

A GENERIC METHODOLOGY FOR FLIGHT
TEST AND SAFETY EVALUATION AT
CONCEPTUAL DESIGN

by

AMIT RAMESH OZA

Presented to the Faculty of the Graduate School of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

MASTER OF SCIENCE IN AEROSPACE ENGINEERING

THE UNIVERSITY OF TEXAS AT ARLINGTON

August 2009

Copyright © by Amit Ramesh Oza 2009

All Rights Reserved

ACKNOWLEDGEMENTS

The research work in these pages could not have been possible without the support of several individuals. I will acknowledge those people now.

First, I would like to express my sincere appreciation and thanks to my conceptual design advisor, Dr. Bernd Chudoba. In the years I have spent working with him, he has provided nothing but encouragement and constructive feedback for all matters academic, philosophical, and/or life in general. Working in his AVD Lab has helped me to grow as a person, learn to appreciate challenges, and possess the necessary skills to meet professional and engineering standards. Without him this thesis would not exist, since it has grown from a flight safety experiment performed almost a decade ago.

Next, I would like to acknowledge to Dr. Ivan Burdun, my flight dynamist advisor. His real-world applications with his software VATES has laid an excellent starting point to bridge a 'safety module' to conceptual design. Additionally, I would like to thank him for guidance in understanding and formulating the interactions of a pilots decision-making logic to the aircraft and operational environment. Again, this research would not be possible without his original work with flight simulation.

Next, I would like to recognize Bob Hoey (retired USAF flight test engineer), William Norton (USAF flight test engineer), Gerald Blausey (retired Lockheed Martin flight dynamist), Jaques Rosay (Airbus Industrie chief test pilot), and Bill Schweikhard (Kohlman Systems Research flight test engineer) for discussing the influences and limitations of aircraft design and helping to advance the solution concept to its current form. Also, I would like thank them advising me on the realities of flight testing and to understanding stability & control and performance. Their experience in this field can be traced back to the century series fighter of the 1950s through today.

Next, I would like to recognize Harry Dunbrack (Wyle Laboratories), for supporting this research, providing insight into the disciplines of flight test engineering and flight testing, and being available to discuss validation issues with the AVD Lab flight test emulation methodology.

Next, I would like to acknowledge Jeff Canclini (Lockheed Martin test pilot) and Dan Canin (Lockheed Martin test pilot) for providing feedback for the pilots decision-making experience, and issues related to flight safety. In particular the discussions indicating the novel benefits for the VATES graphical visualizations and deliverables classically associated with stability & control and performance proved helpful in learning to communicate with the flight test community.

Next, I would like to recognize Bob Gilmer and Vance Purtell (Thompson Petroleum Cessna Citation X pilots) for supplying unique information for validation and calibration of the Citation X test schedules and discussion of the results. Their first-hand experience with the vehicle provided invaluable comments on the aircraft behavior and flight characteristics.

Next, I would like to acknowledge Andy Hahn and Mark Moore (NASA synthesis specialists) for complimenting on the value of the current research and the future steps intended to 'standardize' the conceptual design feedback to the primary design drivers for the aircraft.

I would like to express my appreciation to the AVD Lab team members: Gary Coleman, Lex Gonzalez, Amen Omoragbon, Brandon Watter, Andy Walker, Urmi Khode, and Reza Mansouri. Their friendship, work assistance, and frequent debates have made my graduate school experience at the University of Texas at Arlington truly enjoyable.

I would like to thank my parents, aunts, uncles, and cousins for their support, guidance, constant encouragement, and for understanding the demands of Masters Research. They truly helped to make the research more exciting.

July 20, 2009

ABSTRACT

A GENERIC METHODOLOGY FOR FLIGHT
TEST AND SAFETY EVALUATION AT
CONCEPTUAL DESIGN

Amit Ramesh Oza, M.S.

The University of Texas at Arlington, 2009

Supervising Professor: Bernd Chudoba

The current research is dedicated to the application of a simulation suite that emulates flight testing and is applicable to the aircraft conceptual and preliminary design environment. The configuration concept available for study is an unmodified Cessna Citation X. The research goal is to arrive at a systematic process that reduces aircraft design risk while creating transparency for the manager and engineer during product life-cycle simulation. When integrating the discipline of flight test emulation into the development methodology, the objective is to complement and enrich the design simulation through a correct representation of flight safety relevant disciplines like aircraft certification, flight test, and incident/accident investigation. Clearly, this new 'flight safety module' augments the safety-relevant discipline flight mechanics. This novel stability and control and performance assessment capability utilizes a knowledge-based approach with a legacy to conventional and unconventional aircraft to rapidly integrate lessons learned to support systems level design decision-making. The main goal is to parametrically review and assess flight safety aspects originating from stability and control and performance limitations associated with the operational envelope for the flight vehicle

configuration under consideration. The assessment procedure of a candidate design requires: (1) *pre-flight test procedure* that determines a network of possible safe and unsafe flight paths under normal and complex (multi-factor) flight situations for a specified flight test schedule; (2) execution of the *virtual flight test emulation system* (VATES); (3) *post-flight test procedure* that correlates classical technical deliverables, and (4) *product review* (design feedback mechanism) to iterate the parametric design towards improved physical understanding and improved system flight safety. Consequently, this process allows for a higher density of flight tests to be simulated compared to the density typically afforded during full-scale flight testing.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	iii
ABSTRACT	v
LIST OF ILLUSTRATIONS.....	xi
LIST OF TABLES	xiv
LIST OF NOTATIONS.....	xvii
Chapter	Page
1. A GENERIC FLIGHT TEST AND SAFETY SOLUTION CONCEPT.....	1
1.1. Introduction	1
1.2. Background.....	1
1.3. Problem Description	3
1.4. Understanding the Basics.....	6
1.5. Research Approach	9
1.6. Research Objectives.....	12
1.7. Research Organization	13
1.8. Summary	13
2. CONCEPTUAL DESIGN PRODUCT LIFE-CYCLE (PLC) AND SAFETY METHODOLOGY OVERVIEW	15
2.1. Introduction	15
2.2. PLC Simulation Objective	17
2.2.1. Goal of Conceptual Design	18
2.2.2. Goal of Flight Test	19
2.3. PLC Simulation Review Strategy.....	20
2.3.1. Development of Performance Criteria.....	21
2.3.1.1. Flight Test Simulation (Parametric)	22

2.3.1.2. Flight Test Scheduling	22
2.3.1.3. Flight Test Assessment	25
2.3.1.4. Product Review.....	26
2.4. PLC Process Library.....	26
2.5. Flight Test Simulation (Parametric)	28
2.5.1.Review of Simulator Types.....	28
2.5.2.Review of Simulator Tool Applications.....	30
2.5.2.1. Analysis of Simulation Objectives.....	30
2.6. Flight Test Scheduling	32
2.6.1.Operational Factors Modeling	32
2.6.2.Piloting Objectives.....	35
2.7. Flight Test Assessment	38
2.7.1.Review of Intended Customer Focus	38
2.7.2.Review of Post-Processing Deliverables	40
2.8. Prototype System Development.....	43
2.8.1.Flight Emulation FT/O//AI Methodology Development Objectives.....	43
2.8.1.1. Flight Test Scheduling	43
2.8.1.2. Parametric Flight Test.....	44
2.8.1.3. Flight Test Assessment	45
2.9. Summary	46
3. PROTOTYPE SYSTEM METHDOLOGY AND THEORY	48
3.1. Introduction	48
3.2. Top-Level Methodology Overview	48
3.3. Background – M&S System (VATES)	51
3.3.1.Development History	51
3.3.2.Operational Concept	52

3.3.3.Theoretical Concept	57
3.4. Flight Emulation Process	59
3.4.1.Flight Test Scheduling	59
3.4.2.Flight Test Simulation (Parametric).....	63
3.4.3.Flight Test Assessment	68
3.4.4.Product Review	73
3.5. Summary	74
4. CASE STUDY: CESSNA CITATION X	75
4.1. Introduction	75
4.2. Flight Vehicle Selection Criteria.....	76
4.3. Flight Vehicle Development History.....	77
4.3.1.Market Analysis	77
4.3.2.Mission Specification	79
4.4. Flight Vehicle Baseline Configuration.....	82
4.4.1.Volume Supply	82
4.4.2.Lift Supply.....	83
4.4.3.Thrust Supply	86
4.4.4.Primary Control Supply	88
4.4.5.Secondary Lift Supply	91
4.4.6.Summary	91
4.5. Flight Emulation of the Cessna Citation X.....	94
4.5.1.Flight Test Scheduling.....	94
4.5.2.Flight Test Simulation (Parametric).....	112
4.5.3.Flight Test Assessment	117
4.5.4.Product Review	130
4.6. Summary	131

5. CONTRIBUTIONS SUMMARY AND RECOMMENDATIONS	132
5.1. Contributions Summary	132
5.2. Recommendations for Future Work.....	135
APPENDIX	
A. ADDITIONAL PRODUCT LIFE-CYCLE PROCESS WORK FOR CHAPTER 2.....	137
B. GEOMETRY DESCRIPTION FOR CESSNA CITATION X.....	178
C. ADDITIONAL FLIGHT TEST SCENARIOS AND RESULTS FOR CITATION X	187
D. CONSTANT.INP AND VARIABLE.INP (VATES DATA)	198
E. AERODYNAMICS MODEL FOR CITATION X IN VATES DATA STANDARD.....	212
F. PROPULSION MODEL FOR CITATION X IN VATES DATA STANDARD.....	374
G. WEIGHTS AND INERTIA MODEL FOR CITATION X IN VATES DATA STANDARD	399
REFERENCES.....	401
BIOGRAPHICAL INFORMATION	408

LIST OF ILLUSTRATIONS

Figure	Page
1.1 Product Development Life-Cycle	6
1.2 Life-cycle Simulation Concept.....	9
1.3 Knowledge Construction During Life-cycle Simulation	11
2.1 Product Life-Cycle Methodology Timeline	16
2.2 Overview of Product Life-cycle Methodology at CD	18
2.3 Design Space for CD	19
2.4 Performance Criteria Analysis Color Spectrums.....	21
2.5 Operational Factors Emulation Criteria	23
2.6 Summary of Simulator Types.....	29
2.7 Summary of Simulator Tool Applications	31
2.8 Summary of Operational Factors Modeling Capability	34
2.9 Summary of Flight Test Library Arrangements	37
2.10 Summary of Piloting Classes Simulated	37
2.11 Summary of Process Intended Customer Focus	39
2.12 Summary of Process Operational Deliverable Options	42
2.13 Summary of Process Technical Deliverable Options.....	42
3.1 Conceptual Design Methodology Overview	49
3.2 VATES Operational Concept	52
3.3 Directed Flight Scenario Formulation.....	65
3.4 M_1 : flight variable time-history. S ₁₇₀₃ : “Continued takeoff, left-hand engine out at VEF=150 km/h, $\delta_{FL}=15^\circ$, crosswind -10 m/s” (EXAMPLE)	69
3.5 M_2 : flight event time-history. F ₁₃₂₁ : “Normal takeoff and climb, commanded flight path angle $\theta_G=20^\circ$, commanded bank angle $\gamma_G=-22.5^\circ$ ”(EXAMPLE).....	69

3.6	M_3 : fuzzy constraints of flight. Fuzzy constraints and color-coding of variable zones using safety colors (EXAMPLE)	70
3.7	M_4 : Partial safety spectra, M_5 : Integral safety spectra. F_{2782} : “Normal takeoff and climb, commanded flight path angle $\theta_G=16^\circ$, commanded bank angle $\gamma_G=22.5^\circ$, very strong wind-shear” (EXAMPLE).....	70
3.8	M_6 : Family of integral flight safety spectra. $S_1\Gamma_{11}$: “Normal takeoff, variation/errors of selecting commanded flight path angle and commanded bank angle” (EXAMPLE)	71
3.9	M_7 : Situation complexity buildup diagram. F_{2782} : “Normal takeoff and climb, commanded flight path angle $\theta_G=16^\circ$, commanded bank angle $\gamma_G=22.5^\circ$, very strong wind-shear” (EXAMPLE).....	72
3.10	M_8 : Situational tree of flight. F_{130} : “Takeoff and initial climb, variations/errors of commanded flight path (θ_G) and bank angles (γ_G), very strong wind-shear ” (EXAMPLE).....	72
4.1	Primary Business Jet Market Drivers – 2006.....	78
4.2	Business Jet Market Distribution (Modified from Rolls-Royce)	79
4.3	Cessna Citation X Design Mission (1) Design Cruise, (2) High-Speed Cruise.....	81
4.4	Citation X (Actual) Volume Supply.....	83
4.5	Citation X (Calculated) Volume Supply.....	83
4.6	Citation X Planform Wing View	84
4.7	Citation X Wing Airfoil Approximation (PrADO)	86
4.8	Citation X Wing Airfoil Approximation (Digital DATCOM)	86
4.9	Citation X Thrust Supply (Rolls-Royce AE3007C1 Powerplant)	87
4.10	Citation X LaCE Layout.....	88
4.11	Citation X LoCE Layout.....	89
4.12	Citation X Horizontal Tail Airfoil Approximation (NACA-64-008a)	89
4.13	Citation X DiCE Layout	90
4.14	Citation X Vertical Tail Airfoil Approximation (NACA-64a0010)	90
4.15	Citation X Secondary Lift Supply	91
4.16	Citation X 3-View and Isometric Parametric Configuration Concept (PrADO)	93
4.17	S_1 : Normal Takeoff Scenario.....	113

4.18 S_2 :Continued Takeoff – Speed Above V1 (OEI): Return To Departure Airport Scenario	114
4.19 $S_1 \Gamma_2$: Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle	115
4.20 $S_1 \Gamma_3$ – Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Initial Bank Angle Errors.....	116
4.21 F_{2179} : “Normal Takeoff”, M_1 : Flight Vehicle Time History	118
4.22 (a) $S_1 \Gamma_2 - F_{2043}$: $S_1 \Gamma_2$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle” M_6 : Situational tree of flight.	120
4.23 (a) $S_1 \Gamma_2 - F_{2043}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle” M_6 : Family of integral flight safety spectra.	121
4.24 (a) $S_1 \Gamma_2 - F_{2043}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle” M_2 : Flight event time-history; M_4 : Partial safety spectrum; M_5 : integral safety spectrum.	122
4.25 (a) $S_1 \Gamma_2 - F_{2043}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle” M_7 : Situation complexity buildup diagram.	123
4.26 $S_1 \Gamma_3$: “Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Bank Angle Errors Introduced”, M_8 : Situational tree of flight.	125
4.27 $S_1 \Gamma_3$: “Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Bank Angle Errors Introduced”, M_6 : Family of integral flight safety spectra.	127
4.28 F_{2185} : “Continued Takeoff”, M_1 : Flight Variable Time History	129
C.1 S_3 = Normal Go-Around	194
C.2 S_4 = Single Engine Go-Around.....	195
C.3 F_{4130} – “Normal Go-around”, M_1 – Flight Variable Time-History Plot	196
C.4 F_{4132} – “Normal Go-around, With Wind-Shear”, M_1 – Flight Variable Time-History Plot	196
C.5 F_{4135} – “Go-around, Left Side Engine Out, With Wind-Shear”, M_1 – Flight Variable Time- History Plot.....	197

LIST OF TABLES

Table	Page
1.1 Issues with Product Development Analysis	5
1.2 Product Life-cycle Concept vs. Life-cycle Simulation Concept.....	11
2.1 Definition of Conceptual Design.....	18
2.2 Definition of Flight Test	19
2.3 Product Life-Cycle Methodology Library	27
3.1 Flight Event Calendar Definitions.....	54
3.2 Flight Processes Definitions.....	55
3.3 Flight Process Status Definitions	56
3.4 Modeling Capabilities of VORSTAB, Digital DATCOM, and VORLAX	62
3.5 Data Synthesis to VATES Standard Steps	63
3.6 Example Derivative Scenarios [Takeoff]	67
3.7 Input Data File System for <i>VATES</i>	68
4.1 Cessna Citation X Mission Specification.....	80
4.2 Cessna Citation X FAR Part 25 Regulation Requirements.....	80
4.3 Citation X Volume Supply Description (Calculated)	82
4.4 Citation X Wing and Airfoil Characteristics Summary with Corning Method.....	85
4.5 Main elements (phases, maneuvers, modes) of flight	95
4.6 Speeds (nominal values and limitations)	96
4.7 Altitudes (nominal values and limitations)	97
4.8 Load factor (limitations)	98
4.9 Thrust and Lever Settings	98
4.10 Rates of climb and descent.....	99

4.11 Primary and secondary controls (limitations)	100
4.12 Citation X Flight Emulations Experiments.....	104
4.13 Citation X Drag Coefficient Buildup.....	105
4.14 Citation X Lift Coefficient Buildup.....	106
4.15 Citation X Pitching Moment Coefficient Buildup.....	107
4.16 Citation X Side-Force Coefficient Buildup.....	108
4.17 Citation X Rolling Moment Coefficient Buildup	108
4.18 Citation X Yawing Moment Coefficient Buildup.....	109
A.1 Operational Factors Parameters (Dillenschneider).....	142
A.2 Operational Factors Parameters (Baldwin).....	143
A.3 Operational Factors Parameters (Render).....	144
A.4 Operational Factors Parameters (Rasmussen)	145
A.5 Operational Factors Parameters (Anderson)	146
A.6 Operational Factors Parameters (Kellett)	147
A.7 Operational Factors Parameters (Burdun)	148
A.8 Operational Factors Parameters (Totah)	149
A.9 Operational Factors Parameters (Scharl)	150
A.10 Piloting Technique Options (Dillenschneider)	151
A.11 Piloting Technique Options (Baldwin)	152
A.12 Piloting Technique Options (Render)	153
A.13 Piloting Technique Options (Rasmussen)	154
A.14 Piloting Technique Options (Anderson)	155
A.15 Piloting Technique Options (Kellett)	156
A.16 Piloting Technique Options (Burdun)	157
A.17 Piloting Technique Options (Totah)	158
A.18 Piloting Technique Options (Scharl)	159

A.19 Customer Selection (Dillenscheider)	160
A.20 Customer Selection (Baldwin)	161
A.21 Customer Selection (Render)	162
A.22 Customer Selection (Rasmussen)	163
A.23 Customer Selection (Anderson)	164
A.24 Customer Selection (Kellett)	165
A.25 Customer Selection (Burdun)	166
A.26 Customer Selection (Totah)	167
A.27 Customer Selection (Scharl)	168
A.28 Deliverable Options Available (Dillenschneider)	169
A.29 Deliverable Options Available (Baldwin)	170
A.30 Deliverable Options Available (Render)	171
A.31 Deliverable Options Available (Rasmussen)	172
A.32 Deliverable Options Available (Anderson)	173
A.33 Deliverable Options Available (Kellett)	174
A.34 Deliverable Options Available (Burdun)	175
A.35 Deliverable Options Available (Totah)	176
A.36 Deliverable Options Available (Scharl)	177
B.1 Principle Dimensions.....	179
B.2 Wing Description	180
B.3 Spoilers and High Lift Devices Description	181
B.4 Horizontal Tail Description	182
B.5 Vertical Tail Description	183
B.6 Fuselage and Landing Gear Description	184
B.7 Power Plant Description.....	185
B.8 Design Masses.....	186

LIST OF NOTATIONS

Abbreviations

AVD	=	Aerospace Vehicle Design
BD	=	Baseline Design
C	=	Certification
CE	=	Control Effector
CD	=	Conceptual Design
CCV	=	Controls Configured Vehicle
DCFC	=	Design Constraining Flight Condition
DD	=	Detail Design
DiCE	=	Directional Control Effector
DOF	=	Degrees of Freedom
I/AI	=	Incident and Accident Investigation
FCS	=	Flight Control System
FT	=	Flight Test
FWC	=	Flying Wing Configuration
LaCE	=	Lateral Control Effector
LoCE	=	Longitudinal Control Effector
M	=	Manufacturer
PLC	=	Product Life-Cycle
O	=	Operator
OEI	=	One Engine Inoperative
OFWC	=	Oblique Flying Wing Configuration

OWC	=	Oblique Wing Configuration
PD	=	Preliminary Design
PrADO	=	Preliminary Aerospace Design and Optimization
TAC	=	Tail Aft Configuration
TFC	=	Tail First Configuration
TSC	=	Three Surface Configuration
VATES	=	Virtual Autonomous Test and Evaluation Simulator

Symbols

b	=	Span
c	=	Mean Aerodynamic Chord
C_L	=	Coefficient Of Lift
C_D	=	Coefficient Of Drag
C_m	=	Coefficient Of Pitching Moment
C_Y	=	Coefficient Of Side Force
C_l	=	Coefficient Of Rolling Moment
C_n	=	Coefficient Of Yawing Moment
D	=	Down Coordinate In N-E-D Axes
E	=	East Coordinate In N-E-D Axes
ε_0	=	First Euler Parameter
ε_1	=	Second Euler Parameter
ε_2	=	Third Euler Parameter
ε_3	=	Fourth Euler Parameter
g	=	Gravitational Constant
h, H	=	Altitude
h_{GE}	=	Ground Effect Altitude
I_x	=	Moment Of Inertia About The X Axis

I_y	=	Moment Of Inertia About The Y Axis
I_z	=	Moment Of Inertia About The Z Axis
I_{xz}	=	Product Moment Of Inertia
l	=	Mean Aerodynamic Chord
L/D	=	Lift To Drag Ratio
M	=	Mach Number
$M_{critical}$	=	Critical Mach Number
m	=	Mass
N	=	North Coordinate In N-E-D Axes
n	=	Number Of Flight
N_z	=	Load Factor
p	=	Roll Rate
q	=	Pitch Rate
\bar{q}	=	Dynamic Pressure
r	=	Yaw Rate
S_i	=	Flight Situation, or Flight Scenario
S	=	Reference Area
t	=	Time
T_i	=	Thrust Available Per Engine
V	=	Relative Velocity
V_1	=	Decision Velocity
V_2	=	Take-Off Rotation Velocity
w	=	Weight
Δx_{cg}	=	X Location Of The Center Of Gravity
Δz_{cg}	=	Z Location Of The Center Of Gravity
X_T	=	X Location Of The Thrust Vector

Y_T	=	Y Location Of The Thrust Vector
Z_T	=	Z Location Of The Thrust Vector
δ_a	=	Aileron Deflection
δ_e	=	Elevator Deflection
δ_f	=	Flap Deflection
δ_{HT}	=	Horizontal Tail Deflection
δ_{lg}	=	Landing Gear Position
δ_{lg}	=	Undercarriage Position
δ_{lr}	=	Lower Rudder Position
δ_s	=	Spoiler Position
δ_{sb}	=	Speed brake Position
δ_{sl}	=	Slat Position
Γ_i	=	Hypothesis Experiment
α	=	Angle Of Attack
β	=	Side-Slip Angle
γ	=	Flight Path Angle
ϕ	=	Bank Angle
ψ	=	Yaw Angle
θ	=	Pitch Angle
$\Omega(E)$	=	Calendar Of Flight Events
$\Omega(\Pi)$	=	List Of Flight Processes

CHAPTER 1

A GENERIC FLIGHT TEST AND SAFETY SOLUTION CONCEPT

1.1 Introduction

Any flight vehicle product development follows the generic sequence: (a) identification of business case/mission specification, (b) establishment and execution of an engineering process, (c) collection, visualization, and interpretation of the results generated. The AVD Lab at UTA-MAE is dedicated to improve the overall product life-cycle sequence for flight vehicles from conceptual design to incident/accident investigation, see Chudoba in Reference 1. Thus, the main effort concentrates on an organized and well integrated design process leading to reliable engineering decisions and increased design proficiency through effective simulation of the product life-cycle. This simulation phase enables the manager, engineer, or researcher to survey the full design space and simultaneously review and communicate the flight requirements associated with the production vehicle.

The primary objective of this MS research project is to demonstrate the value-added to the conceptual design phase with the inclusion of parametric flight test emulation as a safety-critical discipline.

1.2 Background

The objective of an integrated life-cycle simulation is to add an analysis capability beyond what is available to the conventional decision-maker. Whether the emphasis is in integrating communication², flight testing³, and/or tool development⁴ the lessons learned can benefit the current study. In terms of:

- Communication along a common framework Boeing offers a scenario where a “ Boeing Quality Assurance analyst on the factory floor...compared finished Boeing 777 aircraft parts and assemblies with the original design to check for variances... [and] conferred

with a Boeing Liaison Engineer, who interactively viewed the same model to validate any potential workarounds.”² This means that a common standard is utilized to connect the manager to the researcher and floor worker.

- Reducing flight test and certification times Boeing, for the B787, notes “advancements in simulation and detailed integration have really cut flight test requirements...test schedules have become more compressed each time another Boeing airplane is designed.”³ Knowledge gained through correct simulation of test cases can shorten basic test schedules and reserve analysis resources for critical flight envelope corners.
- Tool development along a common architecture. “Simulation now begins shortly after the initial concepts are created, and continues until all the hardware is ready for actual testing...Aircraft manufacturers are all pushing for ways to develop software more quickly without sacrificing reliability...There’s a tremendous change from two to three years ago, when aircraft companies were happy to build a unique computer to emulate next-generation software.”⁴ The industry is prepared to move to a generic system growing in precision according to the life-cycle.

As a first test case, Burdun and Chudoba applied this virtual test research to Air France Concorde Flight No AF4590 takeoff accident (July 2000) to calibrate, validate, and determine the potential for early design.^{5,6} The following is summary for this study:

Objectives

- “Investigation of such complex case at conceptual design level within a limited timeframe, without an expensive simulator, given minimal and vague input information representative for the aircraft conceptual design phase, and given minimal or absent piloting knowledge;
- Testing new designs and studying accidents
- Safety conclusions which link conceptual design and flight test.”

Test Hypothesizes

- “How many left engines failed, one or two?”
- What is possible for the aircraft to survive if one or two engines failed?
- What is necessary to make a safe emergency landing and/or turn under these conditions?
- What caused the aircraft to flip over before impact?
- What was the most likely physical picture [time history] of the accident?”

Conclusions

- “All results and conclusion are obtained only from modeling and simulation experiments.
- The virtual flight test and evaluation tool Virtual Autonomous Test and Evaluation Simulator (VATES) allows the reconstruction of a detailed physical picture.
- Coupling tool between conceptual design and flight test with a minimum input information within a short timeframe.
- Method helps engineers to understand operational limits and to use this knowledge in conceptual design and safety analyses (risk reduction).
- FAR Part 25 based test and certification scenarios to examine new and existing designs under design-critical flight conditions.”

Effectively, the emulation tool VATES has been able to capture the scenario experienced by the Concorde and as confirmed by the formal accident report years later.⁷ These results warranted further consideration in a more developed setting. The following chapters are structured to support this viewpoint.

1.3 Problem Description

Consider that the deconstructed design process shows countless levels and decisions that exists with each choice, appropriately, intended to constrain the subsequent opportunities that follow. Thus, the researcher is left to weigh only the available options and selecting an

outcome for a future scenario. The troubling notion in this relationship is that preceding choices are made with limited concern or understanding for later requirements and later design teams (pilots and flight test engineers) are not necessarily able to communicate or fault a grievance when practiced due to isolation. In effect, the idea of proactive decision-makers (conceptual designers) is lost since they are confidently blind to future design circumstances. Aviation Week and Space Technology regularly publishes industry letters collaborating this with titles as “System Users Overlooked”, “Give Pilot the Last Word”, “Engineers Forgot about the Pilots”, and “Engineers Can’t Predict Everything.”⁸

Yet it is not difficult to see that aircraft do operate sustainably every day. Consequently, the operating concept for this study should not be unique as it serves to entertain the discontinuous corners of design and expands the prospect of planning for and managing flight risk. In general, the contribution envisioned here will enhance the opportunity for early fact-based design path planning in an existing work setting. It would be unfair to name this as paradigm shift given the complexities of an aircraft though it is positioned as a platform to help facilitate open communication within an organization. During the course of analysis several issues⁹⁻¹⁹ are evidenced with respect to the decision-maker delivering a better product to the customer, see Table 1.1. Six customers classifications are used during discussion: (1) manufacturer, (2) operator, (3) pilot education, (4) flight test, (5) certification, and (6) incident and accident investigation.

In total the problem recognized arises from a single source, that no single solution exists as a standard for planning, analyzing, and reducing the risks encountered by each of these consumers. This is why it makes sense to place greater attention on the mapping the cause and effect model of the aircraft’s flight safety performance. In turn, this forecasting of, common and multifactor, flight situation will expedite the opportunity of knowledge generalization and risk reduction.

Table 1.1: Issues with Product Development Analysis⁹⁻¹⁹

Headline	Description	Applicable Customer Group/Comments					
		Manufacturer	Operator	Pilot Training	Flight Test	Certification	Incident/Accident Investigation
"NTSB fuels 587 crash crntroversy"	American Airlines A300-600R vertical tail separates during climb-out due to pilot-induced oscillation	Issues with the tail can be traced to early design	Airline could not independently verify the problem	Advanced Aircraft Maneuvering Program does not prepare pilot for this flight condition	Researchers do not explore flight conditions beyond the test schedule	Authorities must move beyond experienced-based regulations and actively propose new requirements	Must reconstruct activities leading to the event from design without prior knowledge and can only reactively propose regulations
"Team simulates A330 Autopilot Abnormal Pitch Commands" and "A330 Crash Analysis: Weather, Engine Failure Not Factors"	A330 was performing an engine out go-around during Category 3 certification when lateral control was lost	NA	NA	Control regained at low altitude to react, though greater analysis before flight may mitigate the effects of the crash	Unplanned flight instances require that the researchers consider dynamic, multi-factor conditions	Authorities must move beyond experienced-based regulations and actively propose new requirements	Must reconstruct activities leading to the event from design without prior knowledge and can only reactively propose regulations
"'Fatal flaw' made Challenger 604 lose pitch control" and "Electric Shock"	Business jet lost horizontal stabilizer control, experienced trim control reversal that countered by elevator and landed flapless	Contingencies for the loss of non-mechanical systems requires multi-factor and more remote flight instances be examined and accounted in early design	NA	NA	NA	NA	NA
"737 Rudder Issues Resurface Despite Redesign" and "NTSB Tests Focus on 737 Rudder"	Uncommanded large rudder deflections result in the aircraft loss of control	Conceptual designers must be able to predict the down-line requirements	NA	NA	NA	NA	Must reconstruct activities leading to the event from design without prior knowledge and can only reactively propose regulations
"Certification for the Stage 4 MD-80 Kit", "Long-Delayed AN-70 Flight Testing Begins", "Short-field 737 Goes into Flight Test", and "Korea High"	The MacDonald Douglas MD-80, Antanov AN-70, Boeing B737, and Korea Aerospace Industries T-50 independently begin flight test services.	NA	NA	NA	Unplanned flight instances require that the researchers consider dynamic, multi-factor conditions	Authorities must move beyond experienced-based regulations and actively propose new requirements	NA

5

1.4 Understanding the Basics

Before endeavoring to discuss the more substantial aspects for the current research topic, it is proposed that a moment be taken to present a reference to definitions used throughout this text. This is done to simply express lessons that were fastidiously learned through multiple discussions with industry and academic contacts. Thereby it is encouraged that this chapter is carefully read and understood before continuing.

Design Life-Cycle Segments. The AVD Lab divides the product life span for a flight vehicle into six continuous parts, Figure 1.1:

1. Conceptual Design (CD)
2. Preliminary Design (PD)
3. Detail Design (DD)
4. Flight Test / Certification / Manufacturing (FT/C/M)
5. Operations (O)
6. Incident / Accident Investigation (I/AI)

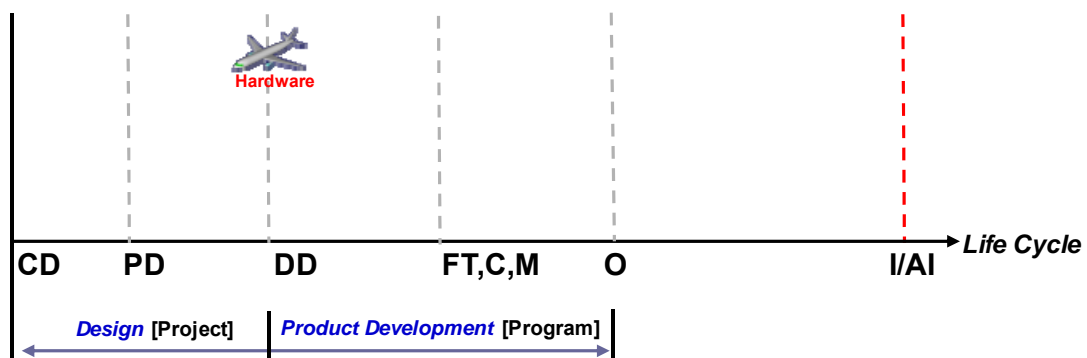


Figure 1.1: Product Development Life-cycle

The more prominent features of the design life-cycle are contained within the project and program segments. The project segment includes the majority of the design work (from conceptual design to detail design) and is completed at the time hardware components for the

vehicle start production. The program segment focuses on the more in depth product development disciplinary activities and ends at the time of first delivery. Relative to the life-cycle, it is not until the conclusion of these two segments that the manufacturer and customer will directly see any value-added from their investment.

Product Life-Cycle. The product life-cycle is structured to systematically create design knowledge characterizing the aircraft. Logically, the end goal for the complete product life-cycle is to continuously ensure the flight safety of the flight vehicle to the “grave”. Figure 1.2 presents an arrangement typical for an industry setting. The project segment traditionally evaluates the standard disciplinary objectives (i.e. aerodynamics, cost, performance, geometry, weights, stability and control, etc.) progressively, separated only by the fidelity of analysis. From the program segment to life-cycle end the objective focus shifts to primarily include manufacturing and production-ready activities with disciplinary observations as needed. During use the following comments can be made:

- Design must anticipate real-world circumstances. This means to emulate safe and unsafe design behavior to integrate lessons learned and decrease the potential for future risk. In this typical organization, CD allows for static performance estimations of selected design-constraining flight conditions (DCFC), six degree-of-freedom, dynamic simulation, of detailed flight situations for PD/DD, and true flight investigations for the remaining phases. Accordingly, knowledge generation tends to be concentrated to the later stages of the design sequence.

Result. Design decisions are based on what is known presently. If the correct knowledge is unavailable, an opportunity may not be realized. Consider that from the initial request for proposal (RFP) at CD, the longest forward thinking spectrum, it may be ten years until first flight and forty years until full aircraft retirement. If errors made at the conceptual design level are not understood nor controlled this could mismanage the

decision path and could escalate to an accident. Therefore, correct upfront knowledge generation must be a priority.

- The design process explores the aircraft through closed-form solutions coupled along the life-cycle. This depiction assumes that researchers do not reason and communicate beyond immediate knowledge objectives. Thereby each phase has its' own unique work culture, work environment, and operational platforms.

Result. The criticism here is that objectivity and communication are fundamental to any sound design strategy. If the research teams lack the freedom to openly confer throughout the lifecycle, data constructed will only reflect to needs at that time. Under these circumstances the CD environment is unqualified to understand the knowledge requirements for the FT/C/M phase whereby decision made could lead to accidents. Thus data objectives and requirements for CD must evolve to correctly represent the FT/C/M flight safety frame of mind.

Life-Cycle Simulation. A product life-cycle simulation is as much a frame of mind, as an approach to work. At the core, it is a concept of knowledge growth and decision management intended to facilitate better and proactive decision opportunities. The primary features include a single, integrated platform that is transparent in communication, and practical and economical in design throughout the complete product life-cycle, see Figure 1.2; whereby building a clear connection for the decision-maker to gauge not only where they are but where they are going. When compared to the product life-cycle (solid arrows), it is evident that this convention is preserved in addition to the life-cycle simulation (dashed arrows). Hence all existing processes are supported.

Still, this is not a simple issue and the subtleties complicate application of this concept. Therefore the following points are made at CD. Employing this integrated platform: (1) a classically, static and/or quasi-static analysis environment now has the capability for six degree-of-freedom (DOF) dynamic simulations when constructing new knowledge earlier, (2) decision-

makers have the full benefit for deciding design paths with the understanding of knowledge objectives in the later design phases (i.e. FT/C/M, O, and I/AI), and (3) knowledge distinctive to the later stages is emulated at CD. Consequently, there is opportunity to ‘*bridge-the-gap*’ and introduce information to early design (‘front-load’) that previously was neither available nor considered. In essence this concept allows the influences and objections of traditionally later design phases to be felt on an early thus accelerated simulated timeline.

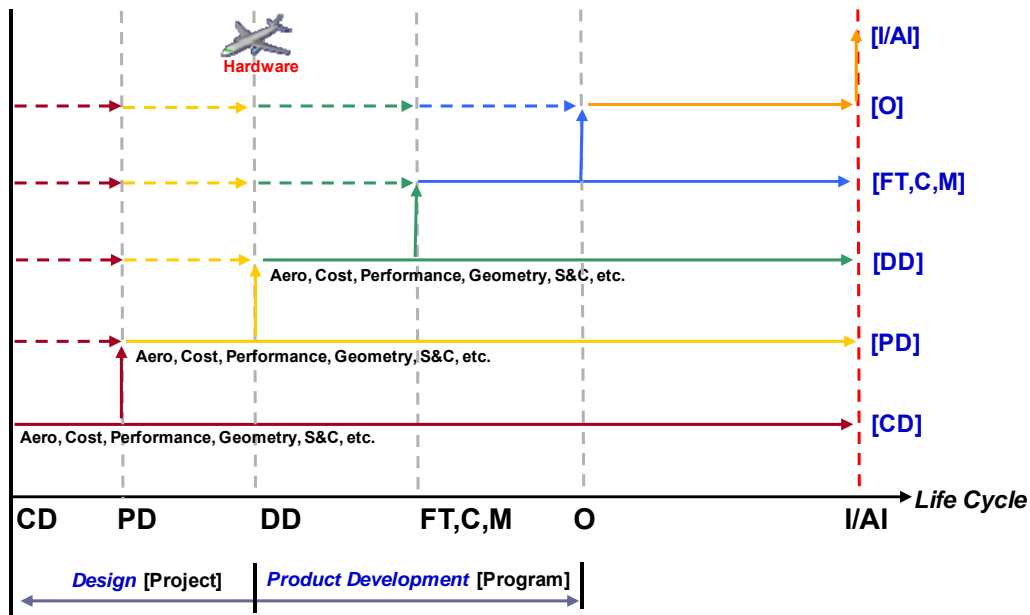


Figure 1.2: Life-cycle Simulation Concept

1.5 Research Approach

Top-Level Expectations

Continuing from the earlier definition of product life-cycle simulation, the expectations in this study are to economically respond to changing circumstances particularly during the aircraft conceptual design (CD) phase. A top-level description of this arrangement includes a capability to:

- **Accelerate design response time.** When real-events vary from predicted opportunities it is required to recalibrate the mission objectives. This function ensures that decision paths are optimized in a timely manner to adapt an organization business strategy.

- **Increase design freedom, correctness, and reliability of results.** Together these latter principles encourage knowledge utilization to create more positive design opportunities. Though much interpretation is left to the research team, this concept is founded in fact-based decision-making.
- **Ensure a systematic and transparent design process to assess and manage risk.** It is not uncommon for researchers to rely on instinct or configuration/technology bias when making design selection. Removing this uncertainty translates into a repeatable procedure that controls the risk for later design.
- **Provide a flexible process and tools capable to evaluate present and future market opportunities.** It is essential that a product development process be free to consider practical and theoretical, in addition to conventional and novel effects due to technology and geometry. Only through such a toolbox can new opportunities be realized.
- **Ensure generic product synthesis functionality.** The future of air transportation may not be limited to the paradigm of a classical tail-aft configuration (TAC) aircraft. As such, the robustness of the process must represent characteristics for the tail-first configuration (TFC), the three-surface configuration (TSC), the flying-wing configuration (FWC), the oblique-wing configuration (OWC), and the oblique-flying-wing configuration (OFWC) to be of value.

In general, the goal is to provide a perspective for the researcher where discrete configuration changes are quantified through a consistent toolbox and the individual benefits for a flight vehicle can be realized.

Knowledge Construction Concept

When functional images of the product life-cycle and product life-cycle simulation are characterized for a common set of variables (design freedom, cost of change, flight test

allowance, and knowledge available) they appear as in Figure 1.3. The transparent region represents the addition of vehicle behavior information that will reduce decision uncertainty and design risk. Also, observe that the typical work flow remains intact for the life-cycle. Table 1.2 provides further comments on this comparison.

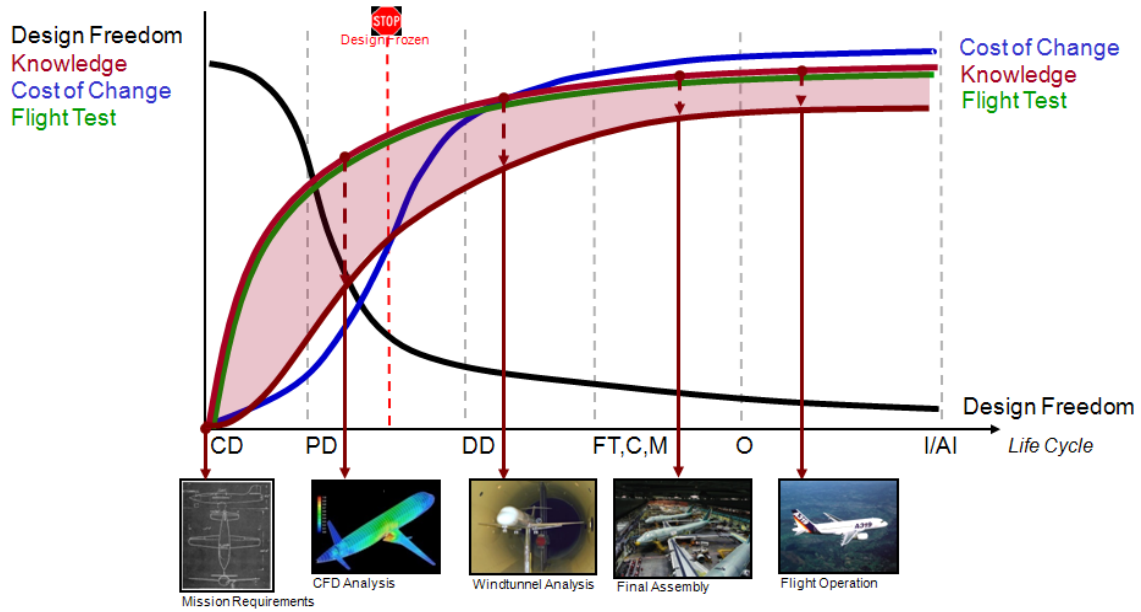


Figure 1.3: Knowledge Construction During Life-cycle Simulation

Table 1.2: Product Life-cycle Concept vs. Life-cycle Simulation Concept

Comparison Criteria:	Product Life-cycle	Life-cycle simulation
Design Freedom	Reduces as life-cycle advances. Freedom is high at CD and rapidly reduces after design freeze.	Reduces as life-cycle advances. Freedom is high at CD and rapidly reduces after design freeze.
Cost of Change	Increases as life-cycle advances. Cost is minimal at CD and increases rapidly after design freeze.	Increases as life-cycle advances. Cost is minimal at CD and increases rapidly after design freeze.
Flight Test Allowance	Minimal activity at CD. Increases to peak activity at FT,C,M and reduces to an "as-required" FT level after.	FT activity increases rapidly from CD to FT,C,M and continues to observe any and all FT activities through I/AI.
Knowledge Available	Minimal FT knowledge at CD. Increases to peak at minimal design freedom and high cost of change.	Available knowledge increases proportionally with FT activity. At CD, design freedom is maximum and cost of change is low.

1.6 Research Objectives

The present study describes a novel flight test emulation process for the product life-cycle methodology. The methodology is demonstrated for the Cessna Citation X flight vehicle. This MS research will represent the FT/C/M, O, and I/AI segments for safety assessment. Note that since the work typically associated with the design phases (parametric sizing, configuration layout, and configuration evaluation) is already completed, this design work here is regarded and executed as a reengineering effort. The objectives follow:

Life-cycle Simulation Methodology Objectives

- Establish a new safety discipline for conceptual design.
- Organize a proactive decision-making flight test and safety emulation process.
- Communicate with pilots, test pilots, designers, and industry professionals to calibrate the process.
- Produce a case study demonstrating validation and calibration at conceptual design

Case Study Citation X Objectives

- Develop a Citation X parametric definition (i.e. aerodynamics, propulsion, and weights and inertia models) from design reengineering
- Develop formal flight test schedules for modeling and simulation (M&S) of normal and complex and neighboring flight scenarios (stability and control, and performance).
- Validate the flight test schedules with industry Citation X experience
- Produce a set of technical and operational deliverables that communicate to the manager and engineer
- Examine the test and derivative flight scenarios to test the influences of design parameters

- Validate the emulated flight test and flight safety results with industry Citation X experience
- Discuss possible control methods to feedback design recommendation to the product life-cycle

1.7 Research Organization

With the initial focus for this novel flight test emulation research completed, Chapter 1 (“Introduction and Objectives”), the research organization is put in place next to explore the work. Starting with Chapter 2 (“Conceptual Design Product Life-Cycle (Plc) and Safety Methodology Overview”), the basic principles of conceptual design and flight test are discussed. Continuing with a review of previously applied flight emulation processes and a specification of the prototype system development requirements. Chapter 3 (“Prototype System Methodology and Theory”) addresses the overall architecture for the methodology and build-up for the relevant concepts under which the simulation study will be conducted. Additionally, it introduces the virtual autonomous test and evaluation simulator (VATES). The calibration and validation work is discussed in Chapter 4 (“CASE STUDY: Cessna Citation X”) where the operational characteristic for the flight vehicle are presented and the resulting flight emulation is baselined. Finally in Chapter 5 (“Contributions Summary and Recommendations”) the lessons learned and the recommendations for future work are presented.

1.8 Summary

Much of the solution concept discussed in this chapter will be accomplished through two research efforts: (1) Master of Science Thesis (M.S.) and (2) Doctor of Philosophy Dissertation (Ph.D.). This distinction is made since it will be the Ph.D. work that arrives at the full capability for an integrated flight ‘safety module’. The MS research contribution explores this add-on discipline without directly interfacing with the design environment. Overall, both research thrusts combined will contribute to establish a new discipline to be added to the classical conceptual design disciplines. This new ‘safety discipline’ needs to be activated during the inner conceptual design iteration, when the simulated flight vehicle is evaluated (iterated) and

feedback is provided to influence the primary design variables for overall mission, geometry, aerodynamics, stability and control, performance, propulsion, weights and inertias, etc. The contributions of the longer term PhD research efforts are: (1) a generic test schedule of flight situations for conceptual design level design, (2) the development of a feedback mechanism that controls the enhancement of parametric design variables, and (3) the ability of the system to grow as the real product life-cycle advances. As such, the M.S. work is reserved to the research objectives outlined in Chapter 1.6. Here, the contribution is to develop the process and framework to address FT/O//AI uniquely with the data-richness generated throughout the early conceptual design phase.

CHAPTER 2
CONCEPTUAL DESIGN PRODUCT LIFE-CYCLE (PLC)
AND SAFETY METHODOLOGY OVERVIEW

2.1 Introduction

It is no revelation to say that flight simulation has been used to emulate flight behavior since the earliest days of aerospace. Initially, the main task was to assist research engineers learn to predict and understand aircraft behavior. Today, the list of applications has grown to include contributions to the public entertainment industry, pilot education, and other industries. Together these settings have produced numerous modeling and simulation (M&S) techniques aimed at substituting the user as a pilot and flight vehicle interface. The understanding of the significance of the current research investigation emerges once its effect on the early product development risk assessment becomes clear.

It is of importance to note that the majority of research or engineering simulators are not directly addressing the primary parametric aircraft design variables. The focus of the majority of existing 'derivative' flight simulators tends to be on secondary aircraft design variables (i.e. handling qualities and flying qualities centering on pilot perception) that help to validate specific corners of the six-degree-of-freedom model; a direct feedback to the primary design framework does usually not exist. Clearly, the opportunity to affect the primary design variables (i.e. geometry, aerodynamics, stability and control, propulsion, weights and inertias, etc) is often left as a minor add-on for design improvement to the product. This disconnect in today's flight simulation practice does limit how well a designer is positioned to recommend changes to the aircraft during a time when design freedom is high and the cost of change is low.

In this context, the current study aims to eliminate this disconnect and bridge flight simulation to the parametric design framework that influences the primary design variables (gross design drivers). When adequately integrated into the overall flight vehicle product life-

cycle environment (PhD research), flight simulation will transition to evolve into the 'safety module' for the conceptual design phase where the extremes of true flight can be explored in the context of the primary design variables. Thereby, to describe the possible value-added through an AVD Lab Product Life-Cycle (PLC) simulation, it is necessary to establish a baseline from which to grow. Such baseline allows us to consistently compare the strengths and weaknesses for each system. In a disciplinary context, this study establishes a direct conceptual design connection between the two highly multi-disciplinary phases framing the product life-cycle, conceptual design and flight test/certification/incident and accident investigation.

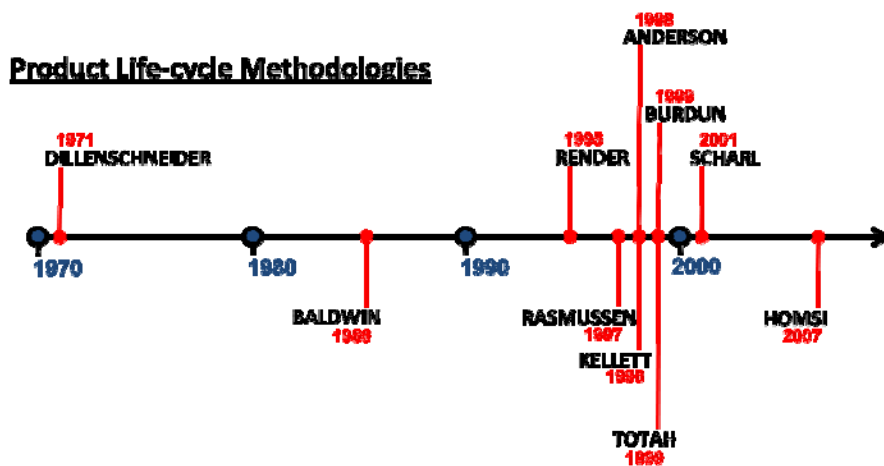


Figure 2.1: Product Life-Cycle Methodology Timeline

While the concept of the product life-cycle (PLC) process is not novel by any means, a system once executed will answer questions as to *What is the cost to benefit relationship incurred for a customer?*, *What value is provided to a customer that was not previously available?*, *What design changes can be made to improve the parametric definition for the aircraft?* To accomplish the above, it is of importance to review PLC processes, see Figure 2.1. As Dillenschneider expresses, "The establishment of practical simulation fidelity commensurate with the design task depends on engineering judgment and capabilities existing at the time of

need.”²⁰ Note that each PLC solution is unique to its implementation era, its research organization, and its customer group it is simulating towards helping the user to construct knowledge maps which are supposed to reflect the aircraft system. Thus, it is possible that every definition of a PLC process may not be the same and likely differs in depth and scope of flight simulation interaction to the design phases. Given this constraint, and for the purposes of this study it is must be assumed that a common meaning of Product Life-Cycle Process.

2.2 Product Life-Cycle Simulation Objectives

This section discusses the top-level objectives used as guidelines for this study. They are:

1. Understand the characteristics and goal for the conceptual design phase.
2. Understand the characteristics and goal for real-world flight testing
3. Define the operational and technical performance criteria enabling robust product development life-cycle simulation.
4. Take into account the lessons learned of existing PLC methodologies that experiment with partial or full integration into aircraft design.
5. Examine life-cycle interactions that quantitatively and qualitatively define each PLC process.
6. Identify limitations and assemble recommendations for the AVD Lab PLC specification, in particular to simulate FT/O//AI, Figure 2.2. (Note that the conceptual design synthesis part is excluded in this study.)
7. Discuss future activities that will make a positive contribution to the AVD Lab PLC simulation methodology.

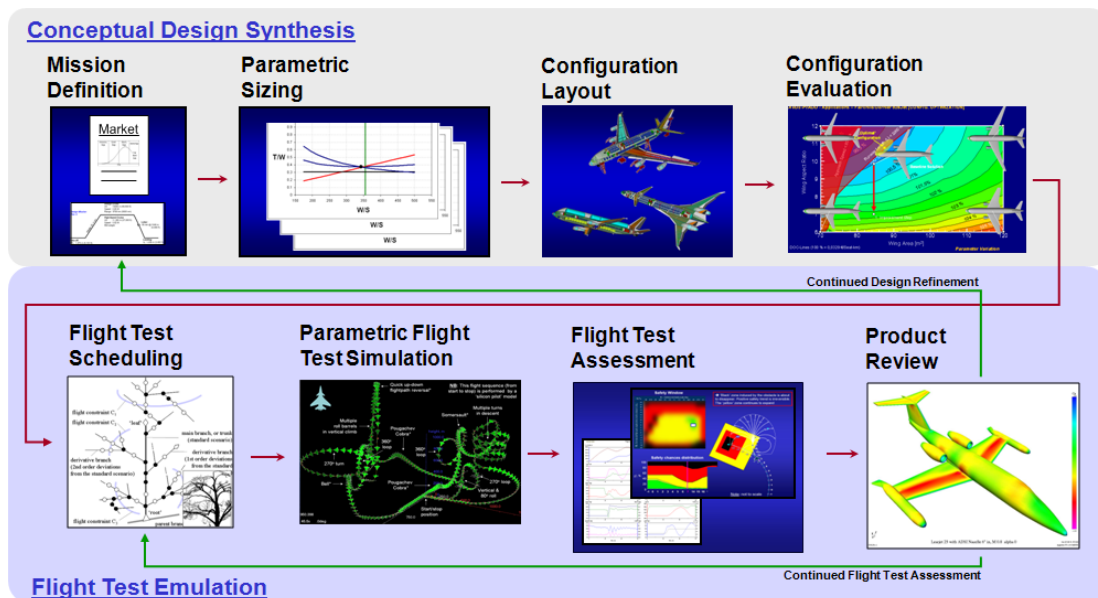


Figure 2.2: Overview of Product Life-cycle Methodology at CD

2.2.1 Goal of Conceptual Design

Table 2.1 summarizes the activities required and strategy for implementing CD and Figure 2.3 describes the design freedom required for analysis of configuration concept benefits. This description is meant to provide a brief glimpse into the world of the aircraft designer.

Table 2.1: Definition of CD

OBJECTIVE:
Explore the design solution space for flight vehicle configurations and converge vehicle systems satisfying operational requirements.
DECISION INFLUENCE:
The decisions made follow through to the complete time span of a product: from CD, PD, DD, FT/C/M, O, to I/AI. It represent the time from the request for proposal to the retirement of the vehicle.
DESIGN SPACE:
Discrete configuration and geometry (TAC, TFC, TSC, FWC, OWC, OFWC) variations and derivatives are quantified, Figure 2.3.
ANALYSIS VIEWPOINT:
Static or quasi-static analytical and empirical assessments (i.e. reduced-order models, volume coefficients, component buildup) for design-critical flight conditions. ²¹⁻²⁴
BENEFIT:
To evaluate opportunities for flight safety, certification, risk, and cost for the decision-maker.

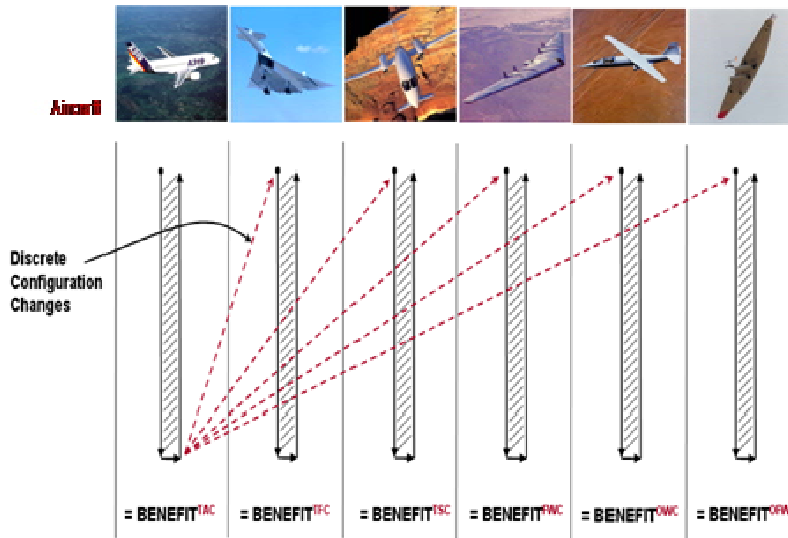


Figure 2.3: Design Space for CD²⁵

2.2.2 Goal of Flight Test

Table 2.2 summarizes the activities required and strategy for implementing FT/O/I/AI. This description is meant to provide a brief glimpse into the world of the aircraft examiner, operator, and investigator.

Table 2.2: Definition of FT

OBJECTIVE:
Evaluate the flight vehicle for design deficiencies beyond operational flight characteristics to determine if: <ul style="list-style-type: none"> • mission suitability for the aircraft is satisfied • performance requirements and contractual guarantees are met • educate the engineers and pilots.²⁶
DECISION INFLUENCE:
The decisions made interact only with the end of the life-cycle (FT/C/M, O, I/AI). It represents the time from first flight to the retirement of the aircraft.
DESIGN SPACE:
A selected configuration and geometry can be minimally updated or corrected for flight deficiencies.
ANALYSIS VIEWPOINT:
Dynamic six-degree of freedom assessment (real-world flight) for design-constraining flight conditions (stability and control, performance calculations). The concept is to “fly-fix-fly” or “predict-test-compare”. ²⁶⁻²⁸
BENEFIT:
To evaluate opportunities for flight safety, certification, risk, and cost for the decision-maker.

2.3 Product Life-Cycle Simulation System Review Strategy

To ease discussion, this evaluation is organized from components of the flight test emulation process illustrated in Figure 2.2. The methodology is discussed in more detail in 'Chapter 3: Prototype System Methodology and Theory'. The steps are reordered here to include a description of flight simulator which the PLC methodology is built around at the start. The review steps follow:

- a. **Flight Test Simulation (Parametric).** Emulates the specified flight test schedule through the application of an integrated modeling and simulation (M&S) tool.
- b. **Flight Test Scheduling (Parametric).** This process is analogous to the Pre-Flight Test Procedure applied during actual flight test. The objective is to determine the flight test schedule to assess a network of possible safe and unsafe flight paths under normal and complex (multi-factor) flight situations to thoroughly check stability and control and performance.
- c. **Flight Test Assessment (Parametric).** This process, similar to the Post-Flight Test Procedure, constructs and examines flight experiment statistics to generate technical deliverables for the flight vehicle configuration. Visualizations are formalized in two formats: classical test and simulator-based.
 - Classical testing visualizations consist of typical industry styled representations expressing flight variable relationships and time-history graphs.
 - Simulator-based visualizations include representations unique to the tool that further contribute to the interpretation of flight variable relationships.
- d. **Product Review.** Assessment of the flight vehicle configuration to identify the effects of the design on system safety and mission performance. Critical combinations of key operational factors generate flight safety recommendations (knowledge) to feedback to the product life-cycle to enhance design decisions.

Before proceeding, several comments should be made: (1) The technical discussion detailing individual program modules is avoided in an effort to focus on the process application, Figure 2.2 (2) The aircraft configuration ‘parametric definition’ is assumed complete and validated (i.e. aerodynamics, moments of inertia, engine thrust and specific fuel consumption input models are available) prior to simulation. (3) Each M&S tool is validated and calibrated, (4) the process is intended to provide feedback to primary design variables (i.e. geometry, aerodynamics, stability and control, propulsion, weights and inertias, etc) to influence the parametric model.

2.3.1 Development of Performance Criteria

The performance criteria correspond to analysis sets within Steps (a) through (d) that help to baseline a PLC methodology. This is done since most flight simulations are designed to address a, unique, given problem and thus it falls to a M&S engineer to build a suitable representation which adds research value for the decision-maker (i.e. design manufacturer, flight testing examiner, certification regulator, operator, incident and accident investigator, and pilot educator).

Before proceeding, the conditions by which the performance criteria are measured is introduced, Figure 2.4. While the value of the color spectrums may appear arbitrary, this is done to standardize the performance analysis results from the methodology descriptions available. The scale used will be indicted at the end of each analysis.

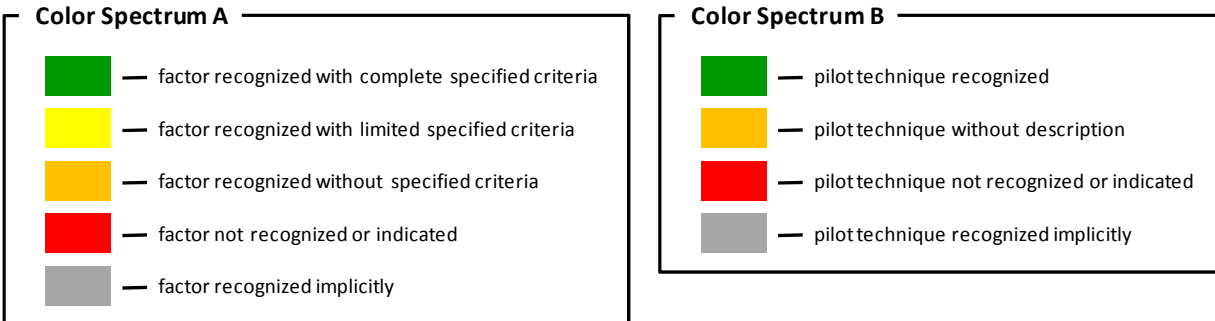


Figure 2.4: Performance Criteria Analysis Color Spectrums

2.3.1.1 Flight Test Simulation (Parametric)

This section reviews the specific integrated M&S tool used during life-cycle simulation to realize the functional design work environment. Two analysis are performed. The first is intended to produce a simulator classification distribution for the associated range of flight dynamics scenarios. It is, generally, tested to confirm the complexity of the physical-systems containing the “pilot-vehicle-operational environment”. Four categories are identified:

1. Computer simulation: pilot-in-the-loop (unmanned) pilot-vehicle interface
2. Static simulation: no-motion pilot-in-the-loop (manned), real-time pilot-vehicle interface
3. Dynamic simulation: partial and/or full-motion pilot-in-the-loop (manned), real-time pilot-vehicle interface
4. Flight test: true-motion pilot-in-the-loop (manned), real-time pilot-vehicle interface

Color Spectrum A is applied.

Secondly, the applicability of each tool is discussed towards the emulation objective. The emulation objective describes the relevance of the tool based on performance, stability and control, handling qualities, and flight control system (FCS) design.

Color Spectrum A is applied.

2.3.1.2 Flight Test Scheduling

Two studies are conducted in this section to determine the ability of the PLC process to satisfactorily characterize the ‘pilot-flight vehicle-operational environment.’ With regards to real-world flight testing, the objective here is to gauge how well the flight variable for an equivalent virtual flight setting can be produced through the simulation. The first analysis evaluates the potential of key operational factors, see Figure 2.5²⁹ along a given flight profile (i.e. groundroll, takeoff, climb, cruise, descent, approach, go-around, and landing):

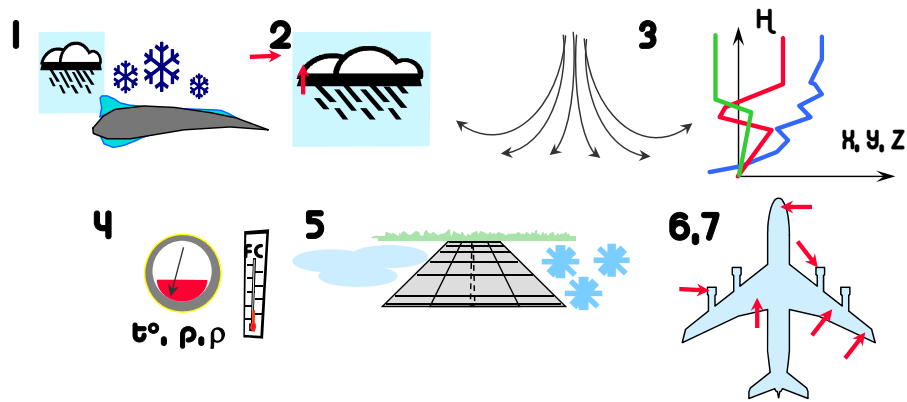


Figure 2.5: Operational Factors Emulation Criteria²⁹

- **Weather Influences:**

1. icing
2. rain
3. wind (gusts, crosswind, microburst, etc.)
4. non-standard atmospheric conditions (temperature, and pressure)
5. non-standard runway conditions (dry, wet, and iced)

- **System Failures:**

6. engines, primary control effectors (elevators, ailerons, rudder, etc.), secondary control effectors (spoilers, flaps, speed brakes, etc.), landing gear, etc.

- **System Variation:**

7. aircraft weight, c.g. location, and inertia
8. configuration changes (high-lift deflections)

Color Spectrum A is applied.

The second study observes the operational boundaries for the flight situation model in representing possible piloting techniques (i.e. flight delays, incorrect control tactics, missing procedures, incorrect objectives or observed parameters, gains etc.). This assessment evaluates the completeness of the flight test library and the possible flight classifications of the simulation. In particular each grouping includes:

- **Flight Test Library Arrangements** – measures the practicality and depth of the test library to enhance the design of an aircraft based on stability & control and performance testing. Three levels are indicated:
 - *User-specified flight test* – no prearranged test library exists. The engineer relies on personal flight knowledge and experiences to simulate vehicle behavior.
 - *Partial-flight test* – a partial test library exists. The engineer relies on his/her personal flight knowledge and experiences in addition to a limited flight test suite (preselected) flight tests to simulate vehicle behavior.
 - *Full-flight test* – a full test library exists. The engineer relies on his/her personal flight knowledge and experiences in addition to a complete flight test suite (preselected) to simulate the vehicle behavior.

- **Flight Classifications** – distinguishes the type of M&S technique utilized to emulate the flight research for a single simulation. Four types are described:
 - *Normal* – represents standard logic relationships for knowledge generation. Flight modes correspond to ideal operational factors for the aircraft
 - *Complex* – represents non-standard logic relationships for knowledge generation. Flight modes correspond to non-ideal or failure of a single operational factor for the aircraft
 - *Multi-factor* – represents non-standard logic relationships for knowledge generation. Flight modes correspond to non-ideal and/or failure of multiple operational factors for the aircraft
 - *Neighborhood* – represents standard and non-standard logic relationships for knowledge generation. Flight modes allow for localized hypothesis (derivative) testing to ideal and/or non-ideal and/or failure of a single and/or multiple operational factors for the aircraft.

Color Spectrum B is applied.

2.3.1.3 Flight Test Assessment

Once the task of flight test emulation is complete the next step is data processing. This step is critical in that the interpretation of the knowledge generated signifies the priorities the process developers place in design. Two assessments are performed to illustrate this issue. The results are based on assessments occur during and after execution of the code.

The first analysis defines the technical deliverables as a function of the operational customer for which they are derived. For instance, *who does the methodology speak to?* While this partiality will always exist when solving a practical problem, it may restrict the opportunity to contribute to aircraft design. To accomplish this task, the PLC process is matched by the target audience: (1) design manufacturer, (2) flight testing examiner, (3) certification regulator, (4) operator, (4) incident and accident investigator, and (5) pilot/student education.

Color Spectrum A is applied.

Secondly, the post-processing of the deliverables data is investigated. Each process possesses a unique ability to feedback to design and, thus, influence the decision-maker. Bearing this in mind, the quality of the presentation is examined in three stages for both operational and technical tasks. They follow:

- **Classical Flight Test Visualization** – consist of typical industry styled representations expressing flight variable relationships and time-history graphs for stability and control, and performance.
- **Simulator-Based Visualization** – include representations unique to the tool that further contribute to the interpretation of flight variable relationships in aircraft design.
- **User-Specified Visualization** – show the ability to adapt and customize flight variable relationships beyond those predefined for classical flight test and simulator-based visualizations.

Color Spectrum A is applied.

2.3.1.4 Product Review

With the flight test emulation completed, it is left to the feedback feature of PLC Process to determine how best to translate flight test knowledge to make manageable design decisions. This step is critical, though at the present time a developed process to manage influences on the primary design variables is beyond the scope and an 'ad-hoc' interpretation is in place.

Observe that the final tool specifications are made only in Chapter 2.9: "Summary" and that these recommendations are for the Masters Research.

2.4 PLC Process Library

In order to correctly calibrate the flight test emulation requirements for a design setting, it is imperative that the reviews of PLC processes reflect: (1) A diverse range of simulation activity. (2) A structured methodology capable of iteration (parametric definition can be updated). The objective, again, is to arrive at a test system that balances the operational and technical needs with the infrastructures available. Thus it will be the capability of the tool and process that determine the type of feedback for the primary design variables.

Ten references have been identified, though only nine are execution ready, Table 2.3. The Homsí Product Life-cycle Process is due to be completed in late 2009³⁸. These Product Life-Cycle methodologies provide a diverse grouping of development perspectives from academic institutions (green), research organizations (blue), industry groups (red), research teams (black).

Table 2.3: Product Life-Cycle Methodology Library^{20, 30-38}

Reference	Year	Type	Source	Title
Dillenschneider, et al.	1971	Journal	LTV Aerospace Corporation	Use of Ground Based Simulators in Aircraft Design
Baldwin, et al.	1986	Paper	General Dynamics	The Air Combat Simulator and Its Role in the Aircraft Development Process
Render, et al.	1995	Paper	Loughborough University of Technology	The Integration of Simulators, Personal Computers and Aircraft in Teaching Aircraft Design
Rasmussen, et al.	1997	Paper	Artificial Horizons, Inc. / University of Strathclyde / USAF Wright Laboratory	AVDS: A Flight Systems Design Tool for Visualization and Engineer-In-The-Loop Simulation
Anderson, et al.	1998	Paper	California Polytechnic State University	A Low-Cost Flight Simulation for Rapid Handling Qualities Evaluations During Design
Kellett, et al.	1998	Paper	Cranfield University / RAFC Cranwell / IBM Global Services	Real-Time Flight Simulation for Graduate Aerospace Education
Burdun, et al.	1999	Paper	Georgia Institute of Technology	A Technique for Testing and Evaluation of Aircraft Flight Performance During Early Design Phases
Totah, et al.	1999	Paper	NASA Ames Research Center	An Integrated Vehicle Modeling Environment
Scharl	2001	Dissertation	Georgia Institute of Technology	Formulation and Implementation of a Methodology for Dynamic Modeling and Simulation in Early Aerospace Design
Homsí, et al.	2007	Workshop	Pascal GENDRE	CRESCENDO: Collaborative and Robust Engineering using Simulation Capability Enabling Next Design Optimisation

Please note that the following evaluations and judgments have been drawn by the author with only the information available in the public domain. Any interpretations made are limited to the performance criteria descriptions in ‘Chapter 2.3: Product Life-Cycle Simulation Systems Review Strategy’. No effort is made to predict any systems capabilities beyond those mentioned in the text of the Process. The unprocessed results are available in Appendix A and the performance criteria summaries are available in Chapters 2.5 to 2.7.

2.5 Flight Test Simulation (Parametric)

2.5.1 Review of Simulator Types

Again, the objective is to produce a simulator class-distribution for the associated range of flight dynamics scenarios. It is tested to confirm the complexity of the physical-systems during the course of life-cycle simulation.

Results

Figure 2.6 overviews the discussion. The variety and number of flight dynamics initiatives directly illustrates the difficulty involved to efficiently and economically represent the aircraft system. For instance, Render's method went as far as to suggest the application of a fully-instrumented test vehicle to motivate the design process for students.. Practicality and cost issues, obviously, may quickly disqualify this option. For a Product Life-Cycle PLC Process intended to operate during the conceptual design phase, this latter principle of validating via a flight test article could be used, to recommend the lower fidelity flight dynamics demonstrations. Consequently, this diminishes the value for the dynamic simulation class.

Generally speaking, the Product Life-Cycle Processes favor simple flight simulators with static simulation as the primary manner of M&S. Three of the latter six options (Dillenschneider, Baldwin, and Anderson)^{20,37,31} portray a fixed base configuration, while the remaining (Render, Rasmussen, and Totah)^{36,30,34} are centered on a PC workstation. Each of these requires a manned interface to 'pilot' the aircraft. At the lowest fidelity level, the only systems without a manned interface but computer simulation are by Anderson³¹, Burdun³³, and Scharl³⁷, where piloting skills are not mandatory for the experimenter. The highest complexity systems are by (Dillenschneider, Render, and Kellett).^{20,35,32}

Comparison Criteria:	Dillenschneider	Baldwin	Render	Rasmussen	Anderson	Kellett	Burdun	Totah	Scharl
Computer Simulation	Red	Red	Red	Red	Green	Red	Green	Red	Green
Static Simulation	Green	Green	Green	Green	Green	Red	Red	Green	Red
Dynamic Simulation	Green	Red	Green	Red	Red	Green	Red	Red	Red
Flight Test	Red	Red	Red	Red	Red	Red	Red	Red	Red

Figure 2.6: Summary of Simulator Types

2.5.2 Review of Simulator Tool Applications

The applicability of each tool is discussed to understand the emulation objective, which describes the relevance of the tool, and aircraft configuration it applies to.

2.5.2.1 Analysis of Simulation Objectives

With multiple disciplines being conveyed during the life-cycle it becomes important to realize that the correct disciplines have to be investigated throughout the conceptual design phase. Flight test, unlike the majority of design disciplines like aerodynamics or structures, is dedicated to represent a multi-disciplinary assessment activity; the overall flight vehicle arrangement is simulated or designed, now it needs to be tested. Clearly, the emulation of flight test as a safety discipline has to be executed for each iteration cycle to enable a trustworthy assessment of the virtual design space. For both, the challenge is to assist design through a direct flight risk feedback.

Results

The goal here is to discern *what information is most beneficial for design?* Surely the 'parametric definition' data-richness largely controls what events can be modeled and simulated, but *what knowledge is actually needed to evaluate the aircraft?* Recall that a total of four design disciplines (performance, stability & control, handling qualities, and flight control system design) have been identified^{20,30-37}, see Figure 2.7. Stability and control, handling qualities, and flight control system design provide an object specific contribution for flight dynamics while flight performance is an independent investigation measuring the overall system response.

At this stage it would be irresponsible to eliminate any Process by research discipline alone since the flight simulator may be a viable solution. Accordingly the designer sets the knowledge requirements and balances these risks of development such that the Product Life-Cycle Process produces a net positive impact.

Comparison Criteria:	Dillenschneider	Baldwin	Render	Rasmussen	Anderson	Kellett	Burdun	Totah	Scharl
Performance	Red	Green	Green	Green	Red	Green	Red	Red	Red
Stability and Control	Green	Green	Green	Green	Green	Green	Green	Green	Green
Handling Qualities	Green	Green	Red	Red	Red	Green	Red	Red	Green
Flight Control System	Green	Red	Red	Green	Green	Red	Green	Green	Green

Figure 2.7: Summary of Simulator Tool Applications

2.6 Flight Test Scheduling

When evaluating flight safety, the schedule of flight test decides the simulation work to be completed. These tests determine the information that will feedback during CD iteration and the type of design variable influences allowed to the aircraft parametric definition.

2.6.1 Operational Factors Modeling

Results

During the course of the above examination it is quickly recognized that the degrees-of-freedom or overall system capability implemented does affects the 'simulation richness' of the 'pilot-flight vehicle-operational environment'. Note that modeling of all operational variables (weather conditions, system failures, and overall system variations) might not be required during the conceptual design phase. However, having the option to model a given flight behavior or characteristic as close as possible to reality during this phase will definitely help the designer reducing future divergences in the design process that increase risk, time, and cost. For flight test emulation this is of particular concern where the primary task is overall system safety assessment throughout the flight envelope, its exploration and expansion. Consequently, this survey illustrates a wide variety of emulation freedom but system capability limitations do exist amongst the Product Life-Cycle Processes, see Figure 2.8. The following review-conclusions can be drawn.

The most common features observed for a process includes first the ability to model systems failures, followed by weather influences, and thirdly system variations. Whether implicitly or directly, only four tools possesses either a partial or complete capability to model all three environments (Dillenschneider, Render, Kellett, and Burdun)^{20,35,33}. The remaining processes (Baldwin, Rasmussen, Anderson, Totah, and Scharl)^{36,30,31,34,37} each contribute to producing weather influences and system failures for simulation. The real surprise here is a lack of simulation capability for weather influences that contributes to the analysis of non-ideal flight scenarios.

Accordingly, the recommendation is for the system that best represents the information requirements for the simulated flight environments and has the flexibility to grow as needs change.

	Dillenschneider	Baldwin	Render	Rasmussen	Anderson	Kellett	Burdun	Total	Scharl
Weather Influences:									
Icing	Red	Grey	Red	Red	Red	Red	Green	Red	Red
Rain	Red	Grey	Red	Red	Red	Red	Green	Red	Red
Wind	Yellow	Grey	Green	Red	Yellow	Red	Green	Orange	Yellow
Non-standard Atmospheric Conditions	Yellow	Grey	Red	Grey	Red	Yellow	Green	Green	Red
Non-standard Runway Conditions	Red	Red	Red	Red	Red	Red	Green	Red	Red
System Failures:									
Engines	Green	Grey	Green	Orange	Grey	Orange	Green	Grey	Red
Primary Control Effectors	Green	Grey	Grey	Orange	Grey	Orange	Green	Grey	Red
Secondary Control Effectors	Yellow	Grey	Yellow	Orange	Grey	Green	Green	Grey	Red
Landing Gear	Red	Grey	Yellow	Orange	Red	Green	Green	Grey	Red
System Variation:									
Aircraft Weight	Green	Red	Green	Red	Red	Green	Green	Red	Red
C.G. Location	Red	Red	Red	Red	Red	Green	Green	Red	Red
Inertia	Red	Red	Green	Red	Red	Green	Green	Red	Red

Figure 2.8: Summary of Operational Factors Modeling Capability

2.6.2 Piloting Objective

The previous section has discussed the operational factors modeling the 'pilot-flight vehicle-operational environment' as it pertains to irregular flight scenarios being simulated. Using this understanding, the emulation environment is evaluated for interaction with respect to the simulated piloting technique achievable.

Results

The top-level methodology utilized to distinguish the flight test objectives during simulation are discussed in the section. More appropriately, it explores the efficiency of the process in terms of productivity of experimentation within the emulated 'pilot-flight vehicle-operational environment' to map knowledge of potentially dangerous scenarios for the normal, protracted, and/or violated flight envelope. It is remarkable to observe the variety of flight classifications and flight test library solutions in existence considering that flight safety performance is the common objective function under investigation. Clearly, the overall robustness of each individual PLC process characterizes (1) the researcher's experience level obtained to effectively contribute, and (2) the technical capability actually implemented to encourage the assessment of incident and accident type events. Obviously there is the need for a generic solution concept, but again, the quality and 'richness' of the PLC process are directly correlated to the decision-maker's risk-taking.

Figure 2.9 and Figure 2.10 summarize the flight situation prediction methods known to supplement piloting objectives. Concerning the flight test library arrangements, all nine methods have a user-specified capability, five (Baldwin, Render Rasmussen, Kellett, and Burdun)^{36,35,30,32,33} include a partial library. Clearly, a full flight test library (simulated test schedule akin a real-world test schedule) is not available. Whereby the researcher has the option to simulate any number of flight maneuvers, however does not have the means (full flight test library) to ensure that all of the correct maneuvers are emulated. The flight classifications (normal, complex, mult-factor, neighborhood) have nine processes to emulate normal conditions, nine directly recognized (Dillenschneider, Baldwin, Render, Rasmussen, Kellett,

Burdun, Totah, and Scharl)^{20,36,35,30,32,33,34,37} or implied (Anderson)³¹ for complex flight conditions, seven directly recognize (Burdun)³³ or imply (Baldwin, Render, Rasmussen, Anderson, Kellett, and Totah)^{36,35,30,31,32,34} an ability for multi-factor conditions, and one process (Anderson)³¹ is recognized for neighborhood-type conditions.

Therefore it can be said that while it is valuable to emulate the normal operational conditions test along the mission profile (takeoff, climb, cruise, descent, go-around, landing), it is the multi-factor chain-reactions (pilot errors, engine malfunctions, control effector malfunctions, adverse weather, etc) and neighborhood variations of flight variables like flight path angles, bank angles, speed, wind-shear, control effector deflection etc that add the most value to FT/O//AI.

Flight Test Library Arrangements:

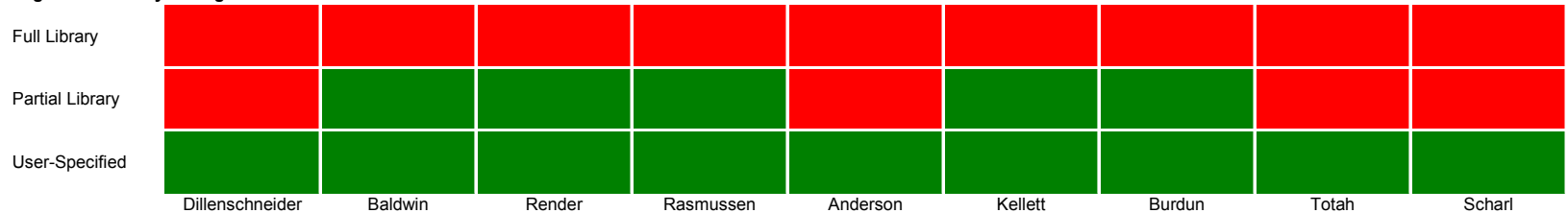


Figure 2.9: Summary of Flight Test Library Arrangements

37

Flight Classifications:

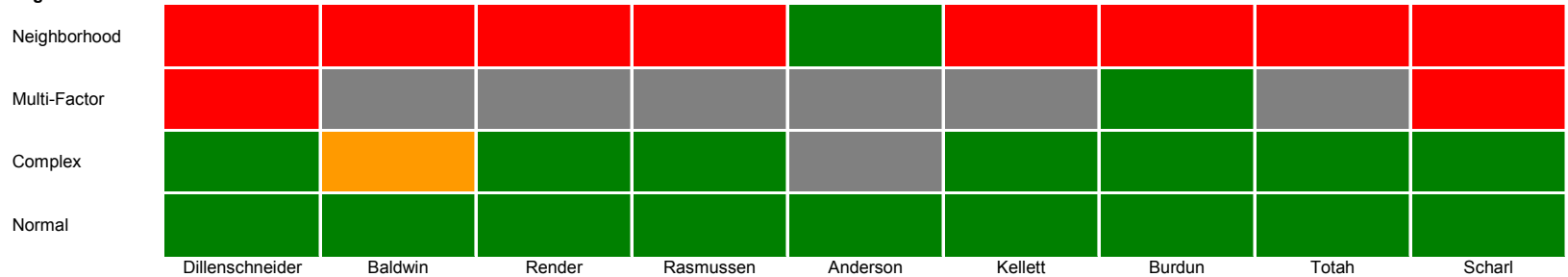


Figure 2.10: Summary of Piloting Classes Simulated

2.7 Flight Test Assessment

2.7.1 Review of Intended Customer Focus

This section serves to define the category of technical deliverables produced by the Product Life-Cycle Process as a function of the customer group. The results will show the preferences in target audience in the survey.

Results

The need for this investigation is quite obvious given that the architecture of each PLC process is driven to identify and resolve a practical design problem. Six target audiences (design manufacturer, flight test examiner, certification regulator, operator, incident/accident investigation boards, and/or pilot/student education) have been identified in order to substantiate the type of deliverables that create and add knowledge within the aircraft life-cycle. The results show that without a 'reference' the decision-maker does not sense the risk being taken or the concerns of a perspective outside his/her own. Still, it is left to the designer to determine what information is required with respect to the aircraft program.

Figure 2.11 is a summary of this study. A summary of the customer focus reveals six systems (Dillenschneider, Baldwin, Rasmussen, Burdun, Totah, and Scharl)^{20,36,30,33,34,37} for the design manufacturer, four (Dillenschneider, Baldwin, Rasmussen, and Burdun)^{20,36,30,33} for the flight test examiner, one (Burdun)³³ for the certification regulator, two (Baldwin, and Kellett)^{36,32} for the operator, one (Burdun)³³ for the incident/accident investigation boards, and seven (Dillenschneider, Baldwin, Render, Rasmussen, Anderson, Kellett, Burdun, and Totah)^{20,36,35,30,31-34} pilot/student education. Please note that no process addresses every customer group, only two (Baldwin, and Burdun)^{36,33} consider more than half of the audiences. Aside from the implications for pilot/student education, there is limited agreement what knowledge should be produced for design. By itself this describes the need for analysis guidelines without which the simulation work will lack meaning.

Comparison Criteria:

	Dillenschneider	Baldwin	Render	Rasmussen	Anderson	Kellett	Burdun	Totah	Scharl
Design Manufacturer	Green	Green	Red	Green	Red	Red	Green	Green	Green
Flight Test Examiner	Green	Green	Red	Green	Red	Red	Green	Red	Red
Certification Regulator	Red	Red	Red	Red	Green	Red	Green	Red	Red
Operator	Red	Green	Red	Green	Red	Red	Red	Red	Red
Incident/Accident Investigation Boards	Red	Red	Red	Red	Red	Red	Green	Red	Red
Pilot/Student Education	Green	Green	Green	Green	Green	Green	Green	Red	Red

Figure 2.11: Summary of Process Intended Customer Focus

2.7.2 Review of Post-Processing Deliverables

Having reviewed the operational characteristics of various known Product Life-Cycle Processes, the objective now becomes to determine the quality and scope of the deliverables produced. The objective is to survey the visualizations the researcher and/or customer has at disposal to allow effective decision-making.

Given the great variety of data post-processing options observed, it is difficult to produce a consistent comparison. Therefore, the review will primarily focus on the number of deliverables available to each process. Note that visual systems based on the physical ground-sky and/or battlefield graphical environment are not considered and not included in the count.

Results

Along with the previous investigation, see 'Chapter 2.6.1 *Review of Intended Customer Focus*', these sections, combined, provide the researcher with a framework for fact-based decision-making. It is interesting to note that given the moderately consistent objectives of each system, the broad variety of knowledge visualizations produced; there is a need for standardization. In total there are fourteen different deliverable options that address the requirements for seven different customer audiences. Obviously, this is a complicated subject to quantify, and a situation severely aggravated due to the possibility of miscommunication with the customer. There is now an inability to measure the value of one perspective over the next. Therefore, up to now, it is left to the researcher to decide which information requirements and/or combinations will allow for a correct data representation to trigger adequate decision-making.

Two summaries are generated from this survey. First we consider the operational deliverables (instrument panel displays, flight path trajectory markers, etc) for the Product Life-Cycle Process, see Figure 2.12. The primary benefit with this style of visualization is an opportunity to address a nontechnical audience. A total of six formats are recognized between Dillenschneider²⁰, Render³⁵, Rasmussen³⁰, and Anderson³¹. Without the inclusion of Rasmussen²⁰, each process is determined for an engineer or pilot. Second, the technical deliverables (time history charts of flight variables, stick force profiles, wing-tip markers, etc) are

observed in Figure 2.13. The technical deliverables fared more favorably with eight graphical representations. They are found between seven references: Dillenschneider²⁰, Rasmussen³⁰, Anderson²¹, Kellett³², Burdun³³, Totah³⁴, and Scharl³⁷. Despite the majority of the formats being time histories, enough variation exists to approach all customer groups. Note that Baldwin³⁶ is the one reference with only graphical ground/sky visualizations and no operational and technical deliverables mentioned or indicated.

**Comparison Criteria
(Operational):**

	Dillenschneider	Baldwin	Render	Rasmussen	Anderson	Kellett	Burdun	Totah	Scharl
Classical Flight Test Visualization	Red	Red	Green	Green	Yellow	Red	Red	Red	Red
Simulator-Based Visualization	Green	Red	Red	Green	Green	Red	Red	Red	Red
User-Specified Visualization	Red	Red	Red	Red	Red	Red	Red	Red	Red

Figure 2.12: Summary of Process Operational Deliverable Options

**Comparison Criteria
(Technical):**

	Dillenschneider	Baldwin	Render	Rasmussen	Anderson	Kellett	Burdun	Totah	Scharl
Classical Flight Test Visualization	Green	Red	Red	Green	Red	Green	Green	Green	Red
Simulator-Based Visualization	Green	Red	Red	Green	Green	Green	Red	Red	Red
User-Specified Visualization	Red	Red	Red	Red	Red	Green	Green	Red	Green

Figure 2.13: Summary of Process Technical Deliverable Options

2.8 Prototype System Development

2.8.1 Flight Emulation FT/O//AI Methodology *Development Objectives*

With 'snapshot' of the product life-cycle methodologies established the following conclusions and recommendations can be made. The comments follow the AVD Lab Flight Emulation FT/O//AI Methodology exclusive of the Product Review section.

2.8.1.1 Flight Test Scheduling

OPERATIONAL FACTORS MODELING

STUDY 1

Emulation Density = f(Operational Factors): The greater the number of operational functions a tool possesses, the better the opportunity for realistic and correct simulation.

Recommendation: The emulation technique selected must be comparable to the Burdun methodologies in capability since it fully demonstrate each of the operational factor criteria. This is of particular importance during the conceptual design phase where known unknowns and unknown unknowns operational problems can be identified and corrected at a much reduced cost.

PILOTING OBJECTIVES

STUDY 1

Emulation Correctness = f(Flight Library Arrangement): For more accurate M&S to occur, a pre-programmed flight test schedule needs to be available for educational purposes and to avoid errors made by the novice or non-technical researcher.

Recommendation: Depending on the emulation requirements, the definition of a prescribed test schedule can vary. For instance, during the conceptual design phase it is usually not known what critical flight behavior the vehicle will display under what conditions. Therefore, any effort should be made towards modeling the 'complete' library of performance and stability & control test cases.

STUDY 2

Emulation Complexity = f(Operational Flight Classification): The ability to represent complex, multifactor, and neighborhood flight behavior should be required regardless of the emulation objective.

Recommendation: Multi-factor and neighborhood flight test should be the realized standard. The first addresses the possibility of whether an initially insignificant chain of flight events does or does not risk or compromise the flight vehicle, while the second ability for rapid knowledge generation and screens to 'patch' necessary holes in the flight envelope. Again this capability is not presently available in CD.

2.8.1.2 Parametric Flight Test

STUDY 1

Cost and Execution = f(Simulation Type): The simulation framework will typically be dependent on the mission objectives under review. However, the increase in complexity from a desktop (computer) simulator to a full-motion (dynamic) simulator bears on the cost and execution of the system. As such, consider the loss of productivity during the conceptual design phase, which itself is a very time-constrained and critical life-cycle phase, due to a failure, maintenance, or reliability issue with the operation of the flight simulator

Recommendation: Any PLC simulator selected should promote knowledge generation. Thereby, the information available dictates the prospect for risk management. Consequently, the computer-based simulator represents the most reliable option considering that early design is resource and time constrained.

STUDY 2

Emulation Type = f(Configuration Evaluation Requirement): At the start of any Product Life-Cycle software development, the emulation objective needs to focus on those disciplines of gross value to aircraft development. No matter the final mission of the vehicle, the objectives

should be prioritized in a manner that places pilot and/or passenger safety before operational intentions.

Recommendation: While the configuration evaluation requirements serve the mission goals set by the decision-maker, certain basic safety tenets are not to be sacrificed in favor of mission-centric goals. A deviation from this guideline exposes the most essential component of the vehicle, the individual(s), to undue risk. Thus, the disciplinary priorities for emulation are from a safety perspective: (1) stability and control, (2) performance, and (3) handling quality and (4) flight control system design.

2.8.1.3 Flight Test Assessment

STUDY 1

Knowledge Generation = f(Intended Customer Focus): It is difficult to argue the needs of one customer group over another during the conceptual design (CD) phase. The knowledge required and generated for each customer group needs to be specified to arrive at meaningful design recommendations. It is essential to refine the knowledge generated from the customer viewpoint to support the decision-maker in producing a better final product.

Recommendation: Six customer groups (design manufacturer, flight test examiner, certification regulator, operator, incident/accident investigation boards, and/or pilot learner) have to be classified. Individually; each group provides a partial picture. The combined groups provide a perspective enabling to understand all potential operational and mission flight issues. Therefore, comprehending the requirements for all six customer groups is of importance thus recommended. In this research all of the customer groups are represented.

STUDY 2

Knowledge Productivity = f(Deliverable Potential): The discussion is for the number and type of operational and technical deliverables. Two categories: (1) classical and simulator-based, and (2) user-specified are discussed. Classical and simulator-based deliverables will ease data building and assist in developing researchers. User-specified deliverable options

allow the researchers to experiment with new knowledge formats. Therefore, this distribution of deliverables available will dictate the quality of the communication with the decision-maker and associated customer group.

Recommendation: The recommendation is largely left informal at this time. However, when considering the emulation objectives (i.e. stability and control, and performance), together with the operational and technical deliverable options, the communication strategy must be such that the classical, simulator-based, and user-specified visualizations correctly address both, the technical and non-technical, decision-makers.

2.9 Summary

The above section outlined the integration of the safety-relevant discipline flight test into the conceptual design environment. The argumentation has followed a rather natural breakdown of concepts, finally resulting in a product development specification. Clearly, there is a need for a new Product Life-Cycle (PLC) system, a system capable of addressing the gross performance objectives characterizing the overall system. Consequently, the challenge has been to explore the strengths and deficiencies of published systems in such a manner to arrive at a significantly improved development specification for the AVD Lab flight emulation FT/O//AI prototype system. This resulted in a specification set that focus on creating a unique benefit for, both, the researcher and customer. That specification follows:

a) Operational Factors Modeled include:

- Weather Influences:
 1. icing
 2. rain
 3. wind (gusts, crosswind, microburst, etc.)
 4. non-standard atmospheric conditions (temperature, and pressure)
 5. non-standard runway conditions (dry, wet, and iced)
- System Failures:

6. engines, primary control effectors (elevators, ailerons, rudder, etc.), secondary control effectors (spoilers, flaps, speed brakes, etc.), landing gear, etc.
- System Variation:
 7. aircraft weight, c.g. location, and inertia
 8. configuration changes (high-lift deflections)
- b) Piloting Objectives is a full flight test library that assesses normal, complex, multifactor, and neighboring flight situations.
 - c) Simulation Type is a computer (desktop) simulator
 - d) Configuration Evaluation Requirements focus on the stability & control and performance disciplines
 - e) Intended Customer Focus includes the frame of mind for manufacturer, flight test examiner, certification authority, operator, incident/accident investigator, and pilot education.
 - f) Deliverable Options benefit the technical and non-technical decision-makers and include classical, user-specified, and simulator-specified visualizations.

These are the complete development objectives for the system that will be developed and implemented in the context of the Ph.D. research investigation. For the M.S. research scope, the development objectives remain the same except that the (b) piloting objective is for a user-specified flight test library, (d) performance and stability & control are not directly evaluated, and (f) deliverable options are simulator-specified visualizations.

Having specified this new discipline and safety module applicable for the conceptual design phase, it is now possible to move forward with its development and implementation.

CHAPTER 3 PROTOTYPE SYSTEM METHODOLOGY AND THEORY

3.1 Introduction

To this point, much has been said regarding the concept and causes behind interfacing design for flight test, but little has been mentioned on the method to accomplish it. Recall that the concept was tested in reduced-order by Chudoba and Burdun.^{1,5,6}

The work outlined in this section advances their work and addresses the “Life-cycle Simulation Methodology Objectives” mentioned in Chapter 1 (“A Generic Flight Test and Safety Solution Concept”). This will take place at (1st) process-level to describe the integration of the concept into the conceptual design (CD) phase, and (2nd) at a more applied-level with the tool VATES. Note that the process itself has been run by, iterated with, and commented on by flight test professionals from Lockheed Martin³⁹⁻⁴¹, Wyle Laboratories⁴², U.S. Air Force^{43,44}, NASA^{45,46}, Kohlman Systems Research⁴⁷, and Airbus Industrie⁴⁸. Therefore, this represents an industry endorsed effort.

3.2 Top-Level Methodology Overview

First, the methodology is expressed as a complete system, the *Product Life-Cycle Methodology*. Then we do concentrate on the primary activity of the present study, the development of the *Flight Test Emulation Methodology*.

A. Product Life-Cycle Methodology:

Collectively, the proposed solution for flight vehicle development is primarily examined at the conceptual design level. This life-cycle flight vehicle development methodology is introduced with Figure. 3.1. The principal idea is to integrate conceptual design synthesis and flight test emulation into a single work environment using a consistent tool-set to simulate the product life-cycle. Clearly, flight testing resembles the new ‘safety discipline’ in concert with the

range of traditional conceptual design disciplines (i.e. aerodynamics, stability & control, performance). This, obviously, requires a more comprehensive knowledge-base describing the overall flight vehicle configuration. This enriched knowledge-base contributes towards reducing aircraft design risk (i.e. unexpected vehicle performance limitations, inadequate control behavior, mechanical problems, critical weather condition, etc.).

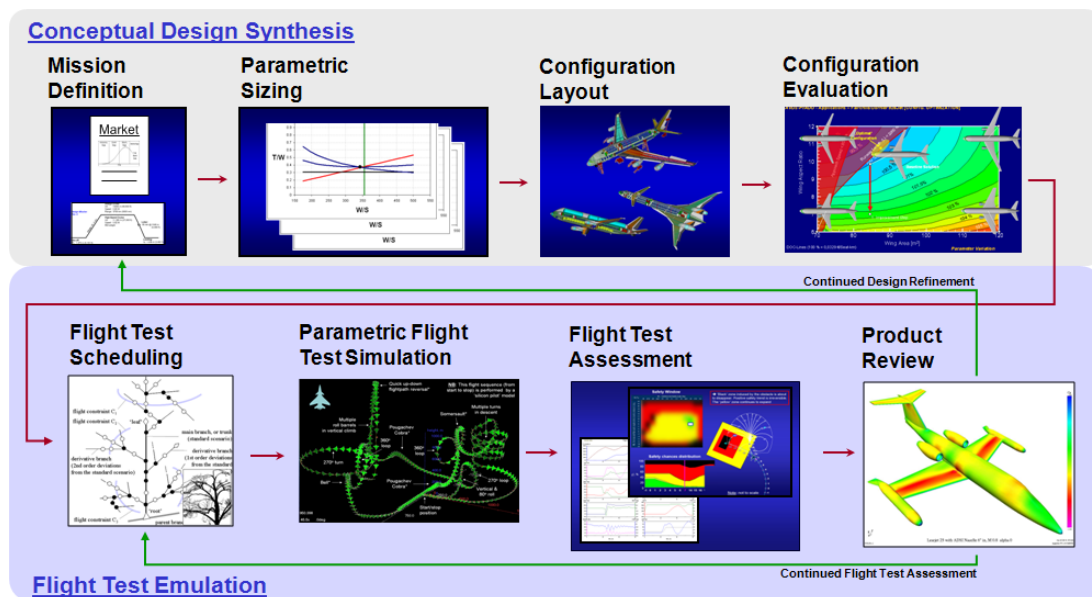


Figure 3.1: Conceptual Design Methodology Overview

As Figure 3.1 illustrates, two critical knowledge paths (design feedbacks) are active during the product review phase. The first, continued design refinement (green line), allows the decision-maker the opportunity to reinitiate design synthesis sequence pending any complex design characteristics/interactions that limit the potential and productivity of mission success for the flight vehicle concept. The second, continued flight test assessment (red line), provides a similar degree of control for flight test emulation though it is dedicated to constructing a more detailed image of ‘pilot-vehicle-operational condition’ environment to reduce the risk of complex system dynamics (i.e. normal and demanding flight conditions and attitudes, c.g. travel, onboard

system failures and system logic errors, piloting tactics, and pilot error, etc.). During life-cycle simulations, both these mechanisms assist the decision-maker to correlate operational constraints and proactively predict responses to future flight conditions.

B. Flight Test Emulation Methodology:

Flight test emulation requires a parametric definition of the aircraft specifying aerodynamics, moments of inertia, engine thrust and specific fuel consumption input characteristics. Typically, such input data is generated during the conceptual design phase and will be discussed with regard to the present application shortly.

In the present context, the challenge becomes to effectively communicate and emulate the 'mindset' and activities of the flight test organization, regulatory authority, and incident and accident investigation boards. Consequently, flight test M&S of the overall system behavior is limited to the following disciplinary analysis:

- Stability and Control (assures overall operational and pilot safety)
- Performance (verifies operator specifications)

Both, stability and control and performance tests, are performed over a range of flight conditions within, bordering, and outside the flight envelope. A high safety margin is required for those flight conditions with insufficient chances of recovery. The methodology is applied as follows:

- a. **Flight Test Scheduling (Parametric).** This process is analogous to the full-scale aircraft Pre-Flight Test Procedure applied during actual flight test. The objective is to determine the flight test schedule to assess a network of possible safe and unsafe flight paths under normal and complex (multi-factor) flight situations to thoroughly check stability and control and performance.
- b. **Flight Test Simulation (Parametric).** Emulates the specified flight test schedule with the numerical *VATES* (Virtual Autonomous Test and Evaluation Simulator) computer program.

- c. Flight Test Assessment (Parametric).** This process, similar to the full-scale aircraft Post-Flight Test Procedure, constructs and examines flight experiment statistics to generate technical deliverables for the flight vehicle configuration. Visualizations are formalized in two formats: classical test and *VATES*.
- Classical testing visualizations consist of typical industry styled representations expressing flight variable relationships and time-history graphs.
 - *VATES* visualizations include representations unique to the tool (i.e. situational tree, and partial and integral flight safety spectra).
- d. Product Review.** Assessment of the overall flight vehicle configuration to identify the effects of operational and design variables on overall system safety and performance. Critical combinations of key operational and design variable factors generate flight safety recommendations (knowledge) to be iterated during the product life-cycle sequence to enhance product development decisions.

3.3 Background – M&S System (VATES)

Before proceeding with the flight test emulation process development, this brief section presented here aims at familiarizing the reader with the flight safety software *VATES*.

3.3.1 Development History

The Virtual Test and Evaluation Simulator (*VATES*) is a flight research tool developed by Dr. Ivan Burdun (Intelonics, Ltd.; Novosibirsk, Russia) continuously over the last 40 years. Since its conception, the tool has been applied to 18 aircraft, 3 helicopters, and 2 hypersonic vehicles and includes a library of over 500 flight scenario types. Problems have been studied in the areas of: (1) investigation of flight incidents/accidents under uncertainty, (2) planning and rehearsal of flight test programs,(3) virtual certification of aircraft under complex and multi-factor conditions, (4) checking flight manuals and flight envelopes in complex flight situations, and (5) aircraft design support.^{29,49} To date, the *VATES* tool has focused on actual (real-world) FT/O//AI simulations. In the present research context, a methodology is developed, followed by

the transitioning and adaptation of VATES for FT/O/I/AI simulations during the early product development phase, the aircraft conceptual design phase.

To facilitate this Dr. Burdun is an active advisor and partner providing assistance with the execution and development of VATES. Note that the understanding gained from this interaction has greatly benefitted the methodology development in Chapter 3.4; whereby, previous attempts at process definition have favored the programmer.⁵⁰ As a result, the current process objective is not the theoretical concept but a practical concept for immediate use.

Before the methodology is introduced the operational and theoretical concepts for which VATES is developed are presented.

3.3.2 Operational Concept

The proposed solution employs a method for autonomous situational modeling and simulation of flight (Figure 3.2). The distinguishing feature of this approach is the use of a generalized mathematical model describing the relations as ‘pilot-vehicle-operational environment’ system dynamics as a substitute for an actual real-time flight vehicle system. In addition to a traditional, though advanced non-linear flight dynamics model, the system model also includes a human pilot’s tactics model, a flight situation model.

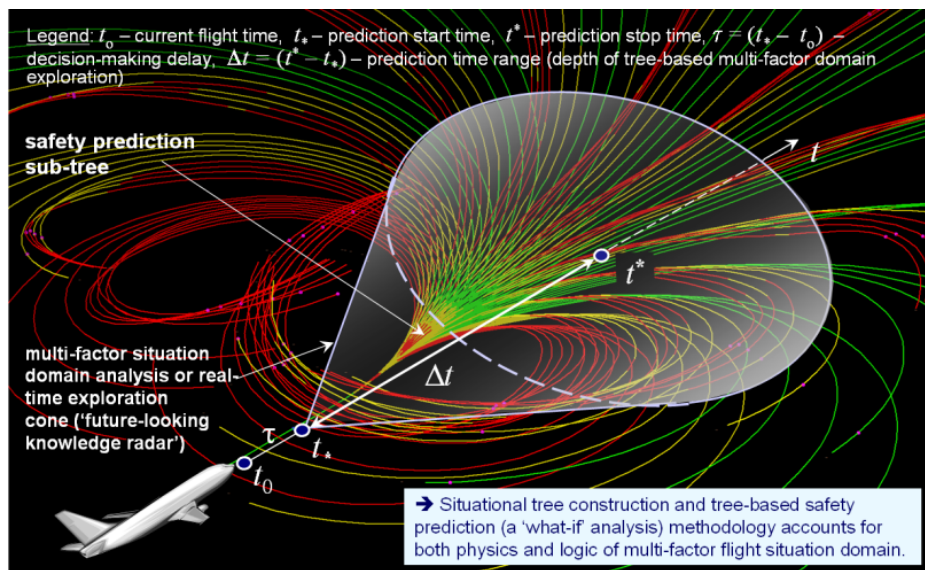


Figure 3.2: VATES Operational Concept⁴⁹

VATES is founded on a situational decision-tree logic that predicts fuzzy flight paths for simple and complex, standard and nonstandard flight operation in demand for the manufacturer, operator, flight test organizations, regulatory authorities, and incident/accident investigation boards with the overall goal to bring awareness related to the overall aircraft flight safety risk level.

The basic concept defining the flight situation is build-up with the flight event (E), the flight process (Π), and the flight scenario (S) for 'pilot-flight vehicle-operational environment'.⁵⁰ The following paragraphs describe these cause-and-effect interactions.

Flight event (E).

Definition. The flight event (E) is a special state of the system, which is important to the pilot, designer or safety expert and stands for a substantial change in the flight situation under study, (i.e. "left engine out", "speed VR achieved", "altitude 360 ft and speed 180 kt", "on the runway", "high angle of attack", "30° left bank", "go-around decision"). The classification is regarded as points or nodes in a multi-dimensional flight scenario.

Main Classes: Within this framework, the flight event is modeled using various types of logic elements. They are determined as:

- A - independent (A_1) and dependent (A_2);
- B - simple (B_1) and compound (B_2),
- C - precise (C_1) and fuzzy (C_2),
- D - momentarily recognizable (D_1) and recognizable with a delay (D_2)
- E - unique (E_1) and periodical (E_2),
- F - single (F_1) and serial (F_2).

Flight Events Calendar . In a functional setting, at any time instance during M&S, a list of all flight events is contained in the calendar of flight events, $\Omega(E)$, to enforce a unique set or group of situations. It is yielded from a union of four subsets, Table 3.1, and:

$$\Omega(E) = \Omega^{NR}(E) \cup \Omega^{JR}(E) \cup \Omega^F(E) \cup \Omega^P(E)$$

Note that

$$\Omega^{JR}(E) \cup \Omega^F(E) = \Omega^A(E)$$

where

$\Omega^A(E)$ is a subset of “active” events.

Table 3.1: Flight Event Calendar Definitions

Subset	Description
$\Omega^{NR}(E)$	“not recognized” events
$\Omega^{JR}(E)$	“just recognized” events
$\Omega^F(E)$	“frozen” events
$\Omega^P(E)$	“past” or “recognized” events

Flight Process (Π).

Definition. This is a time-history of one or several flight parameters (variables), which characterize a certain aspect of the system behavior (dynamics, control, weather, malfunctions, pilot error, etc.), (i.e. “steering runway’s centerline”, “keeping pitch at 10 deg in takeoff”, “wind shear 10 ft/s per 30 ft of H”, “rpm decay when engine #1 failed”, “flaps down 0 deg→15 deg”, “turn at 20 deg bank and 0 deg sideslip”, “wet runway” condition). In general, each flight process has a cause and effect structure that describes a continuous element of the situational flight model.

Process Types. In total, the flight process types are regarded in four groups specific to the intended purpose:

- vehicle flight dynamics (**D**)

- flight control and system state observation processes (**T, O, P**)
- airborne systems functioning and failures (**B, F**)
- external operational conditions (**A, R, W, Y, ...**), and the like.

A complete list of flight processes, $\Omega(\Pi)$ is assembled as follows:

$$\Omega(\Pi) = \Omega(D) \cup \Omega(B) \cup \Omega(T) \cup \Omega(P) \cup \Omega(O) \cup \Omega(F) \cup \Omega(W) \cup \Omega(R) \cup \Omega(Y)$$

A complete catalog of processes is made available in Table 3.2.

Table 3.2: Flight Processes Definitions

Subset	Description
$\Omega(D)$	flight dynamics related processes
$\Omega(B)$	onboard system functions
$\Omega(T)$	piloting tasks
$\Omega(P)$	control procedures
$\Omega(O)$	system state observers
$\Omega(F)$	onboard system malfunctions
$\Omega(W)$	wind conditions
$\Omega(R)$	rain conditions
$\Omega(Y)$	runway surface conditions

Flight Control Processes. A typical model is composed of influences by:

- Piloting task (**T**). A manual flight control process observing a current system state value and comparing it to the final goal state. (i.e. T_4 : “keep to the centerline during ground-roll”, T_5 : “make coordinated turn at +15° bank”, T_8 : “keep pitch at about 10° and zero bank during initial climb”).
- System state observers (**O**). At each time step the error between the current state and goal state is monitored to provide guidance on achieving the piloting task.(i.e. piloting task T_8 listed above can be provided with a state ‘observer’ O_1 to monitor the vehicle motion in pitch.)

- Control procedure (**P**). Represents use of secondary controls and single one-time movements with primary controls. (i.e. **P**₁: “wheels – up”, **P**₂: “unstick”, **P**₃: “flap 30°→15°”, **P**₆: “engines - to MCPR”)
- Onboard system malfunctions (**F**). Emulates abnormal functions of onboard systems. (i.e. **F**₂: “left engine failure”, **F**₈: “uncommanded deployment of thrust-reverser”, and **F**₂₇: “elevator jammed at about 17°”.)

Flight Process States. For emulation to occur each flight process is recognized conditionally and through the union of three subset states, Table 3.3:

Table 3.3: Flight Process Status Definitions

Subset	Description
$\Omega^{NO}(\Pi)$	“not open” processes
$\Omega^O(\Pi)$	“open” processes
$\Omega^{CL}(\Pi)$	“closed” processes

$$\Omega(\Pi) = \Omega^{NO}(\Pi) \cup \Omega^O(\Pi) \cup \Omega^{CL}(\Pi)$$

where the “open” process is further separated into “active” processes $\Omega^A(\Pi)$ and “frozen” processes $\Omega^F(\Pi)$:

$$\Omega^O(\Pi) = \Omega^A(\Pi) \cup \Omega^F(\Pi)$$

Flight Scenario (S).

Definition. This is a plan of the flight situation under study. It specifies the situation content and the control tactics associated with it. Flight scenarios are depicted as directed graphs, $\mathbf{S} = \Omega(\mathbf{E}) \cup \Omega(\Pi)$, and run between a source event and a target event (i.e. “normal takeoff”, “aborted takeoff with engine #1 out” - “landing in crosswind conditions”, “ground roll on wet runway”, “coordinated turn at 15 deg bank”, “stall in takeoff configuration”, “cruise mode at 500 kt &

30000 ft"). Specifically, a *source event*, \mathbf{E}_{i^*} , opens process Π_j , while the *target event*, \mathbf{E}_k^* , closes it in simulation, $\mathbf{S} = (\mathbf{E}_{i^*}, \Pi_j, \mathbf{E}_k^*)$.

Model Implementation. Using the above components the algorithm for performing a flight scenario for a known situational model is:

$$(\forall \mathbf{s}) (\forall \mathbf{S}) (\mathbf{s} = (\mathbf{E}_{i^*}, \Pi_j, \mathbf{E}_k^*)) (\mathbf{S} = \{\Omega(\mathbf{E}), \Omega(\Pi)\}) (\mathbf{s} \in \mathbf{S}) (((\mathbf{E}_{i^*} \in \Omega^P(\mathbf{E}) \wedge \mathbf{E}_k^* \notin \Omega^P(\mathbf{E}) \wedge \Pi_j \notin \Omega^{CL}(\Pi)) \wedge (t \geq t | \mathbf{E}_{i^*} \in \Omega^P(\mathbf{E}) + \tau)) \Rightarrow \Pi_j \in \Omega^A(\Pi)) \vee ((\mathbf{E}_k^* \in \Omega^P(\mathbf{E}) \Rightarrow \Pi_j \in \Omega^{CL}(\Pi)).$$

This relationship models flight events and heterogeneous flight processes, allowing the researcher to build a computational basis for emulation.

3.3.3 Theoretical Concept

The flight dynamics algorithm in *VATES* operates in a form typical for six-degree-of-freedom computer simulators.^{51,52} The system is resolved as a set of ordinary first-order non-linear differential equations of motion with non-linear right-side parts by quaternions. The input characteristics are found as lookup tables (i.e. aerodynamics, propulsion, weight and inertia, atmosphere, rain, wind, turbulence, and runway). As such, it assumes (1) fixed-wing transport aircraft, (2) a flat earth that is stationary in space, (3) a standard rigid body axis system fixed at the center of gravity, (4) aero-elastic effects can be controlled by increments of the primary force and moment coefficients, (5) the undercarriage is modeled as a multi-mass system, (6) automatic control systems are defined as differential equations, and (7) the pilot's decision-making process is represented by the flight events and flight processes language.

This next section is not intended as a procedural build-up describing the above in terms of the complete dynamics algorithm, but more of a generalized formulation of the equations to be integrated, Equation 3.1 to 3.13. Four sets of simulation equations are utilized: force, moment, kinematic, and navigation.^{51,53,54} For more comments regarding the implementation for the computational architecture consult Reference 50.

Force Equations

$$\dot{U} = -QW + RV - \frac{F_{XA}}{m} + \frac{T_X}{m} - g \sin \theta \quad \text{Eq. 3.1}$$

$$\dot{V} = -RU + PW - \frac{F_{YA}}{m} + \frac{T_Y}{m} - g \cos \theta \sin \phi \quad \text{Eq. 3.2}$$

$$\dot{W} = -PV + QU - \frac{F_{ZA}}{m} + \frac{T_Z}{m} - g \cos \theta \cos \phi \quad \text{Eq. 3.3}$$

Moment Equations

$$\dot{P} = \frac{I_{yy} - I_{zz}}{I_{xx}} QR + \frac{I_{xz}}{I_{xx}} (\dot{R} + PQ) + \frac{L}{I_{xx}} + \frac{L_T}{I_{xx}} \quad \text{Eq. 3.4}$$

$$\dot{Q} = \frac{I_{zz} - I_{xx}}{I_{yy}} PR + \frac{I_{xz}}{I_{yy}} (P^2 + R^2) + \frac{M}{I_{yy}} + \frac{M_T}{I_{yy}} \quad \text{Eq. 3.5}$$

$$\dot{R} = \frac{I_{xx} - I_{yy}}{I_{zz}} PQ + \frac{I_{xz}}{I_{zz}} (\dot{P} - QR) + \frac{N}{I_{zz}} + \frac{N_T}{I_{zz}} \quad \text{Eq. 3.6}$$

Kinematic Equations

$$\dot{\varepsilon}_0 = -\frac{1}{2}(\varepsilon_1 P + \varepsilon_2 Q + \varepsilon_3 R) \quad \text{Eq. 3.7}$$

$$\dot{\varepsilon}_1 = \frac{1}{2}(\varepsilon_0 P + \varepsilon_2 R - \varepsilon_3 Q) \quad \text{Eq. 3.8}$$

$$\dot{\varepsilon}_2 = \frac{1}{2}(\varepsilon_0 Q - \varepsilon_1 R + \varepsilon_3 P) \quad \text{Eq. 3.9}$$

$$\dot{\varepsilon}_3 = \frac{1}{2}(\varepsilon_0 R + \varepsilon_1 Q - \varepsilon_2 P) \quad \text{Eq. 3.10}$$

Navigation Equations

$$\begin{aligned} \dot{V}_{north} = & U \cos \theta \cos \psi + V(\sin \phi \sin \theta \cos \psi - \cos \phi \sin \psi) + W(\cos \phi \sin \theta \cos \psi + \\ & \sin \phi \sin \psi) \end{aligned} \quad \text{Eq. 3.11}$$

$$\begin{aligned} \dot{V}_{east} = & U \cos \theta \sin \psi + V(\sin \phi \sin \theta \sin \psi + \cos \phi \cos \psi) + W(\cos \phi \sin \theta \sin \psi - \\ & \sin \phi \cos \psi) \end{aligned} \quad \text{Eq. 3.12}$$

$$\dot{V}_{down} = -U \sin \theta + V \sin \phi \cos \theta + W \cos \phi \cos \theta \quad \text{Eq. 3.13}$$

The basic premise allows for all forms of flight maneuvers to be experimented with. This is particularly true for investigating distressing design cases such as flight incidents and accidents. With the introduction of VATES in place, the discussion resumes to the assessment process constructed to enhance the benefit of the tool to the design researcher.

3.4 Flight Emulation Process

Continuing with the applied-level discussion for the emulation process, this section details the major work that must be performed to successfully construct knowledge that communicates safety information to the decision-maker and customer alike. The steps included are meant to remain at the process level and are not intended as a detailed account of all theoretical options for data construction available; multiple possibilities exist. Additionally, the discussion centers around a conventional tail-aft configuration (TAC), see Chapter 4 '*CASE STUDY: Cessna Citation X*'.

3.4.1 Flight Test Scheduling

The major effort for custom building a flight test schedule stems from organizing and collecting of reference data from pilot manuals, flight reports, airworthiness certifications, media reports, design reviews, pilot discussions, etc. This is done to ensure that all work produced remains in the realm of reality and practical relevance, overall resulting in an industry relevant contribution. For this reason, the subsequent steps outline the information input requirements in order to adequately perform and communicate realistic flight simulations for the aircraft under investigation.

A. Specification: Parametric Definition and Emulation Requirements

The primary influences in this part are based on application of the 'Operational Concept' in Chapter 3.3.2.

STEP 1. *Search, collect, and assemble available technical documentation on the aircraft flight emulation needs.* More specifically included are conditions for: phases and modes of flight, weights, geometry, speeds, altitudes, attitudes, thrusts, rates of climb/descent, trajectory profiles, center of gravity travel, list of primary controls and their purpose, list of secondary controls and their purpose, cockpit's continuous controls ('sticks'), cockpit's on-off type controls ('buttons'), characteristics times (retraction/extension, on/off, delays, durations, etc.), flight control/cockpit action logic or chronological sequence.

STEP 2. *Compile baseline scenarios and specific ('tune-up') data of main phases of flight for the aircraft according to the VATES input data standards for the mission profile.* The flight profile includes normal takeoff, aborted takeoff, continued takeoff, normal climb, cruise segment, normal descent, emergency descent, landing approach, normal landing, continued landing, aborted landing (go-around), emergency landing, landing including ground-roll, and dynamic and special maneuvers, etc. After the preferred order for testing is established, baseline scenarios are organized as:

- initial conditions of flight situation
- flight events
- control procedures and mechanical failures
- piloting tasks
- state observers

Note: flight events and flight processes are to be identified through selection of characteristic commanded values of state or control parameters from Step 1.

STEP 3. *For each phase of flight selected, identify a list of operational factors for M&S work (operational) hypothesis testing.* For each operational factor (i.e. V_2 , time to bank, flight path angle, angle of attack variation, etc.), the following attributes should be specified: left bound for variation, right bound for variation, and value increment (variation step).

Note: A hypothesis is a dependent or independent combination of two to four operational factors.

B. Flight Dynamics Module Construction

STEP 4. *Determine the force and moment equations used to describe the flight characteristics for emulation.* The flight dynamics algorithm in Chapter 3.2.2 'Theoretical Concept' is controlled

by aerodynamic, weights and inertia, and propulsion inputs. These equations are specific to the aircraft and complement, in completeness and complexity, the problem of M&S to be solved.

Note: the 'variables' should contain the attributes that correspond to the VATES input standard.

STEP 5. *Specify the flight parameters used to describe the physical form and operational factors*. The input files 'Constant.inp' provides the geometry input, 'Variables.inp' provides the list of main contributors for the flight vehicle.

C. Generation of 'Parametric Definition'

During the conceptual design phase, any number of tools can be used to calculate the input data required to arrive at the parametric characteristics for the flight vehicle. Note that the output quality generated can only be as good as the input data quality provided. Thus, the input files definition requires particular care. Steps 5-7 indicate the methods available and the one selected for the Cessna Citation X design case study.

STEP 6. *Determine the aerodynamic model used to describe the flight characteristics*. Four methods are available: VORSTAB⁵⁵ (non-linear vortex lattice method), Digital DATCOM⁵⁶ (semi-empirical method), VORLAX⁵⁷ (linear vortex lattice method), or user specified ad-hoc methods. Table 3.4 summarizes the modeling capabilities for each of these tools. For the Citation X design case study Digital DATCOM is used given its ability to simply model a wide range of control effector types in addition to generating the range of selected unsteady aerodynamic derivatives. For the purposes of simulation, a modified stand-alone version, Digital DATCOM^{MAX}⁵⁸ is executed through RunDATCOM, see Chapter 4 'CASE STUDY: Cessna Citation X'.

STEP 7. *Determine the propulsion models used to describe the flight characteristics*. Two methods are available for analysis: Preliminary Advanced Design Optimization⁵⁹ (PrADO) synthesis tool (cycle analysis method embedded in a design optimization tool), or a user specified ad-hoc methods. Here, the engine map is derived from PrADO. The tabulated variables are available for all mission segments and include max thrust (T_{max}), specific fuel

consumption (*SFC*), engine pitch angle and pitch moment as a function altitude, mach number, and throttle setting.

STEP 8. Determine the weights and inertia models used to describe the flight characteristics.

Two methods are available for analysis: PrADO⁵⁹ (analytical method embedded in a design optimization tool), or a user specified ad-hoc methods. Again, the data (W_{fuel} , I_x , I_y , I_{xz}) is derived through PrADO empirical geometry relations and numerical analysis.

Table 3.4: Modeling Capabilities of VORSTAB, Digital DATCOM, and VORLAX^{55,56,57}

	VORSTAB	Digital DATCOM	VORLAX
<i>Mathematical Model</i>	non-linear vortex lattice	semi-empirical methods	linear vortex lattice
<i>Flight Conditions</i>	subsonic and supersonic	subsonic, supersonic, hypersonic, transonic with experimental data	subsonic and supersonic
<i>Static Derivatives</i>	yes	yes	yes
<i>Dynamic Derivatives</i>	yes, no unsteady aerodynamic derivatives	yes	yes, no unsteady aerodynamic derivatives
<i>Control Derivatives</i>	yes	yes	yes
<i>Configurations</i>	up to 5 surfaces and 1 fuselage. asymmetric wing alone, no fuselage or vertical fins	Symmetric fuselage, wing, horizontal tail, vertical tail, ventral Fin. twin vertical tail for subsonic speeds only	symmetric and asymmetric configurations
<i>Longitudinal Control Surfaces and High Lift System Types</i>	plain flaps and leading edge slats	plain, single slotted, double slotted, Fowler slotted, split, leading edge and Krueger flaps, pure jet flaps, jet flap & mech., IBF*, EBF**	Any flap that can be modeled with flat plate sections
<i>Lateral Control Surfaces</i>	antisymmetric deflected Ailerons	plug, flap, slotted spoilers, differential horizontal tails, and ailerons	any flap that can be modeled with flat plate sections
<i>Directional Control Surfaces</i>	rudder	no	yes
<i>Non-linear Aerodynamic Prediction</i>	yes	yes	No
<i>Ground Effect</i>	yes	yes	No

*Externally blown flap

**Internally blown flap

D. ‘Parametric Definition’ Data Synthesis to VATES Standard

STEP 9. Prepare the parametric definition files for conversion into the VATES data standard. At this point the appropriate data for M&S has been generated and contained in three separate output files. Table 3.5 displays the process adapted from Reference 60 to deconstruct the format into a usable standard. Once completed, VATES can directly read and implement the flight model.

Table 3.5: Data Synthesis to VATES Standard Steps

Step	Function	MS-DOS Command	Files	
			Input	Output
1	Interpolation of data tables (file-protocols) data by key argument	3NORM	Normprot.inp [*].inp	Normprot.out [*].out
2	Calculation of ‘deltas’ and formation of primary tables of aircraft input characteristics	4CHAR	Genchar.inp TestXXXX.cnd [*].out	Genchar.out [yyy.xxx]
3	Collection of information on the definition domains of primary tables of aircraft input characteristics	5COLL	Collarg.inp TestXXXX.cnd [*].out	Collarg1.out Collarg2.out
4	Formation of the definition domains of primary tables of aircraft input characteristics	6UNIO	Makeunio.inp	Makeunio.out
5	Formation of united tables of the aircraft input characteristics and their description	7TABL	Maketabl.inp [char]	Maketabl.out Maketab2.out [table_char]
6	Formation of a database which contains tables of the aircraft input characteristics in the VATES input standard	8BANK	Makebank.inp [table_char] Variable.inp	Makebank.out Charbank.out Descript.out
7	Generation of FORTRAN modules that compute the aircraft’s aerodynamic and other input characteristics for a 6DOF flight dynamics model in the VATES tool	9FUNC	Chbank.inp Fmaket.inp Descri.inp Variable.inp	Descri.out Genfun.out [Xx_func.out] functi.out

3.4.2 Parametric Flight Test Simulation

A distinguishing feature of this applied ‘pilot-aircraft-operational environment’ approach allows for a continuous simulation of the pilot’s or designer’s decision-making capacity during flight. This substitution of a real system increases the volume and density of flight safety studies

and thereby knowledge constructed during PLC simulation. As such, the technique developed to enact this systematization is based primarily on data structures collected in Chapter 3.3.1 'Part A. Specification of Parametric Definition and Emulation Requirements.'

STEP 1. *Develop a graphical framework for the baseline test case.* For instance, consider a flight vehicle taking off through an atmospheric zone of weak to moderate wind conditions. The weather conditions have been characterized by changes in wind direction and magnitude; from head-wind to tail-wind. This phenomenon represents a typical flight situation that is causing a sharp loss of airspeed after lift-off. After activation of the stall alarm (when the angle of attack exceeds 12° - 13°), the control stick is pushed forward. Soon after that, a flap retraction procedure ($30^{\circ} \rightarrow 15^{\circ}$) is commenced prematurely (in the attempt to reduce drag).

The case formulation flight scenario \mathbf{S}_0 of the takeoff is depicted in Fig. 3.3 in the form of a directed graph. It will later develop the derivative hypothesis for the study. A 'calendar' $\Omega_0(\mathbf{E})$ of the *flight events* comprising \mathbf{S}_0 represents discrete components of the situation under study and it incorporates the following elements:

- \mathbf{E}_1 : "ground roll start"
- \mathbf{E}_2 : "speed VR achieved"
- \mathbf{E}_5 : "nose wheel off the runway"
- \mathbf{E}_7 : "AoA is about 6° "
- \mathbf{E}_{71} : "AoA is about 10° "
- \mathbf{E}_8 : "altitude is about 10.7 m"
- \mathbf{E}_{21} : "altitude is about 56 m"
- \mathbf{E}_{15} : "flight time is 60 seconds".

A united list $\Omega_0(\mathbf{T})$ of the *flight processes* of \mathbf{S}_0 , or continuous components of flight, may be derived as follows:

- \mathbf{T}_1 : "steer the runway's centerline by rudder during ground roll" (piloting task)
- \mathbf{T}_3 : "steer the pitch time-schedule by means of elevator" (piloting task)

- T_4 : “keep bank and sideslip angles at about zero in climb by ailerons and rudder” (piloting task)
- P_1 : “wheels-up” (control procedure)
- P_2 : “elevator-up by -5.7° ” (control procedure)
- P_3 : “reverse action by elevator (6.5° down)” (control procedure)
- P_4 : “move flaps from 30° to 15° ” (control procedure)
- P_5 : “rebalance [horizontal] stabilizer” (control procedure)
- W_1 : “apply a wind profile as identified on mm/dd/yy” (wind).
- R_1 : “apply a rain profile as identified on mm/dd/yy” (wind).

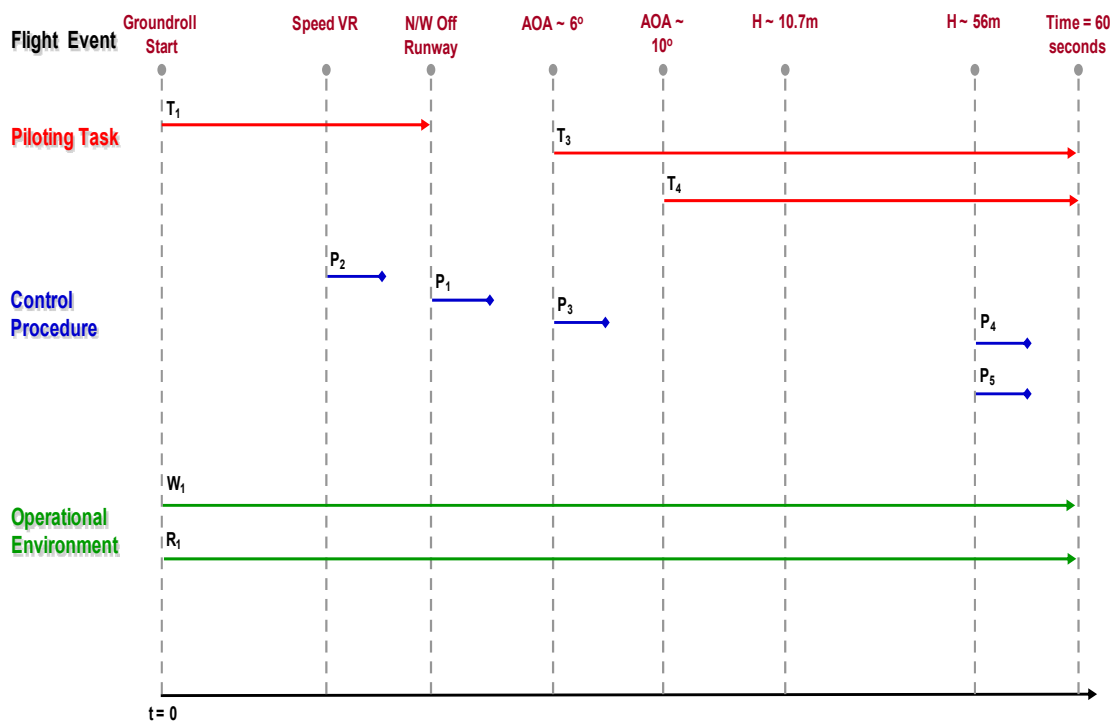


Figure 3.3: Directed Flight Scenario Formulation

Test Scenario Description: The relationship between the events and the processes in S_0 is clear from Fig. 3.3 The modeled situation lasts 60 seconds. Note: this complex enough case can be mapped into a compact cause-and-effect structure, which includes only eight events and ten

processes. The first event expected to occur is E_1 , and the last one is E_{15} . The order of other events during simulation may differ from the list $\Omega_0(\Pi)$. According to S_0 , the “pilot” is instructed to maintain the pitch angle as specified (the task T_3). Note also that there are two specific events, E_7 and E_{71} , introduced for the purpose of testing. Other events and processes represent typical components of a takeoff scenario for a nominal business jet aircraft.

Derivative Test Scenarios: In order to explore a domain of operational modes around the flight condition, a series of scenarios can be derived from S_0 . It represents reasonable variations in the key operational factors of flight. Then the “silicon pilot” is executing these scenarios in simulation experiments. The following three sample hypotheses, Table 3.6, are introduced for the previous takeoff situation.

- Hypothesis 1 (“AoA Control”). In several flights the “pilot” attempts to keep the angle of attack constant at various levels. Flap control is as scheduled for operation. The weather condition also remains original.
- Hypothesis 2 (“Pitch Control”). In several flights the “pilot” attempts to maintain the aircraft’s pitch attitude at certain levels. It also tries, from flight to flight, various flap settings while crossing the wind zone. In addition, a second wind-shear (of three gradients) is added at $t = 40$ s. The “pilot” attempts to counter this new factor by lowering the command pitch angle to preserve the airspeed.
- Hypothesis 3 (“Accident-Like Control”). The “pilot” repeats the pitch control tactics recorded in the accident, but varying, from flight to flight, the final position of flaps during retraction (in P_4). The weather condition remains original.

Table 3.6: Example Derivative Scenarios [Takeoff]

No	Scenario description
0	Reconstructs the accident with an airplane at takeoff under strong wind-shear and heavy rain conditions
1	Repeats the scenario 0 except that flaps are kept at 30°
2	Repeats 0 except that flaps are retracted from 30° to 22.5°
3	As 0 , except that after $t = 28$ s the “silicon pilot” attempts to keep AoA close to its operational limit ($\sim 13^\circ$)
4	As 0 , except that the “pilot” keeps AoA at $\sim 10^\circ$ after $t = 28$ s
5	As 0 , except that the “pilot” keeps AoA at $\sim 15^\circ$ after $t = 28$ s
6	As 0 , except that the “pilot” keeps pitch at the level of about 10° after $t = 28$ s
7	As 0 , except that the “pilot” keeps pitch at $\sim 5^\circ$ after $t = 28$ s
8	As 0 , except that the “pilot” keeps pitch at $\sim 15^\circ$ after $t = 28$ s
9	As 6 , plus second “very strong” wind-shear is added
10	As 9 , but flaps are not retracted (kept at 30°)
11	As 10 , but the command pitch is lowered from 10° to 6° if the climb rate is less than 1 m/s
12	As 6 , but no further (second) wind-shear is introduced and the flaps position remains unchanged
13	As 6 , but no further (second) wind-shear is introduced and flaps are retracted to 15°
14	As 6 , plus another half-strong wind-shear occurs, flaps are retracted to 15° and the command pitch is reduced from 10° to 6° if the climb rate is insufficient ($V_z < 1$ m/s)
15	As 6 , plus when another half-strong wind-shear hits the airplane, flaps are retracted to 15° and pitch is kept at $\sim 10^\circ$
16	As 6 , plus another half-strong wind-shear is introduced, flaps are kept at 30°; also, the command pitch is reduced from 10° to 6° if the climb rate is insufficient ($V_z < 1$ m/s)

STEP 2. Flight scenario input into VATES for baseline scenario. Without going into depth regarding the contents and organization of each flight experiment input file, the main components are constituted in eighteen files, Table 3.7. A set of five files control the ‘pilot-aircraft’ relationship: **G101** (Initial Conditions of Flight), **G102** (Calendar of Flight Events), **G104** (Piloting Tasks), **G103** (Control Procedures and Onboard System Failures), and **G105** (System State Observers). For more information please consult Reference 50. (Note: This step is not discussed in the Citation X case study.)

Table 3.7: Input Data File System for *VATES*

File Name	Content	Purpose
G100	Main file of a flight experiment scenario	Contains references to input file names constituting the flight experiment scenario
G964	Logbook and experiment data	Specifies experiment's logbook name, aircraft type name, flight experiment name, and a list of memorized input data files
G121	Vocabulary of flight variables	Contains a vector of flight (model) variables
G101	Initial conditions of flight	Contains a list of initial values of selected main flight variables
G102	Flight events	Contains a specification of the flight event calendar used in the flight simulation experiment
G122	Vehicle model constants	Contains a vector of constant input parameters of the vehicle model
G131	Table of vehicle model input characteristics	Contains a table of variable input parameters (characteristics) of the vehicle flight model
G104	Piloting tasks	Specifies flight control processes with feedback ("piloting tasks")
G103	Control procedures and system failures	Specifies the flight control processes (without feedback, of "on-off" type) and onboard system failures used in the simulation experiment
G105	System state observers	Contains a list of system state observers
G134	Structure of input characteristics table	Describes the structure of the input characteristics table (ref. data file G131)
G135	Arguments of input characteristics table	Specifies the arguments of the input characteristics table (ref. data file G131)
G111	Integration parameters	Defines input parameters of a numeric integration algorithm used in the flight model
G928	Wind profile specification	Specifies a wind type processes (if any) used in the simulation experiment
G950	Wind data table	Contains a table of components of the wind model
G959	Rain profile specification	Specifies a rain type processes (if ordered)
G961	Rain data table	Contains a table of input parameters of the rain intensity model (if ordered)
G963	Output variables ordered for recording	Specifies a subset of flight variables from the vocabulary to be recorded in output tables and depicted on the output diagrams

Once each of the files is compiled the calculations are performed with the 'fly.exe' Batch File. Next, the following assessment can be made.

3.4.3 Flight Test Assessment

The objective of the third process task is the visualization of classical and *VATES* specific graphical and analytical flight safety performance related information. While it is important to recognize that two standards of knowledge generalizations exist to communicate with technical and managerial decision-makers, at this stage are, however, no prerequisites

stated to make this distinction. Therefore the following formats have been implemented, Figure 3.4 to 3.10:

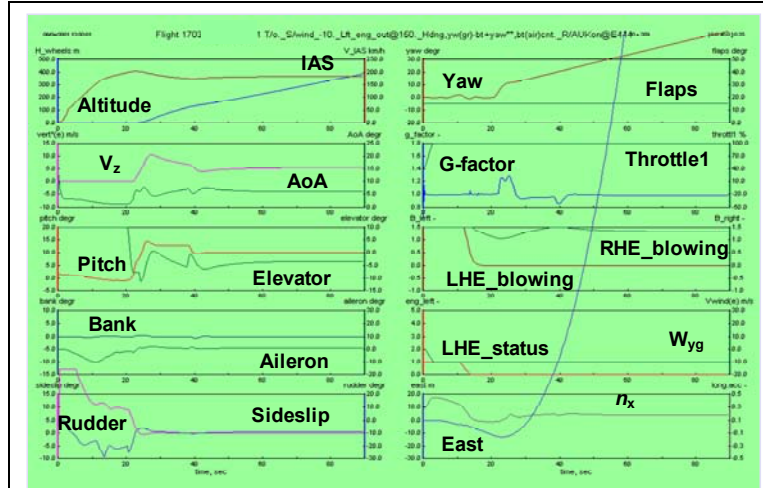


Figure 3.4: M_1 : flight variable time-history. S₁₇₀₃: “Continued takeoff, left-hand engine out at VEF=150 km/h, $\delta_{FL}=15^\circ$, crosswind -10 m/s” (Example)⁶¹

- M_1 : flight variable time-history - chronological measurement of all monitored flight variables. Presentation is similar to the telemetry output of a full-scale aircraft flight test system;

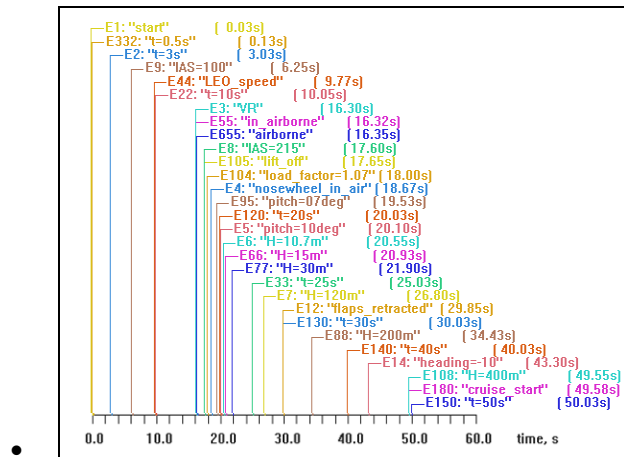


Figure 3.5: M_2 : flight event time-history. F₁₃₂₁: “Normal takeoff and climb, commanded flight path angle $\theta_G=20^\circ$, commanded bank angle $\gamma_G=-22.5^\circ$.” (Example)⁶¹

- M_2 : flight event time-history - chronological sequence of all flight situation events. Calibrates the designer’s understanding of flight events to ‘real-world’ interactions.

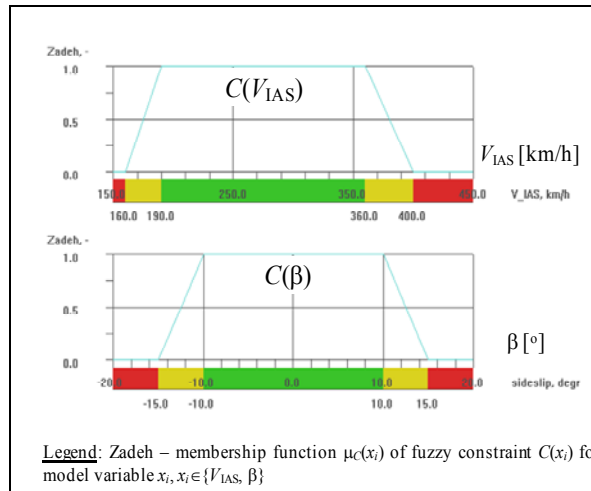


Figure 3.6: M_3 : fuzzy constraints of flight. Fuzzy constraints and color-coding of variable zones using safety colors (Example)⁶¹

- M_3 : fuzzy constraints of flight – imprecise constraint set for operational constraints representing transitional aircraft safety. Indicates safety limits imposed by the decision-maker

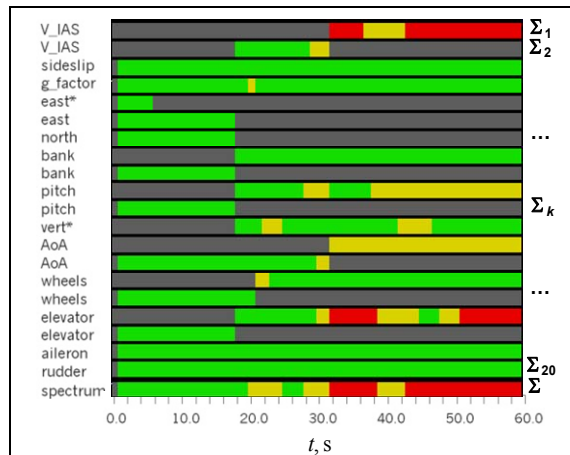


Figure 3.7: M_4 : Partial safety spectra, M_5 : Integral safety spectra. F_{2782} : “Normal takeoff and climb, commanded flight path angle $\theta_G=16^\circ$, commanded bank angle $\gamma_G=22.5^\circ$, very strong wind-shear.” (Example)⁶¹

- M_4 : partial safety spectrum – chronological color-coded bars reflecting status changes in aircraft flight safety for the monitored flight variable. Identifies discrete regions of possible concern for monitored variable;

- M_5 : integral safety spectrum - chronological color-coded bars reflecting a summary or total flight safety status for all monitored flight variables;

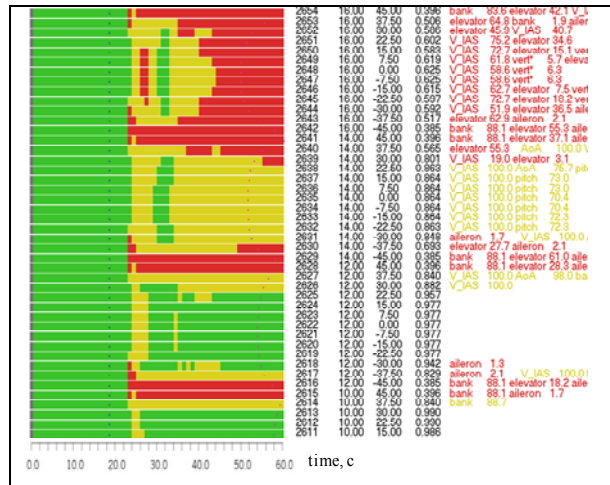


Figure 3.8: M_5 : Family of integral flight safety spectra. $S_1 \cdot \Gamma_{11}$: “Normal takeoff, variation/errors of selecting commanded flight path angle and commanded bank angle.” (Example)⁶¹

- M_6 : family of integral flight safety spectra; top-level color-coded safety related operational factor cause and effect map for a subset of derivative or neighboring flight scenarios. Presents the results of multiple scenarios to help characterize aircraft behavior for variations of operational factors;

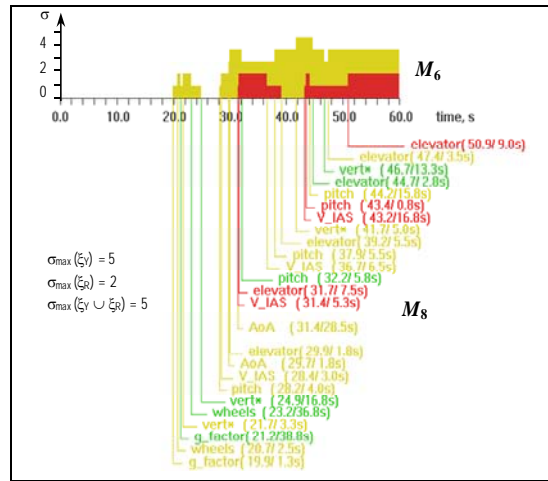


Figure 3.9: M_7 : Situation complexity buildup diagram. F_{2782} : “Normal takeoff and climb, commanded flight path angle $\theta_G=16^\circ$, commanded bank angle $\gamma_G=22.5^\circ$, very strong wind-shear.” (Example)⁶¹

- M_7 : situation complexity buildup diagram – chronological diagram of fuzzy constraint violations and restorations for all monitored operational variable fuzzy constraints during flight. Measures total ‘pilot workload’ due to fuzzy constraint violations of all monitored variables.

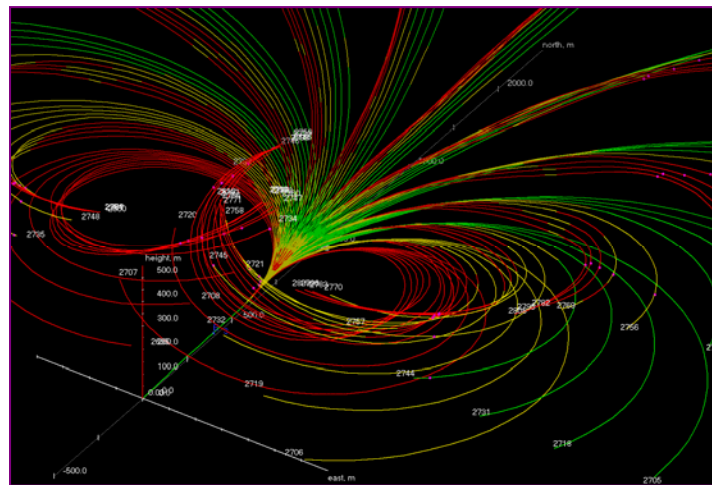


Figure 3.10: M_8 : Situational tree of flight. F_{130} : “Takeoff and initial climb, variations/errors of commanded flight path (θ_G) and bank angles (γ_G), very strong wind-shear.” (Example)⁶¹

- M_8 : situational tree of flight – chronological color-coded flight path diagram of derivative or neighboring flight situations for a family of integral flight safety spectra for all monitored operational variables. Presents mission and off-mission behavior along the trajectory for all monitored variables.

The formats M_1, \dots, M_8 are introduced to map different aspects of a flight vehicle's safety performance in safe and complex circumstances. The same concept is applied tailoring deliverables to match the target decision-maker or customer information requirements. Using a combination of safety colors and graphic symbols, each monitored variable $x_i, x_i \in \mathbf{x}$, is evaluated along a safety color palette (P) for the aircraft state vector \mathbf{x} ; where $P = \{\xi_W, \xi_G, \xi_A, \xi_R, \xi_B, \dots\}$ or $P = \{\square, \blacksquare, \blacktriangle, \blacklozenge, \blackstar, \dots\}$, and ξ_i is described as safety colors, $i \in \{W, G, A, R, B, \dots\}$. The palette P characterizes levels of aircraft flight safety performance, respectively: uncertain, safe, interim, unsafe, and catastrophic.⁶¹

3.4.4 Product Review

Product review is an essential feedback feature to the PLC simulation in determining the overall benefit of the flight vehicle development, overall managing the decision process. At present, however, a structured analysis for assessment is beyond the scope since no existing standard for control nor feedback exists. According to Hoey, *"There are no standard processes ... for feeding flight test results back into the design process. It depends on the seriousness of a test result. In [most cases], the test results are reported to management, and there is a brief cost/benefit analysis performed which leads to a decision to accept the deficiency, since the cost of the 'fix' is too large."*⁶² Instead, an ad-hoc analysis is performed based on Chapter 3.4.3 *Flight Test Assessment* in order to gain a firmer understanding of the simulation and analysis types possible for future applications.

3.5 Summary

With a description of the more fundamental theory and methodology in place, a unique process has been introduced to directly include flight test practice into the aircraft conceptual design setting. It is this, Part 2 - Flight Test Emulation *Product Life-Cycle simulation* process that unifies data flow from later design considerations into a framework that focuses on: (1) actively creating opportunities for risk reduction and management, (2) decision-maker ability to consider possible engineering options having understood the risks involved, and (3) decision-maker potential to decide on required and available margins of flight safety to be included in the aircraft.

CHAPTER 4

CASE STUDY: CESSNA CITATION X

4.1 Introduction

As discussed in Chapter 1: *A Generic Flight Test and Safety Solution Concept*, flight test by definition is the validation of the ability of an aircraft system to be trusted as mission-worthy and air-worthy; whereby this is the final proof of the customer requirements (request for proposal). In design terms this means that the level of associated flight risk is within the accepted safety tolerances. From the conceptual design perspective, this risk factor, while formally established in reduced-order form, is usually only minimally recognized as a function of density of maneuvers modeled and complexity of flights simulated for the pilot-machine system behavior. Consequently, in order to effectively and efficiently contribute this pre-defining conceptual design phase, the strategy must be to include flight test as a safety discipline with its ability to scientifically forecast realistic test situations while allowing economical detection and/or risk prevention that enhance options along the decision path. The advantage is simply the opportunity to emulate, experiment, and communicate in an integrated framework.

As history and the review with Chapter 2 have shown, significant resources have already been allotted to determine six-degree-of-freedom product life-cycle methodologies. However, those systems are demonstrating significant limitations. The process established in the present context avoids those limitations by:

- being a generic and computational capability able to interact with physical (pilot-aircraft-operational environment) constraints,
- assembling comprehensive schedule of flight problems and maneuvers,
- providing a standardized perspective to provide managers and designers with decision knowledge, and by

- most consequently providing the foundation for a consistent, clear, and transparent process for data management in implementing this setting.

This case study investigates the Cessna Citation X by implementing the first, third, and fourth comments of the previous paragraph. As such, the following objectives are supported:

- Develop a Citation X parametric definition (i.e. aerodynamics, propulsion, and weights and inertia models) from design reengineering
- Develop formal flight test schedules for modeling and simulation (M&S) of normal and complex and neighboring flight scenarios (stability and control, and performance).
- Calibrate the flight test schedules with industry Citation X experience
- Produce a set of technical and operational deliverables that communicate to the manager and engineer
- Examine the test and derivative flight scenarios to test the influences of design parameters
- Validate the emulated flight test and flight safety results with industry Citation X experience
- Discuss possible control methods to feedback design recommendation to the product life-cycle

However, a discussion to put the Citation X in perspective is held before proceeding.

4.2 Flight Vehicle Selection Criteria

The Citation X was elected for application of the flight test emulation process due to it's' peculiarity as a:

1. **Tail-aft Configuration (TAC) Vehicle** – While it would be more original to demonstrate the prototype system with an aircraft of more unconventional (i.e. TFC, TSC, FWC, OWC, OFWC) standing, this conventional configuration concept is selected due to comfort of analysis it represents to communicate the proof of concept. This is a matter of validation and calibration

2. **Unique Market Segment Representation** – As a business jet, the market presents the Cessna Citation X as the ‘fastest toy’ within the air transportation continuum. This vehicle, thus, delivers the corporate customer market the maximum speed performance, thus flight flexibility for the customer.
3. **Novel Design Standing** – Given the moniker of world’s fastest cruise vehicle (M=0.92), this design introduces demanding compromises on low-speed and high-speed design features not typical for most aircraft in the business and commercial industry.

4.3 Flight Vehicle Development History

Note: the conversation presented in this section is not meant to be an exhaustive review but rather to discern the Cessna Citation X’s dominating qualities in the business jet market. Thus, the objective is to appreciate the uniqueness and possible future of this aircraft.

4.3.1 Market Analysis

In 2006, Honeywell⁶³ evaluated some of the broader market drivers of interest to customers when purchasing a business jet vehicle, see Figure 4.1. These are delineated across global regions and commonly indicate that range, followed by new technologies and speed, are key selection criteria. Additionally, direct operating cost (DOC), while a concern, is shown to bear lesser weight for this exclusive segment of transportation. However, this trend has been changing with the recent uncertainties over future fuel prices. Relative to the Citation X, being a vehicle first imagined in the early 1990s, this market scenario shows that it will likely remain relevant in the near term.

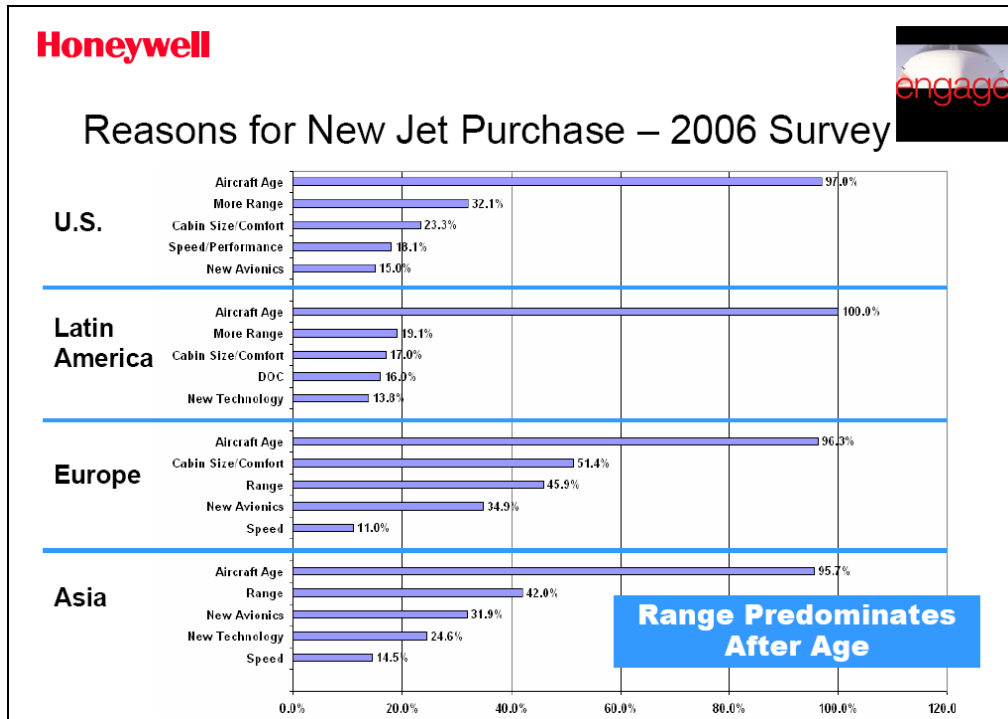


Figure 4.1: Primary Business Jet Market Drivers – 2006⁶³

In general, the Citation X has experienced notable success⁶⁴ in the medium weight class over the past decade. More recently, the composite Bombardier Learjet 85⁶⁵ (designed for fuel efficiency) and the much larger M=.925 Gulfstream G650⁶⁶ (designed for speed, range, and comfort) business jets require the Citation X to evolve to preserve its advantage and market status. In 2006, Cessna announced to launch the Citation Columbus, a wider cabin cross section corporate jet designed for comfort and range; its product development philosophy being to expand into the medium and longer range markets, see Figure 4.2.⁶⁷ At the time of writing, the Columbus has been put on hold due to the global recession.⁶⁸ The question is: *will customers value fuel savings or time savings for future transcontinental corporate and long-haul flight?*⁶⁹

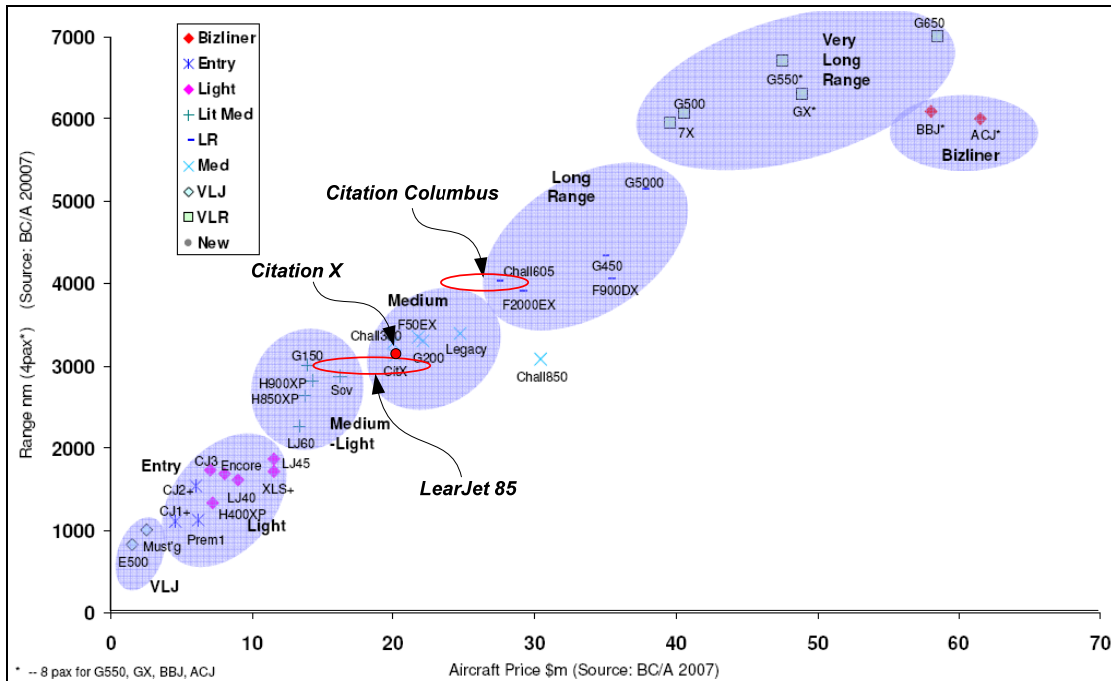


Figure 4.2: Business Jet Market Distribution (Modified from Rolls-Royce)⁶⁹

Certainly, the current global recession may not directly motivate to assess the Citation X as a ‘green alternative’. Still, the Citation X does illustrate designer-ability requirements to rapidly assess flight safety performance for new, but in particular innovative aircraft configuration concepts.

4.3.2 Mission Specification

Since the original mission requirement for the Citation is propriety, a working mission specification for the Cessna Citation X is conceptually constructed, see Table 4.1. The appropriate FAR Part 25 certification regulation requirements (flight safety values), see Table 4.2, have been taken into account. During the course of the M&S activities, the aircraft mission specification and certification rules, see Tables 4.1 and 4.2, have been implemented to assist in processing fuzzy constraint violation factors and operational limits flight variables.⁶⁹

Table 4.1: Cessna Citation X Mission Specification⁶⁹

Mission requirements	
Payload Weight (kg)	
Crew (2)	184 kg (410 lbs)
Maximum Passengers (12)	1,110 kg (2,460 lbs)
Design Passengers (4)	820 kg (820 lbs)
Range	
Maximum	5,900 km (3,200 nm)
Design	5,700 km (3,000 nm)
Velocity	
High-Speed Cruise (mid-weight)	0.92 M
Design Cruise Speed	0.85 M
Altitude (m)	
Max Operating	15,000 m (49,000 ft)
Design Cruise (0.82 M)	15,000 m (49,000 ft)
Max Cruise Speed (0.92 M, mid-weight)	11,300 m (37,000 ft)
Take-Off Field Length (at TOGW)	1,570 m (5,140 ft)
Landing Field Length (at max landing weight)	1036 m (3,400 ft)
Fuel Reserves	45 min at 1,524 km (5,000 ft)

Table 4.2: Cessna Citation X FAR Part 25 Regulation Requirements⁶⁹

Regulation requirements	
Take-Off Climb (OEI)	
Initial Segment	$\gamma=0.012$, LG up, T_{max} , flaps, ground effect $1.2V_s$, OEI
Transition Segment	$\gamma =0.000$, LG down, T_{max} , flaps, ground effect, V_{LOF} to $1.2V_s$, OEI
Second Segment	$\gamma =0.024$, LG up, T_{max} , flaps extended, $1.2V_s$, OEI
En-Route Requirement	$\gamma =0.012$, LG up, $1.25V_s$, OEI
Landing Field Length	$0.6S_L$
Landing Go-Around (AEO/OEI)	
AEO	$\square=0.031$, LG down, landing flaps, $1.3V_s$
OEI	$\square=0.021$, LG down, T_{max} , approach flaps, $1.5V_A$
Fuel Reserves	45 min reserve at 1,524 (5,000ft)

The following design mission profile is assembled for the present research investigation, see Figure 4.3. It is of importance to note that the Citation X has two cruise design points to be taken into account as an essential analysis requirement: (1) Cruise at $M=0.85$, $H=49,000$ ft, design cruise weight; and (2) Cruise at $M=0.95$, 37,000 ft, mid-cruise weight⁷⁰. The $M.85$ design point is design requirement insures the Citation X's design cruise performance

competitiveness compared with the lower speed competition, while the M.92 design point gives the operator the option of higher-speed cruise by sacrificing range.

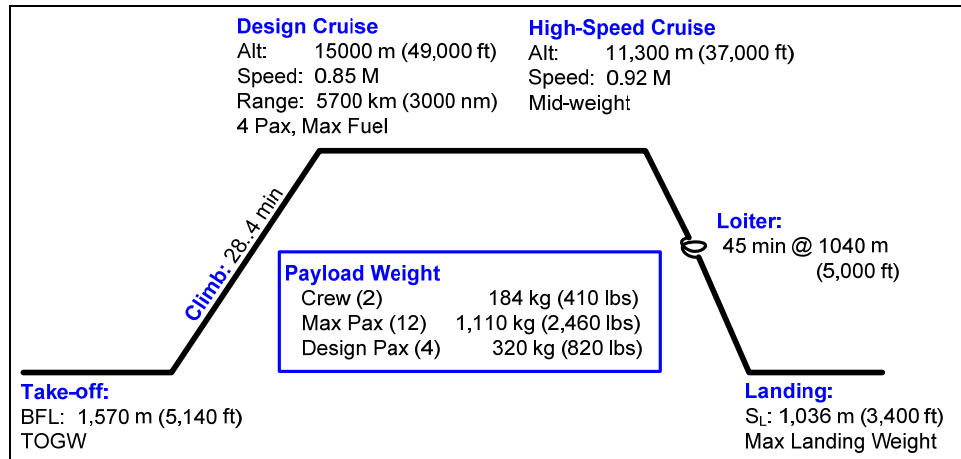


Figure 4.3: Cessna Citation X Design Mission (1) Design Cruise, (2) High-Speed Cruise

4.3.3 Cessna Citation X Design Objective

The following summarizes the original Citation X business case perspective from the 1990s:

- replacement for older technology jets;
- add-on or replacement for a mid-size jet;
- alternative to a larger jet.

Key operational and market driven features are:

- superior cabin comfort;
- fastest speed;
- outstanding climb performance;
- smooth direct flights;
- reduced pilot workload;
- advanced navigation system;
- durable, cost effective engines;
- ease of maintenance;
- comprehensive warranty;

- dedicated product support,⁶⁹
- predictable parts cost;
- safety.

4.4 Flight Vehicle Baseline Configuration

In a real-world conceptual design environment, the true configuration and geometry of the aircraft to be designed is unknown to the decision-maker. For the present study, the Citation X is re-engineered at conceptual design level in order to have a validation reference available. As such, much effort has been invested to calculate and construct a representative baseline vehicle. The following summarizes the physical buildup of the aircraft with reference as how to generate: (1) volume supply (capacity to carry payload), (2) lift supply (capacity to affect lift), (3) thrust supply (capacity to overcome drag), (4) primary control supply (capacity to supply primary control), and (4) secondary lift supply (capacity to supply secondary lift). For more information please consult Reference 71 and 72.

4.4.1 Volume Supply

A conventional fuselage is used to transport the passengers, pilots, luggage, fuel, systems, etc. The fuselage outer mold shape geometry is displayed in Figure 4.4 and 4.5. Table 4.3 presents the related station values where X = x-coordinate distance (baseline), R = body radius, ZU = upper mold line distance from baseline, and ZL = lower mold line distance from baseline.

Table 4.3: Citation X Volume Supply Description (Calculated)

Station	1	2	3	4	5	6	7	8
X (m)	0.000	0.730	1.820	2.780	3.370	5.190	7.275	8.250
R (m)	0.000	0.380	0.610	0.894	0.991	1.086	1.219	1.219
ZU (m)	0.000	0.480	0.870	1.420	1.562	1.562	1.562	1.562
ZL (m)	0.000	-0.280	-0.350	-0.368	-0.420	-0.610	-0.875	-0.875
Station	9	10	11	12	13	14	15	16
X (m)	9.190	10.748	12.500	13.770	14.810	16.060	17.190	17.780
R (m)	1.219	1.196	1.066	0.920	0.775	0.590	0.315	0.062
ZU (m)	1.562	1.562	1.562	1.490	1.380	1.240	1.090	0.952
ZL (m)	-0.875	-0.830	-0.570	-0.350	-0.170	0.060	0.460	0.828

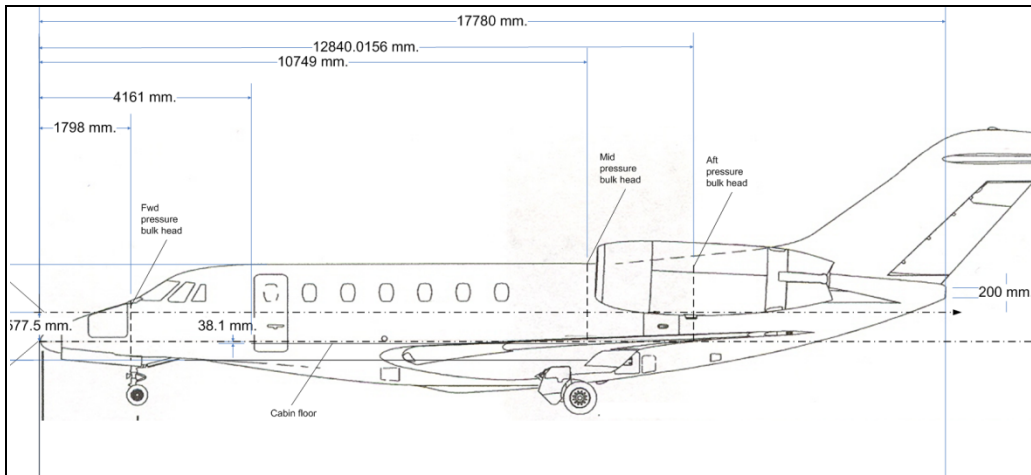


Figure 4.4: Citation X (Actual) Volume Supply⁷³

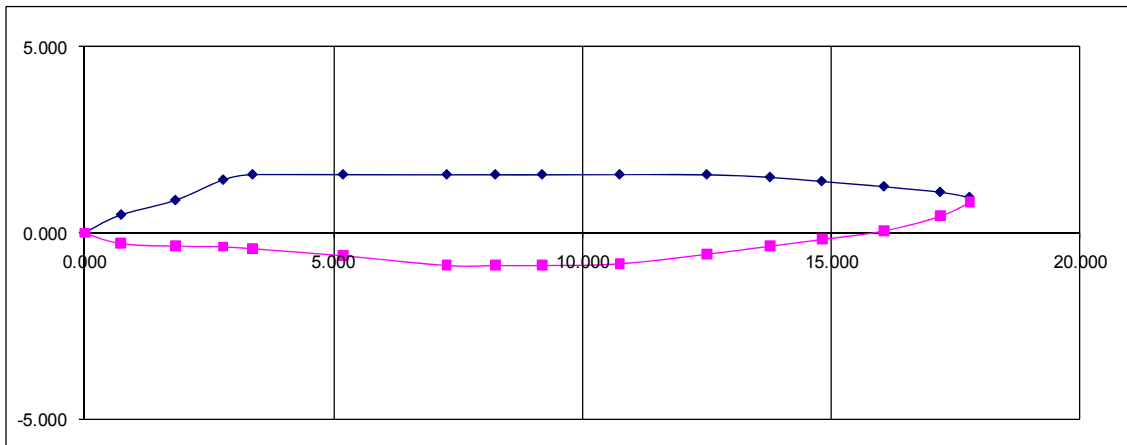


Figure 4.5: Citation X (Calculated) Volume Supply

4.4.2 Lift Supply

Primary lift supply is delivered from a supercritical main wing (delays transonic drag rise and increases critical Mach number) for the Citation X, see Figure 4.6. Since the exact shape and aerodynamics are unknown, the characteristics of the airfoil are approximated and calculated as shown with Table 4.4; where wing variable = {planform area (S), aspect ratio (AR), sweep angle ($\Lambda_{c/4}$)}, cruise conditions = {weight (W_{cruise}), velocity (V), altitude (h), dynamic pressure (q), cruise lift coefficient ($C_{L_{cruise}}$)}, critical mach numbers = {Mach number ($M_{critical}$), critical Mach number without lift (M_{CRDCL}), critical Mach number without aspect ratio (M_{CRDAR})}.

The cruise lift coefficient is estimated given the cruise conditions of $W_{CR} = 26,000$ lbs and $V_{CR} = 526$ kts and $H_{CR} = 37000$ ft:

$$C_L = \frac{W_{cruise}}{\bar{q}S} = 5.09 \quad \text{Eq. 5.1}$$

Next, with the wing aspect ratio and quarter chord sweep geometries known, the lift coefficient can be calculated resulting in the determination of the average wing thicknesses compared to the measured.

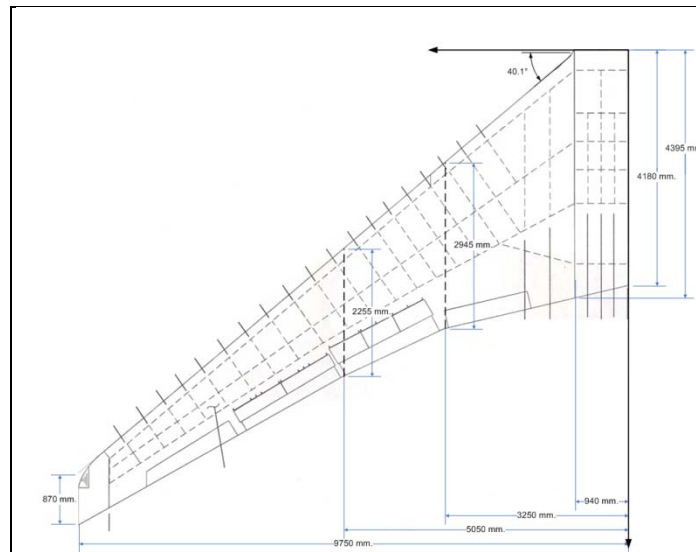


Figure 4.6: Citation X Planform Wing View⁷³

Table 4.4: Citation X Wing and Airfoil Characteristics Summary with Corning Method.⁷⁴

Wing dimensions	t/c (% chord)
S (ft ²)	527
AR	7.75
$\Delta_{c/4}$ (deg)	37.7
Cruise Condition	
W_{cruise} (lbs)	26,000
V (kts)	526
h (ft)	37,000
q (lbs/ft ²)	0.9269
$C_{Lcruise}$	5.09
Critical Mach number	
M_{cruise}	0.92
DM_{CRDCL}	0.075
DM_{CRDAR}	0.011
M_{CRD0}	0.874
t/c average required	0.099
t/c average measured	0.105

The airfoil thickness distribution (t/c) is assessed to have twelve percent at the root and eight percent at the tip.

Airfoil Characteristic Approximation

The airfoil characteristics are required as input for (A) PrADO and (B) DATCOM^{MAX}, to accurately determine the lift curve, drag polar, side force, and moment derivatives. The Citation X wing is segmented as follows:

- PrADO

Recall that the PrADO tool, though briefly discussed, was first introduced in Chapter 3.4: 'Flight Emulation Process' and is used to estimate the gross values for the Citation X propulsion model, and weights and inertia model. Two airfoils are used from the root: Cessna 7500 (t/c = 12.8%) to a transition airfoil GIII BL145 (t/c = 8.26%) at the tip, Figure 4.7.

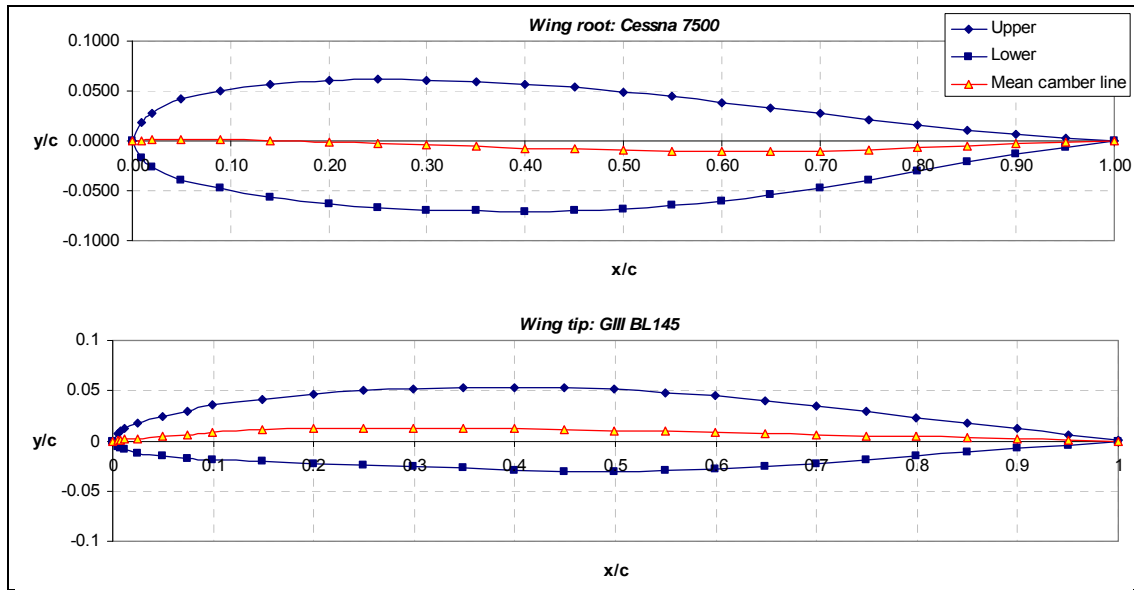


Figure 4.7: Citation X Wing Airfoil Approximation (PrADO)

- Digital DATCOM

To simplify analysis, a single airfoil (GIII BL126) is used. It is approximated based on calculations of the average thickness for the span, about 8.5%. Accordingly, the BL126 has a thickness of 8.78%. Figure 4.8 illustrates this airfoil section.

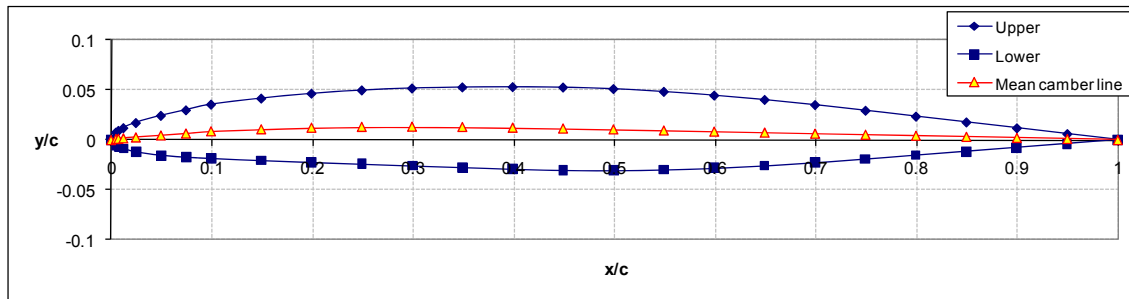


Figure 4.8: Citation X Wing Airfoil Approximation (Digital DATCOM)

Note that the associated high lift systems lift supply effects will be discussed later in the secondary lift supply section.

4.4.3 Thrust Supply

The Citation X utilizes a twin fuselage podded configuration with the Rolls-Royce AE3007C1 powerplant. This engine features a 14-stage axial flow compressor with two spools,

a two-stage high pressure turbine, and a three-stage low pressure turbine, being flat-rated to a static sea-level takeoff thrust of 6,700 lbs each and a bypass ratio = 5.1.⁷⁵ The physical geometry has been obtained from the Citation X structural repair references 73 and 76. Note that this information is mostly of benefit for calculating a thrust and weight model from PrADO; it does not reflect the aerodynamic work to be performed with DATCOM^{MAX}. The PrADO geometry model is shown with Figure 4.9.

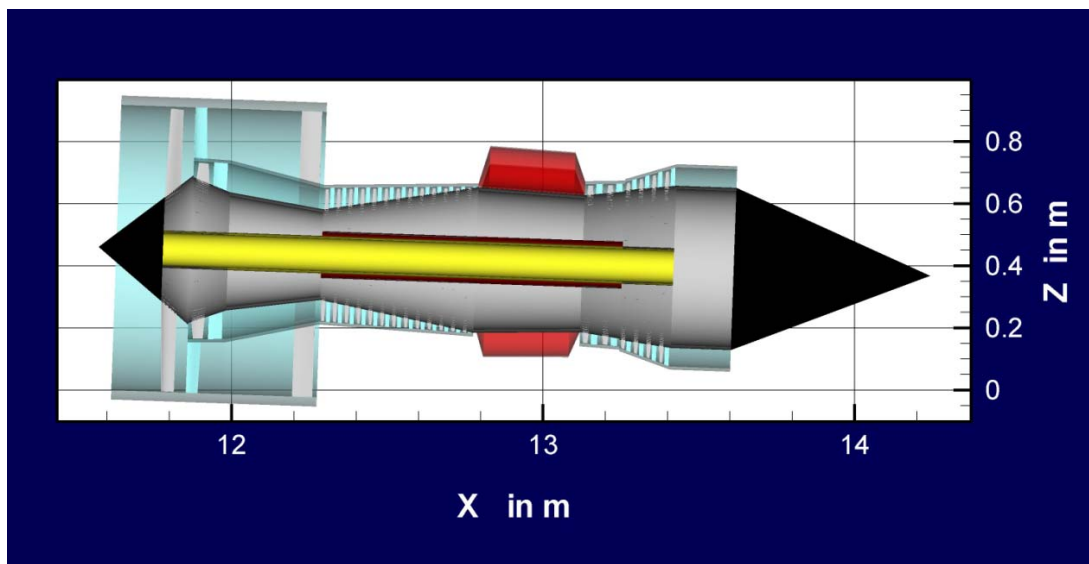


Figure 4.9: Citation X Thrust Supply (Rolls-Royce AE3007C1 Powerplant), PrADO

4.4.4 Primary Control Supply

A. Lateral Control Effectors (LaCE)

The Citation X LaCE include outboard low-speed ailerons and inboard high-speed spoilers along the trailing edge of the main wing, Figure 4.10.

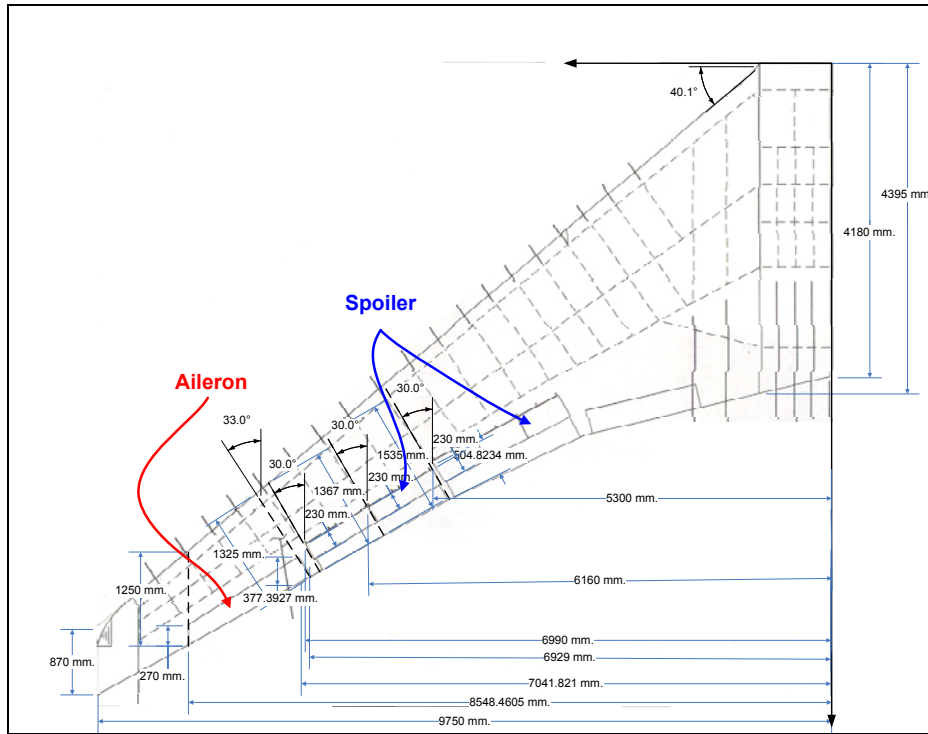


Figure 4.10: Citation X LaCE Layout⁷³

B. Longitudinal Control Effectors (LoCE)

The Citation X LoCEs include an all moving horizontal slab-stabilizer tail surface for trim-control on top of the vertical empennage (T-tail). Maneuver pitch control is performed with trailing edge elevators on the t-tail, see Figure 4.11. Since the exact airfoil section is unknown for the horizontal tailplane, it is assumed to have 8 percent thickness. The NACA-64-008a symmetric airfoil has been selected, see Figure 4.12.

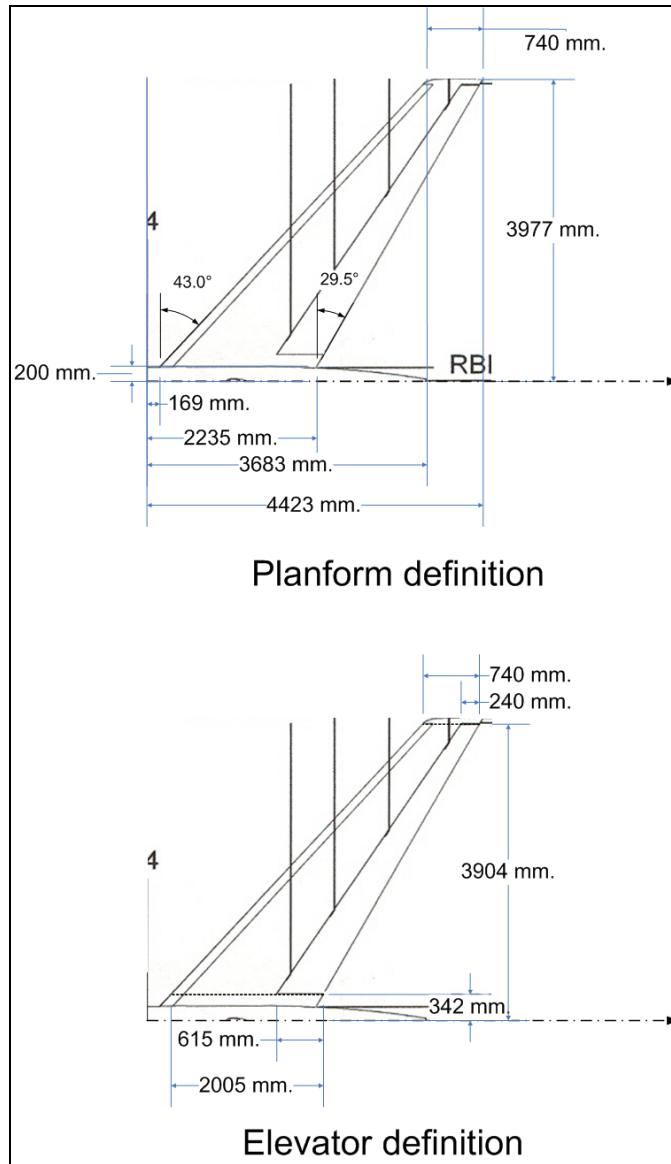


Figure 4.11: Citation X LoCE Layout⁷³

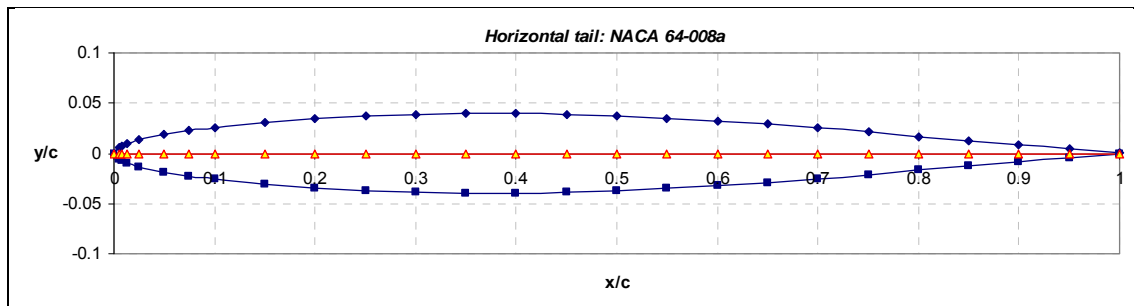


Figure 4.12: Citation X Horizontal Tail Airfoil Approximation (NACA-64-008a)

C. Directional Control Effectors (DiCE)

The Citation X DiCE includes a vertical stabilizer with a split rudder for maneuver control, see Figure 4.13. Again, since the exact fin airfoil is unknown, it is approximated to be a $t/c = 10\%$ thick NACA-64a0010 airfoil section, see Figure 4.14. It is also understood that the higher thickness is required to tolerate the structural loads from the 'T-tail' empennage configuration.

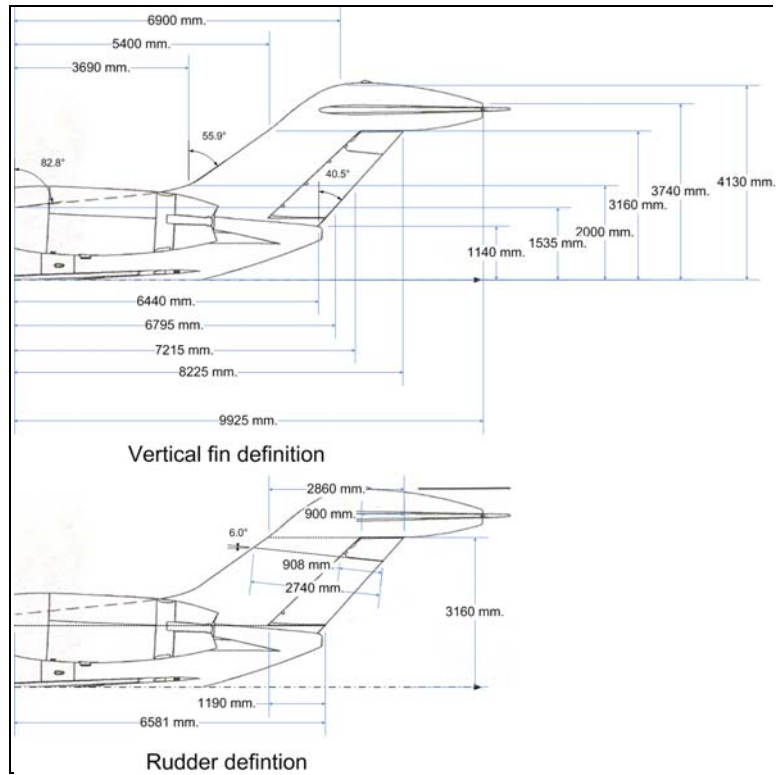


Figure 4.13: Citation X DiCE Layout⁷³

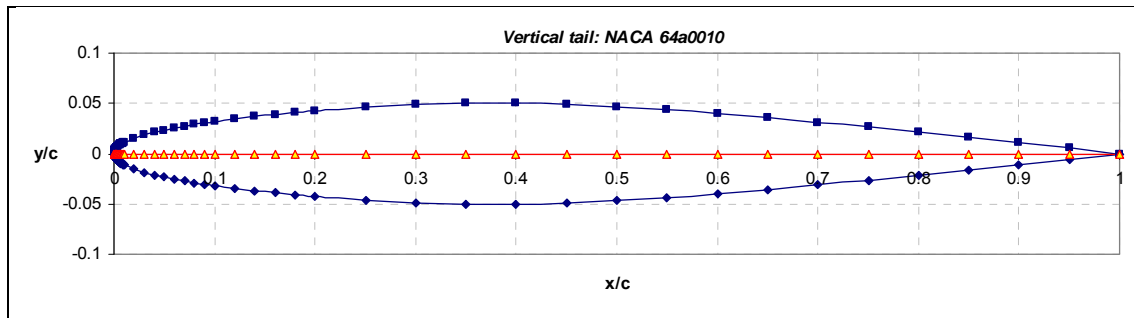


Figure 4.14: Citation X Vertical Tail Airfoil Approximation (NACA-64a0010)

4.4.5 Secondary Lift Supply

For the takeoff and landing cases, the Citation X employs three Fowler wing trailing edge flaps and one leading edge slat per wing half-span to generate the required field performance, see Figure 4.15. The flaps translate out from the wings whereat full extension the leading edge is only just beyond the top surface skin of the main.. The slats deflect parallel to the local airfoil section along a slat rail. In total, the high-lift devices provide five distinct flight configuration settings (from configuration clean to configuration full). Those configuration changes are further explored during the later analysis stage.

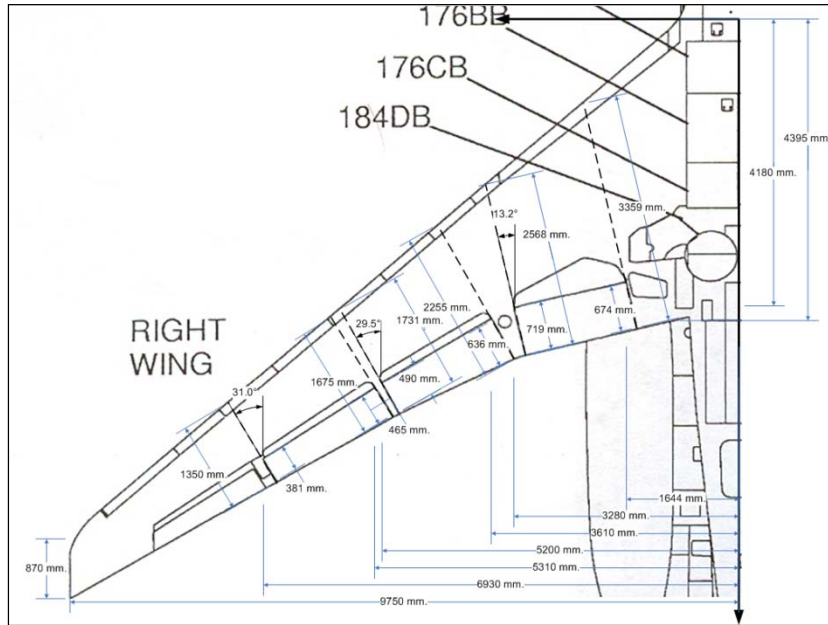


Figure 4.15: Citation X Secondary Lift Supply⁷³

4.4.6 Summary

The combined efforts of the above descriptions result in a parametric and geometry model (Appendix B) of the Citation X, see the three-view and isometric geometry for the Cessna Citation X generated with the aircraft synthesis system PrADO, see Figure 4.16. Data from the geometry model and parametric model are input into the aerodynamic prediction tool Digital DATCOM. To reiterate, PrADO is utilized to generate propulsion, weight, and inertia data while

DATCOM^{MAX} (with an expanded ability to model control effectors) is implemented to determine configuration aerodynamic characteristics.

It is evident from the above abbreviated Citation X modeling summary that this vehicle is of fairly sophisticated design. The ability to correctly model the aircraft itself followed by a robust M&S phase of the flight behavior during conceptual design, will provide the decision-maker an enhanced prediction capability.

With the background discussion now complete the remainder of this chapter does focus on the simulated flight testing of the Cessna Citation X with the product life-cycle flight test emulation methodology as outlined in Chapter 3 *Methodology and Theory*.

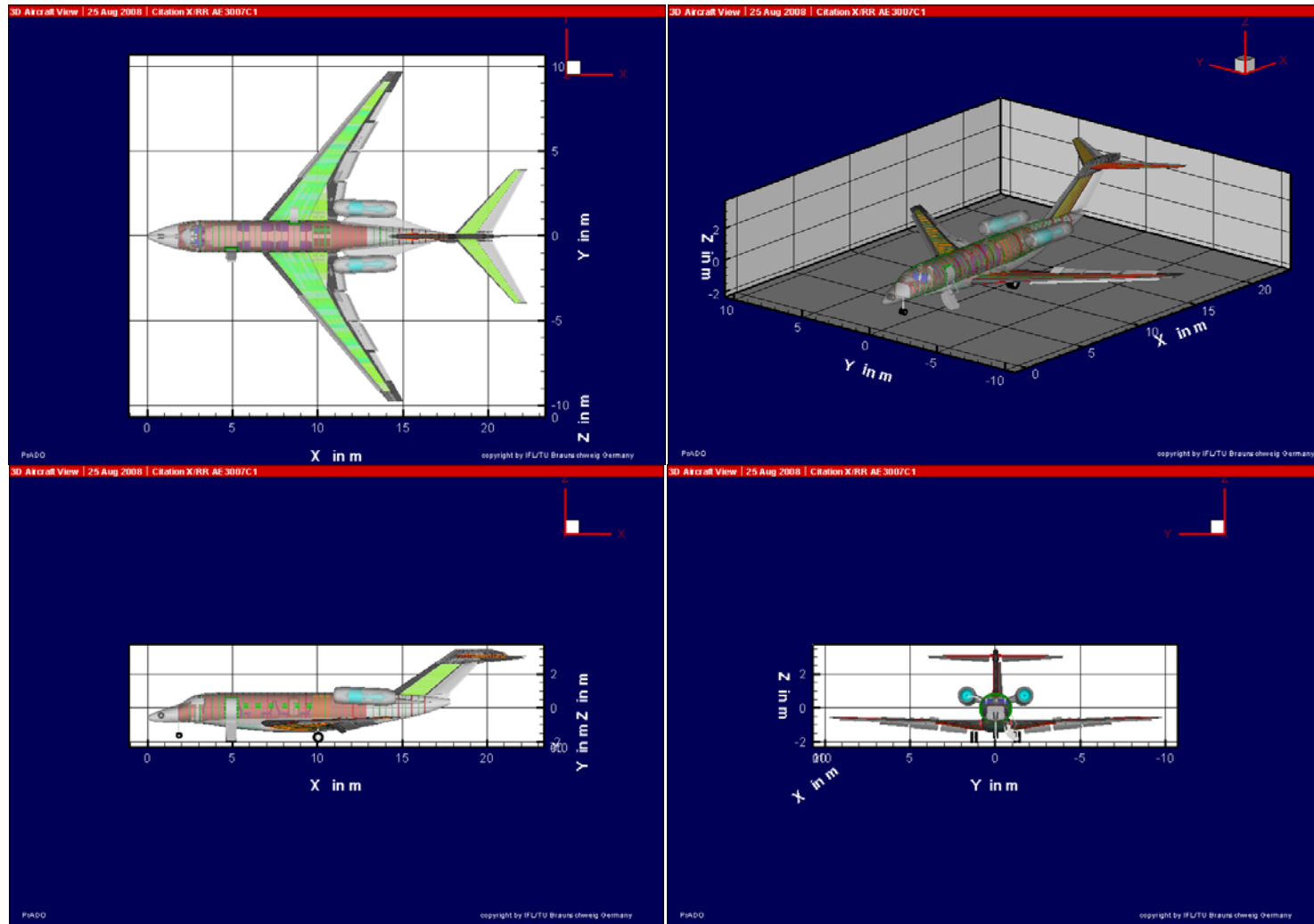


Figure 4.16: Citation X 3-View and Isometric Parametric Configuration Concept (PrADO)

4.5 Flight Emulation of the Cessna Citation X

4.5.1 Flight Test Scheduling

A. Specification of a 'Parametric Definition' and Emulation Requirements

STEP 1. *Search and collect available technical documentation on the aircraft flight emulation needs.*

The following tables are assembled throughout the subsequent pages:

- Table 4.5: Main elements (phases, maneuvers, modes) of flight
- Table 4.6: Speeds (nominal values and limitations)
- Table 4.7: Altitudes (nominal values and limitations)
- Table 4.8: Load factor (limitations)
- Table 4.9: Thrust and lever settings
- Table 4.10: Rates of climb and descent
- Table 4.11: Primary and secondary controls (limitations)

Table 4.5: Main Elements (Phases, Maneuvers, Modes) Of Flight^{77,78}

Name of Flight Element	Source Event	Target Event
Normal takeoff	Release Brakes	V=170 KIAS
Aborted takeoff	$V < V_1$	V=0 KIAS
Continued takeoff (single engine) [no fire]	V_R	$h \geq 1500$ ft AGL [V _{ENR} =190 KIAS]
Continued takeoff (single engine) [fire]	V_R	$h \geq 400$ ft AGL [V=170 KIAS]
Climb		
Climb (single engine)		
Cruise (level flight)		
Cruise (level flight), single engine		
Descent		
Descent (single engine)		
Descent (powerless)		
Emergency descent		
Approach	$h = [1000 \text{ ft (IMC), } 500 \text{ ft (VMC)}]$ (GS=approx. 3 deg.)	Landing in the touchdown zone.
Approach (single engine)	$h = [1000 \text{ ft (IMC), } 500 \text{ ft (VMC)}]$ (GS=approx. 3 deg.)	Landing in the touchdown zone.
Approach (powerless) [final approach]	$V = V_{REF} + 10$ KIAS min.	Touchdown
Normal landing		
Continued landing (single engine)		
Landing (powerless)		
Go-around (all engines)		
Go-around (single engine)	Pitch aircraft/Throttles for positive rate of climb	h=as desired
Stalls [clean configuration]	h=as desired	V=as required
Stalls [departure configuration]	h=as desired	V=as required
Stalls [landing configuration]	h=as desired	V=as required
Turns [steep]	V=250 KIAS	V=as desired
Unusual attitude maneuvers		
...		

Table 4.6: Speeds (Nominal Values and Limitations)⁷⁷⁻⁷⁹

Characteristic Speed	U.S.		Comments
	Value	Unit	
Decision speed	117	knots	Ramp weight=32082 lb
Rotation speed	117	knots	Ramp weight=32082 lb
Takeoff speed	127	knots	Ramp weight=32082 lb
Max. operating Mach-1	0.92	Mach	h>30650 ft
Max. operating Mach-2	0.82	Mach	Mach trim off
Max. operating knot-1	350	KIAS	h=8000 to 30650 ft
Max. operating knot-2	270	KIAS	h≤8000 ft
Cruise speed (fuel-saving, long range)	470/.77	Knot/Mach	
Speed schedule-1	270	KIAS	h=sea level to 8000 ft
Speed schedule-2	345	KIAS	h=8000 to 24000 ft
Speed schedule-3	275	KIAS	h=24000 to 35000 ft
Speed schedule-4	240	KIAS	h=35000 to 41000 ft
Speed schedule-5	190	KIAS	h=41000 to 51000 ft
Maximum maneuvering speed			
Maximum slat extended speed	250	KIAS	
Maximum flap extended speed-1	250	KIAS	5 deg. flaps
Maximum flap extended speed-2	210	KIAS	15 deg. flaps
Maximum flap extended speed-3	180	KIAS	full flaps
Maximum landing gear operating speed	210	KIAS	
Maximum l/g extended speed	210	KIAS	
Maximum turbulent air penetration speed	300/0.9	KIAS/Mach	
Maximum speed brake extension speed	No limit		
Minimum speed brake extension speed	V _{REF} +15	KIAS	
Minimum single engine cruise climb speed	190	KIAS	
Maximum ground roll speed	210	Knots	
Minimum speed (icing)	200	KIAS	Approach and landing (slats down) or approach at nominal airspeeds (full flap)
Landing speed	118	Knots	

Table 4.7: Altitudes (Nominal Values and Limitations)⁷⁷

Characteristic Altitude	SI		U.S.		Comments
	Value	Unit	Value	Unit	
Maximum altitude for flap extension		m	18,000	ft	
Maximum altitude for landing gear			18,000	ft	
Maximum altitude limit (takeoff)			14,000	ft	
Maximum altitude limit (landing)			14,000	ft	
Minimum altitude for in-flight use of speed brakes			400	ft	
Service ceiling	13715	m	45,000	ft	
Service ceiling (OEI)	8839	m	29,000	ft	
Sea level cabin	7690	m	25,230	ft	
Maximum cruise altitude	15544	m	51,000	ft	Cruise configuration

Table 4.8: Load Factor (Limitations)⁷⁷

Load Factor Limit Name	SI		Comments
	Value	Unit	
Maximum operating load factor-1 (W=36100 lbs)	-1.0 to 2.7	G	Cruise configuration, flaps up, slats retracted
Maximum operating load factor-2 (W=36100 lbs)	0.0 to 2.0	G	Cruise configuration, flaps up, slats extended
Maximum operating load factor-3 (W=36100 lbs)	0.0 to 2.0	G	Cruise configuration, flaps 5-15 deg, slats extended
Maximum Duration	10	sec.	Cruise configuration, (0.0 to negative G)
Maximum operating load factor (W=31800 lbs)	3.5	G	Landing configuration, R/D=600 ft/min

98

Table 4.9: Thrust and Lever Settings⁷⁷

Thrust/Lever Setting Name	SI		Comments
	Value	Unit	
Maximum takeoff rating	12,800	Lbs	
Maximum reverse thrust lever angle	46	deg	Thrust reversers restricted to ground operations, prohibited from touch-and-go landings
Idle thrust reverse			Thrust to idle at 65 KIAS (landing ground roll)
Idle thrust reverse (single engine)			Thrust to idle at 70 KIAS (landing ground roll) with nosewheel steering failure or slippery runway

Table 4.10: Rates of Climb and Descent⁷⁷

Parameter Name	U.S.		Comments
	Value	Unit	
Rate of climb [initial]	3720	ft/min	Takeoff configuration
Rate of climb (crosswind)	3500	ft/min	Takeoff configuration, crosswind=20 knot
Rate of climb (OEI)	1150	ft/min	
Rate of descent (maximum)	1000	ft/min	Approach configuration

General Comments:

- Vehicle most fuel efficient above FL410 (41000 ft). Objective to climb to FL410 with urgency.
- $t > 20$ min to reach FL410

Table 4.11: Primary and secondary controls (limitations)^{77,78,80}

Parameter	Clean			Partial No. 1			Partial No. 2			Partial No. 3			Full		
	$\delta_f = 0.0, \delta_{sl} = 0.0$			$\delta_f = 0.0, \delta_{sl} = 30.0$			$\delta_f = 5.0, \delta_{sl} = 30.0$			$\delta_f = 15.0, \delta_{sl} = 30.0$			$\delta_f = 35.0, \delta_{sl} = 30.0$		
Vehicle State	<i>Min</i>	<i>Max</i>	<i>step</i>	<i>Min</i>	<i>Max</i>	<i>step</i>	<i>Min</i>	<i>Max</i>	<i>step</i>	<i>Min</i>	<i>Max</i>	<i>step</i>	<i>Min</i>	<i>Max</i>	<i>step</i>
<i>Mach</i>	0	0.95		0	0.4		0	0.4		0	0.4		0	0.4	
<i>α (deg)</i>	-4	30		-4	30		-4	30		-4	30		-4	30	
Control Deflections															
<i>δ_e (deg)</i>	-15	19		-15	19		-15	19		-15	19		-15	19	
<i>δ_{HT} (deg)</i>	-1.2	12		-1.2	12		-1.2	12		-1.2	12		-1.2	12	
<i>δ_a (deg)</i>	-15	15		-15	15		-15	15		-15	15		-15	15	
<i>δ_s (deg)</i>	0	40		0	40		0	40		0	40		0	40	
<i>δ_{ru} (deg)</i>	N/A	N/A		N/A	N/A		N/A	N/A		N/A	N/A		N/A	N/A	
<i>δ_{rl} (deg)</i>	29.5	-29.5		29.5	-29.5		29.5	-29.5		29.5	-29.5		29.5	-29.5	
<i>δ_{sb} (deg)</i>	0	40		0	40		0	40		0	40		0	40	
Configuration															
<i>L.G. (up/down)</i>	Up	Down		Up	Down		Up	Down		Up	Down		Up	Down	
<i>x_{cg} (%MAC)</i>	15	35		15	35		15	35		15	35		15	35	
<i>z_{cg} (%MAC)</i>	N/A	N/A		N/A	N/A		N/A	N/A		N/A	N/A		N/A	N/A	

STEP 2. *Compile baseline scenarios and specific calibration data of main phases of flight for the aircraft according to the VATES input data standards the mission profile.*

To attain overall correctness for known flight scenarios, the flight descriptions have been calibrated with industry knowledge. The M&S logic assembled is based on the combined efforts of the Citation X Operating Handbook⁷⁸, the Citation X Pilot Training Manual⁷⁷, and regular conversations with active Citation X pilots for Thompson Petroleum⁸¹. The four baseline scenarios selected focus on the design-critical low-speed portion of the mission profile, see Figure 4.3. The following is a verbal description of the event-process relationship for scenario development, $S_i = \Omega_i(\mathbf{E}) \cup \Omega_i(\mathbf{\Pi})$

S₁ = NORMAL TAKEOFF

FLIGHT EVENTS

E₁: ground roll start

E₂: monitor V1 (115 kn)

E₃: speed VR achieved [see table speed value for prescribed MTOW weight]

E₄: nose wheel off the runway at V2

E₅: AOA is $\alpha=8^\circ-10^\circ$

E₆: AOA is about $\alpha=10^\circ$

E₇: altitude is about 35 ft (positive rate of climb)

E₈: speed VIAS is about 170 knots or altitude is H=2,000 to 3,000 ft

E₉: end scenario

PILOTING TASKS

T₁: steer the runway's centerline by rudder during ground roll ($\delta_r=XXX^\circ$)

T₂: hold nose down (about 5°) by elevator ($\delta_e=3^\circ-5^\circ$)

T₃: steer elevator as specified by the flight director ($\delta_e=XXX^\circ$)

T₄: keep bank and sideslip angles at about 0° in climb by ailerons ($\delta_a=XXX^\circ$) and rudder ($\delta_r=XXX^\circ$)

CONTROL PROCEDURE

P₁: add power, release brakes

P₂: elevator down ($\delta_e=5^\circ-7^\circ$)

P₃: wheels-up

P₄: retract flaps from $\delta_f=15^\circ$ to 0°

S₂ = CONTINUED TAKEOFF – SPEED ABOVE V1 (OEI): RETURN TO DEPARTURE AIRPORT

FLIGHT EVENTS

E₁: ground roll start

E₂: speed VR achieved [see table speed value for prescribed MTOW weight]

E₃: nose wheel off the runway at V2 [see table speed value for prescribed MTOW weight]

E₄: AOA is about $8^\circ-10^\circ$

E₅: altitude is about H=35 ft AGL

E₆: altitude is about H=1,500 ft (positive rate of climb)

E₇: speed is about V2+15 knots [see table speed value for prescribed MTOW weight]

E₈: speed is about VENR=190 knots

E₉: end scenario

PILOTING TASKS

T₁: steer the runway's centerline by rudder during ground roll ($\delta_r=XXX^\circ$)

T₂: steer the pitch time-history specified by elevator ($\theta=10^\circ$)

T₃: keep bank and sideslip angles at about 0° in climb by ailerons ($\delta_a=XXX^\circ$) and rudder ($\delta_r=XXX^\circ$)

T₄: maintain V2 with positive rate of climb [see table speed value for prescribed MTOW weight]

CONTROL PROCEDURE

P₁: release brakes, add power

P₂: left engine failure or malfunction

P₃: elevator down by $\delta_e=5^\circ-7^\circ$

P₄: wheels-up

P₅: down elevator by $\delta_e=3^\circ-5^\circ$

P₆: reverse action by up elevator ($\delta_e=-3^\circ-5^\circ$)

P₇: set thrust to XXX% N1

P₈: retract flaps from $\delta_f=15^\circ$ to 5°

Additionally, Appendix C contains flight scenarios simulated and results for flight situations: \mathbf{S}_3 = Go-Around and \mathbf{S}_4 = Single Engine Go-Around. They are not discussed in this study.

STEP 3. *For each phase of flight selected, identify a list of operational factors for testing in M&S for work (operational) hypothesis testing.*

From the two original baseline scenarios ($\mathbf{S}_i = \{\text{normal takeoff } (\mathbf{S}_1), \text{ continued takeoff } (\mathbf{S}_2)\}$), two variations (derivatives) are included for a total of four flight experiments, see Table 4.12. Note that this study is limited to the flight-critical takeoff operational environment, where the possibility for nonlinear aerodynamic effects and multifactor dynamics is maximized. Of this scenario group, only $S_1 \cdot \Gamma_2$ and $S_1 \cdot \Gamma_3$ include operational hypothesis experiments (derivative and neighboring flights) with the number of flights (n) greater than one. In effect multiple flights are simulated per execution of VATES.

First, $S_1 \cdot \Gamma_2$ combines an ICAO rated 'strong'-intensity microburst with two operational factors: commanded flight path angle variation due to pitch (θ_{G1}) from $+6^\circ$ to $+30^\circ$ with a step size of 2° and commanded bank angle (β) variations from -42° to $+42^\circ$ by steps of 7° . Next, $S_1 \cdot \Gamma_3$ simulates initial pilot error or incorrect takeoff through three operational factors: initial (uncommanded) bank angle (β_{error}) from -15° to $+15^\circ$ with a step size of 5° , commanded flight path angle variation due to pitch (θ_{G1}) from $+2^\circ$ to $+10^\circ$ with a step size of 1° and commanded bank angle (β) variation from -42° to $+42^\circ$ by steps of 7° about 40 seconds into each flight.

The same primary test factors (commanded flight path angle and commanded bank angle) are used for both hypotheses to illustrate change in the start assumptions for the Citation

X operational environment and takeoff procedure. The generation of such information results in different predictive information for the decision-maker.

Table 4.12:Citation Flight Emulations Experiments

Basic Flight Scenario		Operational Hypothesis		Emulation Study	
S_i	Name	Γ_k	Formula	$S_i \cdot \Gamma_k$	n
S_1	Normal Takeoff	Γ_1	NA	S_1	1
S_1	Normal Takeoff, Windshear	Γ_2	$\theta_{G1} \times \beta$	$S_1 \cdot \Gamma_2$	144
S_1	Normal Takeoff	Γ_3	$\theta_{G1} \times (\beta + \beta_{error})$	$S_1 \cdot \Gamma_3$	1036
S_2	Continued Takeoff, Left-Hand Engine Out During Groundroll	Γ_4	NA	S_2	1

B. Flight Dynamics Module Construction

STEP 4. Determine the force and moment equations used to describe the flight characteristics for emulation.

The aerodynamic buildup equations for the Citation X are dedicated for use with DATCOM^{MAX}. As such, Equations 5.2 to 5.7 with Tables 4.13 to 4.18 describe the parameters presented with the following assumptions:

1. Downwash effects due to angle of attack and Mach number between the horizontal tail and horizontal tail trailing edge elevator are computed internally and contained in the aerodynamic look-up tables.
2. Center of gravity variations are represented in the moment equations with Δx_{cg} and Δz_{cg} multipliers for the relevant force variable.
3. Vehicle is assumed symmetric; therefore, lateral and directional derivatives are linear with sideslip, though the lateral and directional derivatives with sideslip are not assumed linear with angle of attack in order to capture effects due to stall for longitudinal, lateral, and directional derivatives.
4. Force and moment derivatives due to engine failure have not been included.
5. Icing terms are not included.

The force and moment equations presented describe the full aerodynamic effects experienced by the Citation X. From this set of equations the higher-order effects are decided equal to zero to represent the data-richness at CD.

It should be mentioned that assembling a correct aerodynamic database is a major effort prior to simulation; without which the flight behavior for the aircraft will be grossly misrepresented.

Drag Coefficient

$$C_D = \Delta C_{D_{W+B}}(\delta_f, M, \alpha) + \Delta C_{D_{HT+\delta_e}}(\alpha, \delta_f, \delta_{HT}, \delta_e) \cdot K_D^M(\alpha, M, \delta_f) + \Delta C_{D_{sb}}(\alpha, M, \delta_f) + \Delta C_{D_s}(\alpha, M, \delta_s) + \Delta C_{D_{LGmax}}(\alpha, M) \cdot \delta_{LG} + \Delta C_{D_{GE}}(\alpha, M, \delta_f, h_{GE}) \quad \text{Eq. 5.2}$$

Table 4.13: Citation X Drag Coefficient Buildup

Function-characteristic representation	Characteristic representation in aerodynamic buildup equation	Main affecting parameter/component	Other effecting parameters
$\Delta C_{D_{W+B}}(\alpha, M, \delta_f)$	$\Delta C_{D_{W+B}}(\delta_f, M, \alpha)$	wing+body	α, M, δ_f
$\Delta C_{D_{HT+\delta_e}}(\alpha, M, \delta_f, \delta_{HT}, \delta_e)$	$\Delta C_{D_{HT+\delta_e}}(\alpha, \delta_f, \delta_{HT}, \delta_e) \cdot K_D^M(\alpha, M, \delta_f)$	horizontal tail (δ_{HT}) and elevator (δ_e)	α, δ_f, M
$K_D^M(\alpha, M, \delta_f)$	$K_D^M(\alpha, M, \delta_f)$	Mach number (M)	α, δ_f
$\Delta C_{D_{sb}}(\alpha, M, \delta_{sb})$	$\Delta C_{D_{sb}}(\alpha, M, \delta_{sb})$	speed brake (δ_{sb})	α, M
$\Delta C_{D_s}(\alpha, M, \delta_s) = 0$	$\Delta C_{D_s}(\alpha, M, \delta_s)$	spoiler (δ_s)	α, M
$\Delta C_{D_{LGmax}}(\alpha, M)$	$\Delta C_{D_{LGmax}}(\alpha, M) \cdot \delta_{LG}$	landing gear position (δ_{LG})	α, M
$\Delta C_{D_{GE}}(\alpha, M, \delta_f, h)$	$\Delta C_{D_{GE}}(\alpha, M, \delta_f, h_{GE})$	altitude (h_{GE})	α, M, δ_f

Lift Coefficient

$$C_L = \Delta C_{L_{W+B}}(\delta_f, M, \alpha) + \Delta C_{L_{HT+\delta_e}}(\alpha, \delta_f, \delta_{HT}, \delta_e) \cdot K_L^M(\alpha, M, \delta_f) + \Delta C_{L_{sb}}(\alpha, M, \delta_f) + \Delta C_{L_{LGmax}}(\alpha, M) \cdot \delta_{LG} + \Delta C_{L_{GE}}(\alpha, M, \delta_f, h_{GE}) + C_L^q(\alpha, M, \delta_f) \cdot q \cdot \frac{b}{V} \quad \text{Eq. 5.3}$$

Table 4.14: Citation X Lift Coefficient Buildup

Function-characteristic representation	Characteristic representation in aerodynamic buildup equation	Main affecting parameter/ component	Other effecting parameters
$\Delta C_{L_{W+B}}(\alpha, M, \delta_f)$	$\Delta C_{L_{W+B}}(\delta_f, M, \alpha)$	wing+body	α, M, δ_f
$\Delta C_{L_{HT+\delta_e}}(\alpha, M, \delta_f, \delta_{HT}, \delta_e)$	$\Delta C_{L_{HT+\delta_e}}(\alpha, \delta_f, \delta_{HT}, \delta_e) \cdot K_L^M(\alpha, M, \delta_f)$	horizontal tail (δ_{HT}) and elevator (δ_e)	α, δ_f, M
$K_L^M(\alpha, M, \delta_f)$	$K_L^M(\alpha, M, \delta_f)$	Mach number (M)	α, δ_f
$\Delta C_{L_{sb}}(\alpha, M, \delta_{sb})$	$\Delta C_{L_{sb}}(\alpha, M, \delta_{sb})$	speed brake (δ_{sb})	α, M
$\Delta C_{L_s}(\alpha, M, \delta_s) = 0$	$\Delta C_{L_s}(\alpha, M, \delta_s)$	spoiler (δ_s)	α, M
$\Delta C_{L_{LGmax}}(\alpha, M) = 0$	$\Delta C_{L_{LGmax}}(\alpha, M) \cdot \delta_{LG}$	landing gear position (δ_{LG})	α, M
$\Delta C_{L_{GR}}(\alpha, M, \delta_f, h)$	$\Delta C_{L_{GE}}(\alpha, M, \delta_f, h_{GE})$	altitude (h_{GE})	α, M, δ_f
$C_L^q(\alpha, M, \delta_f)$	$C_L^q(\alpha, M, \delta_f) \cdot q \cdot \frac{b}{V}$	pitch rate (q)	α, M, δ_f

Pitching Moment Coefficient

$$C_m = \Delta C_{m_{W+B}}(\delta_f, M, \alpha) + \Delta C_{m_{HT+\delta_e}}(\alpha, \delta_f, \delta_{HT}, \delta_e) \cdot K_m^M(\alpha, M, \delta_f) + \Delta C_{m_{sb}}(\alpha, M, \delta_f) + [C_m^{\dot{\alpha}}(\alpha, M, \delta_f) \cdot C_m^q(\alpha, M, \delta_f) \cdot q] \cdot \frac{b}{V} + \Delta C_{m_{LGmax}}(\alpha, M) \cdot \delta_{LG} + \Delta C_{m_{GE}}(\alpha, M, \delta_f, h_{GE}) + C_L \cdot \Delta x_{cg} + C_D \cdot \Delta z_{cg}$$

Eq. 5.4

Table 4.15: Citation X Pitching Moment Coefficient Buildup

Function-characteristic representation	Characteristic representation in aerodynamic buildup equation	Main affecting parameter/ component	Other effecting parameters
$\Delta C_{m_{W+B}}(\alpha, M, \delta_f)$	$\Delta C_{m_{W+B}}(\delta_f, M, \alpha)$	wing+body	α, M, δ_f
$\Delta C_{m_{HT+\delta_e}}(\alpha, M, \delta_f, \delta_{HT}, \delta_e)$	$\Delta C_{m_{HT+\delta_e}}(\alpha, \delta_f, \delta_{HT}, \delta_e) \cdot K_m^M(\alpha, M, \delta_f)$	horizontal tail (δ_{HT}) and elevator (δ_e)	α, δ_f, M
$K_m^M(\alpha, M, \delta_f)$	$K_m^M(\alpha, M, \delta_f)$	Mach number (M)	α, δ_f
$\Delta C_{m_{sb}}(\alpha, M, \delta_{sb}) = 0$	$\Delta C_{m_{sb}}(\alpha, M, \delta_{sb})$	speed brake (δ_{sb})	α, M
$\Delta C_{m_s}(\alpha, M, \delta_s) = 0$	$\Delta C_{m_s}(\alpha, M, \delta_s)$	spoiler (δ_s)	α, M
$\Delta C_{m_{LGmax}}(\alpha, M)$	$\Delta C_{m_{LGmax}}(\alpha, M) \cdot \delta_{LG}$	landing gear position (δ_{LG})	α, M
$\Delta C_{m_{GR}}(\alpha, M, \delta_f, h)$	$\Delta C_{m_{GE}}(\alpha, M, \delta_f, h_{GE})$	altitude (h_{GE})	α, M, δ_f
$C_m^{\dot{\alpha}}(\alpha, M, \delta_f)$	$C_m^{\dot{\alpha}}(\alpha, M, \delta_f) \cdot \dot{\alpha} \cdot \frac{b}{V}$	angle-of-attack derivative ($\dot{\alpha}$)	α, M, δ_f
$C_m^q(\alpha, M, \delta_f)$	$C_m^q(\alpha, M, \delta_f) \cdot q \cdot \frac{b}{V}$	pitch rate (q)	α, M, δ_f
-	$C_L \cdot \Delta x_{c.g}$	C.G. x-shift ($\Delta x_{c.g}$)	α, M
-	$C_D \cdot \Delta z_{c.g}$	C.G. z-shift ($\Delta z_{c.g}$)	α, M

Side-Force Coefficient

$$C_Y = C_Y^\beta(\alpha, M, \delta_f) \cdot \beta + \Delta C_{Y_{ru}}(\alpha, M, \delta_{ru}) + \Delta C_{Y_{rl}}(\alpha, M, \delta_{rl}) + \Delta C_{Y_a}(\alpha, M, \delta_a) + \Delta C_{Y_s}(\alpha, M, \delta_s) \quad \text{Eq. 5.5}$$

Table 4.16: Citation X Side-Force Coefficient Buildup

Function-characteristic representation	Characteristic representation in aerodynamic buildup equation	Main affecting parameter/ component	Other effecting parameters
$C_Y^\beta(\alpha, M, \delta_f)$	$C_Y^\beta(\alpha, M, \delta_f) \cdot \beta$	sideslip (β)	α, M, δ_f
$\Delta C_{Y_{ru}}(\alpha, M, \delta_{ru})=0$	$\Delta C_{Y_{ru}}(\alpha, M, \delta_{ru})$	rudder upper section (δ_{ru})	α, M
$\Delta C_{Y_{rl}}(\alpha, M, \delta_{rl})$	$\Delta C_{Y_{rl}}(\alpha, M, \delta_{rl})$	rudder lower section (δ_{rl})	α, M
$\Delta C_{Y_a}(\alpha, M, \delta_a)=0$	$\Delta C_{Y_a}(\alpha, M, \delta_a)$	aileron (δ_a)	α, M
$\Delta C_{Y_s}(\alpha, M, \delta_s)=0$	$\Delta C_{Y_s}(\alpha, M, \delta_s)$	spoiler (δ_s)	α, M

Rolling Moment Coefficient

$$C_l = C_l^\beta(\alpha, M, \delta_f) \cdot \beta + \Delta C_{l_{ru}}(\alpha, M, \delta_{ru}) + \Delta C_{l_{rl}}(\alpha, M, \delta_{rl}) + \Delta C_{l_a}(\alpha, M, \delta_a) + \Delta C_{l_s}(\alpha, M, \delta_s) + [C_l^p(\alpha, M) + C_l^\beta(\alpha, M) \cdot \Delta x_{cg} \cdot \frac{2b}{l}] \cdot p \cdot \frac{l}{2V} + C_l^r(\alpha, M) \cdot r \cdot \frac{l}{2V} \quad \text{Eq. 5.6}$$

Table 4.17: Citation X Rolling Moment Coefficient Buildup

Function-characteristic representation	Characteristic representation in aerodynamic buildup equation	Main affecting parameter/ component	Other effecting parameters
$C_l^\beta(\alpha, M, \delta_f)$	$C_l^\beta(\alpha, M, \delta_f) \cdot \beta$	sideslip (β)	α, M, δ_f
$\Delta C_{l_{ru}}(\alpha, M, \delta_{ru})=0$	$\Delta C_{l_{ru}}(\alpha, M, \delta_{ru})$	rudder upper section (δ_{ru})	α, M
$\Delta C_{l_{rl}}(\alpha, M, \delta_{rl})$	$\Delta C_{l_{rl}}(\alpha, M, \delta_{rl})$	rudder lower section (δ_{rl})	α, M
$\Delta C_{l_a}(\alpha, M, \delta_a)$	$\Delta C_{l_a}(\alpha, M, \delta_a)$	aileron (δ_a)	α, M
$\Delta C_{l_s}(\alpha, M, \delta_s)$	$\Delta C_{l_s}(\alpha, M, \delta_s)$	spoiler (δ_s)	α, M
$C_l^p(\alpha, M, \delta_f)$	$C_l^p(\alpha, M, \delta_f) \cdot p \cdot \frac{l}{2V}$	roll rate (p), part 1	α, M, δ_f
$C_l^\beta(\alpha, M, \delta_f)$	$C_l^\beta(\alpha, M, \delta_f) \cdot \Delta x_{cg} \cdot \frac{b}{V} \cdot p$	roll rate (p), part 2	α, M, δ_f
$C_l^r(\alpha, M)$	$C_l^r(\alpha, M) \cdot r \cdot \frac{l}{2V}$	yaw rate (r)	α, M

Yawing Moment Coefficient

$$\begin{aligned}
 C_n = & \left(C_n^\beta(\alpha, M, \delta_f) + C_n^\beta(\alpha, M) \cdot \Delta x_{cg} \cdot \frac{b}{l} \right) \cdot \beta + \Delta C_{n_{ru}}(\alpha, M, \delta_{ru}) + \Delta C_{n_{rl}}(\alpha, M, \delta_{rl}) + \\
 & \left(\Delta C_{n_{ru}}(\alpha, M, \delta_{ru}) + \Delta C_{n_{rl}}(\alpha, M, \delta_{rl}) \right) \cdot \Delta x_{cg} \cdot \frac{b}{l} + \Delta C_{n_a}(\alpha, M, \delta_a) + \Delta C_{n_s}(\alpha, M, \delta_s) + \\
 & \left(C_n^r(\alpha, M) + 2 \cdot C_n^\beta(\alpha, M) \cdot \Delta x_{cg} \cdot \frac{2b}{l} + 2 \cdot C_Y^\beta \cdot \left(\Delta x_{cg} \cdot \frac{b}{l} \right)^2 \right) \cdot r \cdot \frac{l}{2V} + C_n^p(\alpha, M) \cdot p \cdot \frac{l}{2V}
 \end{aligned} \tag{Eq. 5.7}$$

Table 4.18: Citation X Yawing Moment Coefficient Buildup

Function-characteristic representation	Characteristic representation in aerodynamic buildup equation	Main affecting parameter/ component	Other effecting parameters
$C_n^\beta(\alpha, M, \delta_f)$	$C_n^\beta(\alpha, M, \delta_f) \cdot \beta$	sideslip (β), part 1	α, M
$C_l^\beta(\alpha, M)$	$C_l^\beta(\alpha, M) \cdot \Delta x_{cg} \cdot \frac{b}{l} \cdot \beta$	sideslip (β), part 2	α, M
$\Delta C_{n_{ru}}(\alpha, M, \delta_{ru}) = 0$	$\Delta C_{n_{ru}}(\alpha, M, \delta_{ru})$	rudder upper section (δ_{ru})	α, M
$\Delta C_{n_{rl}}(\alpha, M, \delta_{rl})$	$\Delta C_{n_{rl}}(\alpha, M, \delta_{rl})$	rudder lower section (δ_{rl})	α, M
$\Delta C_{n_{ru}}(\alpha, M, \delta_{ru}) = 0$	$\Delta C_{n_{ru}}(\alpha, M, \delta_{ru}) \cdot \Delta x_{cg} \cdot \frac{b}{l}$	C.G. x-shift ($\Delta x_{c.g.}$), part 1	α, M
$\Delta C_{n_{rl}}(\alpha, M, \delta_{rl})$	$\Delta C_{n_{rl}}(\alpha, M, \delta_{rl}) \cdot \Delta x_{cg} \cdot \frac{b}{l}$	C.G. x-shift ($\Delta x_{c.g.}$), part 2	α, M
$\Delta C_{n_a}(\alpha, M, \delta_a)$	$\Delta C_{n_a}(\alpha, M, \delta_a)$	aileron (δ_a)	α, M
$\Delta C_{n_s}(\alpha, M, \delta_s)$	$\Delta C_{n_s}(\alpha, M, \delta_s)$	spoiler (δ_s)	α, M
$C_n^r(\alpha, M)$	$C_n^r(\alpha, M) \cdot r \cdot \frac{l}{2V}$	yaw rate (r), part 1	α, M
$C_n^\beta(\alpha, M)$	$2 \cdot C_n^\beta(\alpha, M) \cdot \Delta x_{cg} \cdot \frac{b}{l} \cdot r \cdot \frac{1}{V}$	yaw rate (r), part 2	α, M
$C_Y^\beta(\alpha, M, \delta_f)$	$2 \cdot C_Y^\beta(\alpha, M, \delta_f) \cdot \left(\Delta x_{cg} \cdot \frac{b}{l} \right)^2 \cdot r \cdot \frac{l}{2V}$	yaw rate (r), part 3	α, M
$C_n^p(\alpha, M)$	$C_n^p(\alpha, M) \cdot p \cdot \frac{l}{2V}$	roll rate (p)	α, M

STEP 5. *Specify the flight parameters used to describe the physical form and operational factors in VATES.*

- The 'constant.inp' file contains greater than 125 model constants defining the reference and initial physical attributes of the Citation X. Many of the variables are first introduced with Appendix B *Citation X Geometry Description*, but are now visualized in a VATES compatible format. See Appendix D for the full file description.
- The 'variable.inp' file includes greater than 300 model constants defining flight dynamics module parameters and 'hypothesis' factors describing the physical aircraft and operational environment. See Appendix D for the full file description.

C. Generation of 'Parametric Definition'

STEP 6. *Determine the aerodynamic model used to describe the flight characteristics.*

The following conditions for are imposed for data construction with the DATCOM^{MAX} code for each of the five configuration setting = {Clean, Partial No. 1, Partial No. 2, Partial No. 3, Full}:

- Mach number (M) $\in \{0.0, \dots, 0.5\}$ at $\Delta h = 0.1$
- Altitude (h) \in at constant sea level due to the lack atmospheric variation at low altitude
- Center of gravity locations: $\Delta x_{cg} = 9.754$ m (forward position) and $\Delta z_{cg} = 0.0$ m
- Ground effect altitudes (h_{GE}) $\in \{1.430, 4.845, 9.690\}$ [m]
- Angle of attack (α) $\in \{-4.0, \dots, 30.0\}$ [$^{\circ}$] by $\Delta h = 2.0^{\circ}$
- Elevator deflection (δ_e) $\in \{-15.0, \dots, 20.0\}$ [$^{\circ}$] by $\Delta h = 5.0^{\circ}$
- Horizontal tail defection (δ_{HT}) $\in \{-1.2, \dots, 12.0\}$ [$^{\circ}$] by $\Delta h = 2.0^{\circ}$
- Aileron defection (δ_a) $\in \{-15.0, \dots, 15.0\}$ [$^{\circ}$] by $\Delta h = 5.0^{\circ}$
- Spoiler defection (δ_s) $\in \{-40.0, \dots, 40.0\}$ [$^{\circ}$] by $\Delta h = 10.0^{\circ}$
- Lower rudder defection (δ_{lr}) $\in \{-29.5, \dots, 29.5\}$ [$^{\circ}$] by $\Delta h = 15.0^{\circ}$

- Speed brake deflection (δ_{sb}) $\in \{30.0, 60.0\}$ [°]
- Undercarriage position (δ_{ig}) $\in \{\text{up, down}\}$

From the original Digital DATCOM, this source code variation has an added capability to repeat the angle of attack, altitude, and Mach number run for undercarriage settings, spoiler deflections, leading-edge flap settings, trailing edge flap settings, ground-effect, horizontal tail incidence, elevator deflection, rudder deflection, and aileron deflection

STEP 7. Determine *the propulsion models used to describe the flight characteristics.*

Recall that the Citation X is designed for two mission objective functions: (1) low-speed, longer-range, maximum fuel weight design cruise, and (2) high-speed, shorter range, middle payload weight high-speed cruise. In developing the propulsion model, the more demanding case is the high-speed mission with the thrust constraint along the mission profile during cruise. The design optimization tool PrADO performs an internal performance estimation coupled with a weight analysis to generate the propulsion model.

STEP 8. Determine *the weights and inertia models used to describe the flight characteristics.*

Recall that the Citation X is designed for two mission operation: (1) low-speed, longer-range, maximum fuel weight design cruise, and (2) high-speed, shorter range, middle payload weight high-speed cruise. In developing the weights and inertia models, the more demanding case is the design mission with the weight constraint along the mission profile during takeoff. The design optimization tool PrADO performs an internal weight estimation calibrated with a performance analysis to generate weight and inertia models for the symmetric Citation X.

D. ‘Parametric Definition’ Data Synthesis to VATES Standard

STEP 9. Prepare *the parametric definition files for conversion into the VATES data standard.*

A description of the final parametric definition files is found in Appendix E (aerodynamics characteristics), Appendix F (propulsion characteristics), and Appendix G (weight and inertia characteristics).

4.5.2 Flight Test Simulation (Parametric)

With the necessary inputs prepared in VATES data standard, the flight scenarios can be organized and executed.

STEP 1. *Develop a graphical framework for the baseline test case.*

For each baseline scenario, $\{S_1, \dots, S_2\}$, the system model is tested. For this set: S_1 (normal takeoff), S_2 (continued takeoff), Figures 4.17 and 4.18 are build to facilitate communication with the researcher and more importantly to navigate the input files 'G101.inp', 'G102.inp', 'G103.inp', 'G104.inp', and 'G105.inp' for M&S. That is:

- $S_1 = \Omega_1(E) \cup \Omega_1(\Pi)$, where $\Omega_1(E) = \{E_1, \dots, E_9\}$ and $\Omega_1(\Pi) = \{T_1, \dots, T_4, P_1, \dots, P_4\}$
- $S_2 = \Omega_2(E) \cup \Omega_2(\Pi)$, where $\Omega_2(E) = \{E_1, \dots, E_9\}$ and $\Omega_2(\Pi) = \{T_1, \dots, T_5, P_1, \dots, P_8\}$

The directed graphs for the hypothesis experiments ($S_1 \Gamma_2$ and $S_1 \Gamma_3$) are largely unchanged from the baseline situation S_1 and include the operational factor variations for study, see Figure 4.19 and 4.20.

It should be worth noting that the chronology of the events calendar specified does not have to equal the events calendar simulated, given that a criteria or violation may unknowingly constrain the system and change the order of events and processes for the M&S.

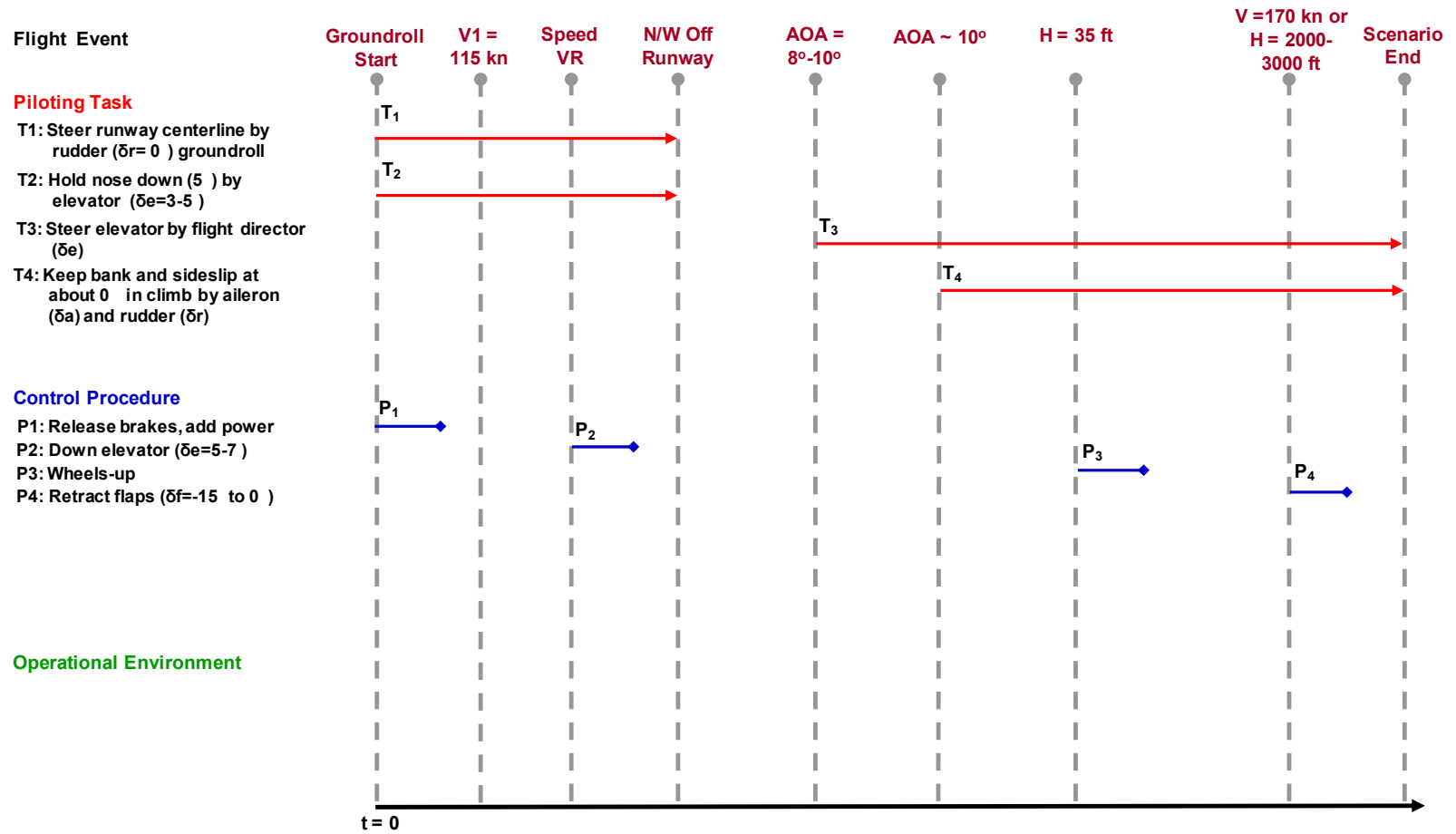


Figure 4.17: S₁: Normal Takeoff Scenario

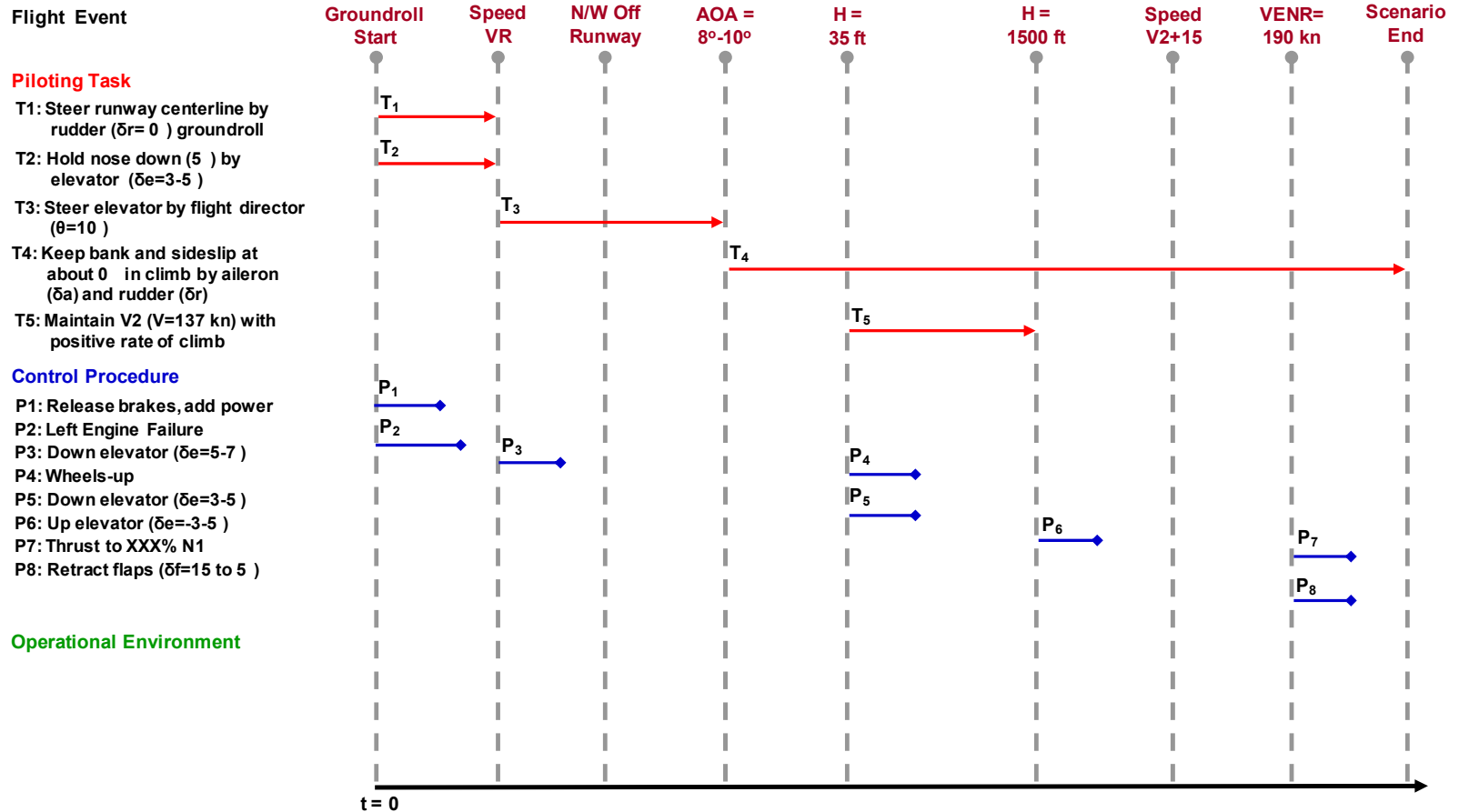


Figure 4.18: S₂: Continued Takeoff – Speed Above V1 (OEI): Return To Departure Airport Scenario

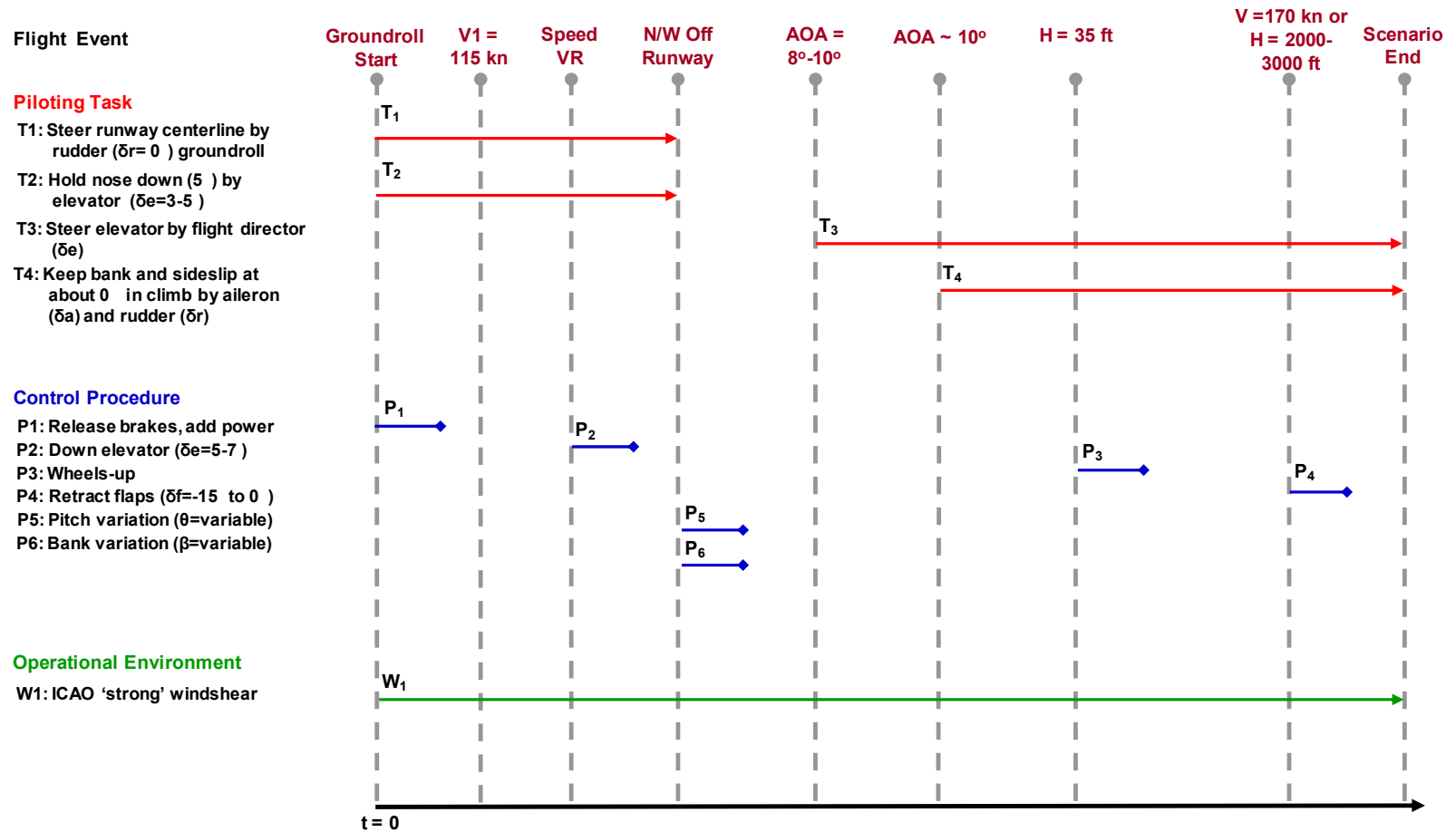


Figure 4.19: $S_1 \Gamma_2$: Normal Takeoff, Under Wind-shear, Variations of Flight Path Angle, and Bank Angle

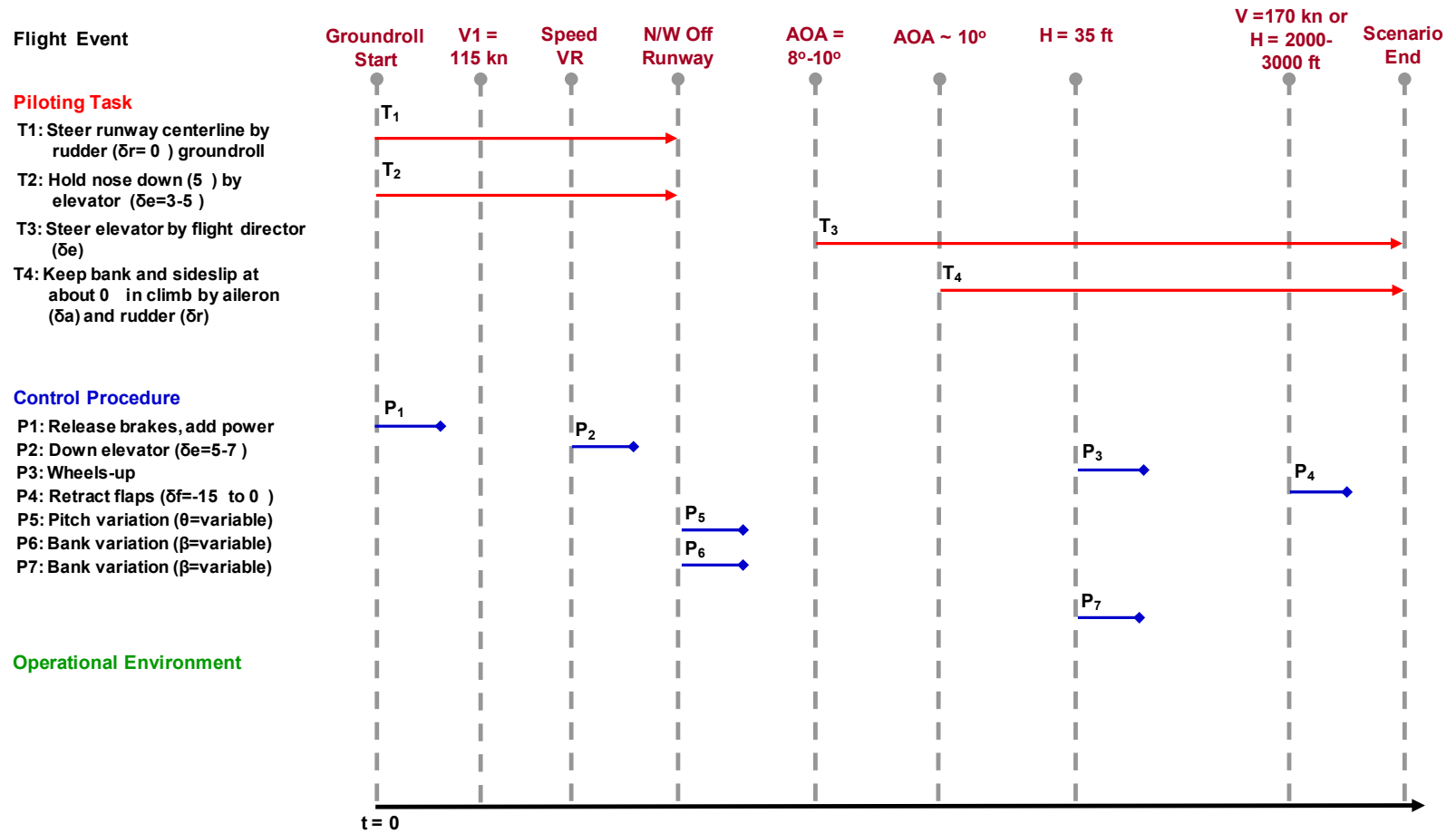


Figure 4.20: S₁ Γ₃ – Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Initial Bank Angle Errors

4.5.3 Flight Test Assessment

In total, the objective of the flights simulated has been to a) expose the VATES tool, and b) to demonstrate the design contribution capability to the conceptual design phase. Accordingly, the primary (\mathbf{S}_1 – Normal Takeoff, \mathbf{S}_2 – Continued Takeoff – Speed Above V1 (OEI): Return To Departure Airport) and derivative ($\mathbf{S}_1 \Gamma_2$ Normal Takeoff, Under Wind-shear, Variations of Flight Path Angle, and Bank Angle, $\mathbf{S}_1 \Gamma_3$ – Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Initial Bank Angle Errors) scenarios are meant to expose the decision-maker to concerns from manufacturers, flight testing bodies, certification authorities, operators, accident investigation groups, and pilot training education during the configuration evaluation. As such, this concept of flight scenario initiation enables the user to a) plan and b) execute benign to complex flight cases in an accelerated time frame. For instance, the aggregate accumulation of virtual flight test time and experience for all scenarios, $\{\mathbf{S}_1, \mathbf{S}_2\}$, is in excess of 27 hours full-scale aircraft flight testing, as compared to the M&S experiment duration of approximately fifteen minutes. With the following the test results are presented with the assumption that the designer has the frame of mind of a pilot, recall the earlier development of the ‘safety module’, for any flight or operating segment of the product life-cycle coupled with the design freedom provided by the conceptual design phase.

- \mathbf{S}_1 – Normal Takeoff

Deliverable Type

Graph-analytical format \mathbf{M}_1 is used to plot the time histories to simulate a micro-flight test experience for study, see Figure 4.21. The series consists of 1 flight, \mathbf{F}_{2179} , with monitored variables $x_i = f(t)$, $x_i \in \{V_{IAS}, H, \dot{Z}, \alpha, \theta, \delta_e, \phi, \delta_a, \beta, \delta_r, \delta_f, \psi, \delta_{ig}, \gamma, T_1, T_2, E, \delta_{th}, n_z, M\}$ for $t=100s$.

Flight Description

In this experiment, the situational model, $\mathbf{S}_1 = \Omega_1(\mathbf{E}) \cup \Omega_1(\mathbf{\Pi})$, does not observe any violation or additional risk beyond that commonly encountered during normal flight operations. The flight behavior compares well to the directed graph scenario description. Each of the variables monitored, x_i , are well within the design-tolerance values referenced earlier in Chapter 4.5.1. *Flight Test Scheduling – Part A: Step 1.*

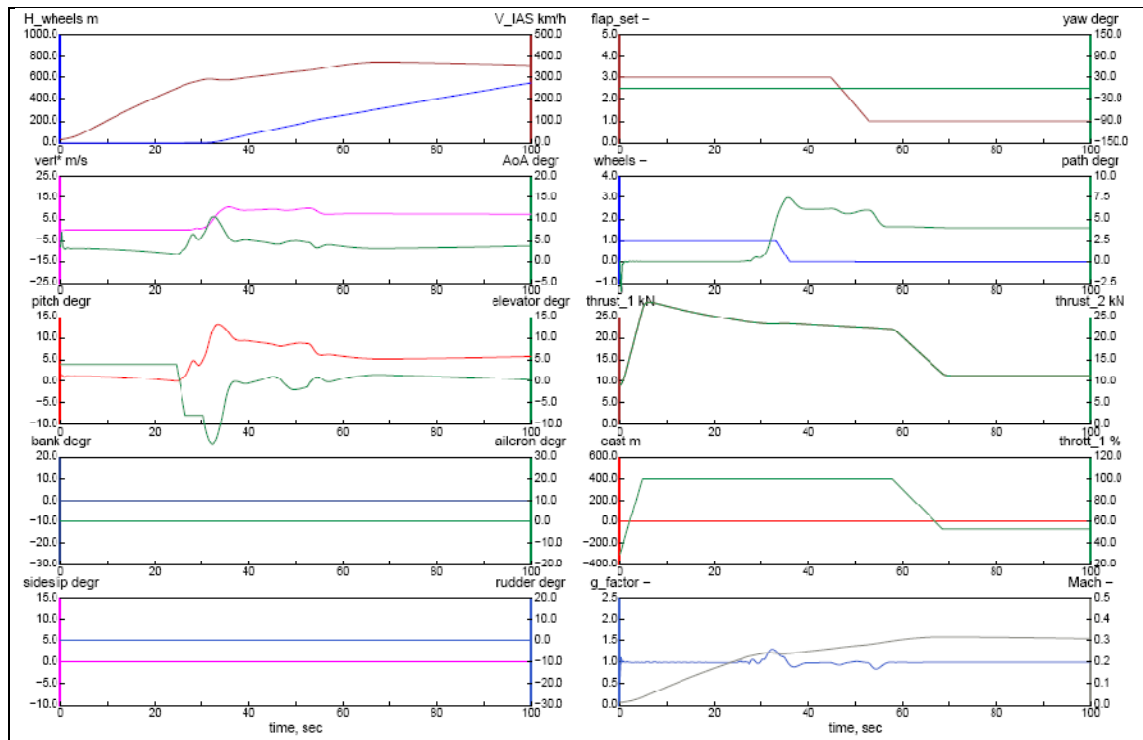


Figure 4.21: F_{2179} : “Normal Takeoff”, M_1 : Flight Vehicle Time History

Result

The silicon piloting recommendations and constraints at continued takeoff are as follows. There are no areas of concern to the decision-maker. Consequently this flight emulation is a standard case detailing flight-handbook, thus non-dangerous, operation of the aircraft. This result is not surprising since the Citation X is a certified product combined with an exceptional safety-record. Obviously, this individual flight test does not illustrate the decision-maker the aircraft’s response to design-critical off-mission situations, should a derivative case arise. The

following off-design flight situation models a design-critical flight condition (takeoff under wind-shear) for the Citation X.

- **S₁ Γ₂** – Normal Takeoff, Under Wind-Shear, Variations of Flight Path Angle, and Bank Angle

Deliverable Type

Graph-analytical format $\{M_2, M_4, M_5, M_6, M_7, M_8\}$ are used to present a flight event time-history, partial safety spectrum, integral safety spectrum, family of integral flight safety spectra, situation complexity buildup diagram, and situational tree of flight to simulate the macro-flight test experience for study, see Figures 4.22 to 4.25. This set consists 144 flights, $\{F_{2010}, \dots, F_{2154}\}$, with monitored variables $x_i = f(t)$, $x_i \in \{V_{IAS}, H, \dot{Z}, \alpha, \theta, \delta_e, \Phi, \delta_a, \beta, \delta_r, \delta_f, \Psi, \delta_{lg}, \gamma, T_1, T_2, E, \delta_{th}, n_z, M\}$ for $t=50s$. For the purposes of this discussion, a subset of two flights is shown for illustration purposes: (a) F_{2043} (standard takeoff mission) where $\theta_{G1} = 0.0^\circ$ and $\beta = 0.0^\circ$, and (b) F_{2175} (complex takeoff at sideslip and very high pitch) where $\theta_{G1} = 30^\circ$ and $\beta = 14^\circ$.

Flight Description

In this experiment, the baseline situational model, $S_1 = \Omega_1(E) \cup \Omega_1(\Pi)$, is sensitive to wind-shear and variations of the following factors: (1) initial commanded flight angle (θ_{G1}) at E_4 (nose-wheel off runway), and (3) commanded bank angle (β) at E_4 (nose-wheel off runway). The objective of the flight set is to determine the ability of the Citation X to survive interaction with a strong-intensity microburst with the correct pilot reaction under conditions of operation. Thus, the variables, x_i , are monitored individually or shown as integral summaries with fuzzy constraint tolerances fixed as referenced earlier in Chapter 4.5.1. *Flight Test Scheduling – Part A: Step 1*. Note that in the calendar in events, $\Omega_1(E)$, E_6 (\sim AoA = 10°) is removed and the processes, $\Omega_1(\Pi)$, are shifted to focus on the pilot, aircraft, and flight environment interaction under a microburst.

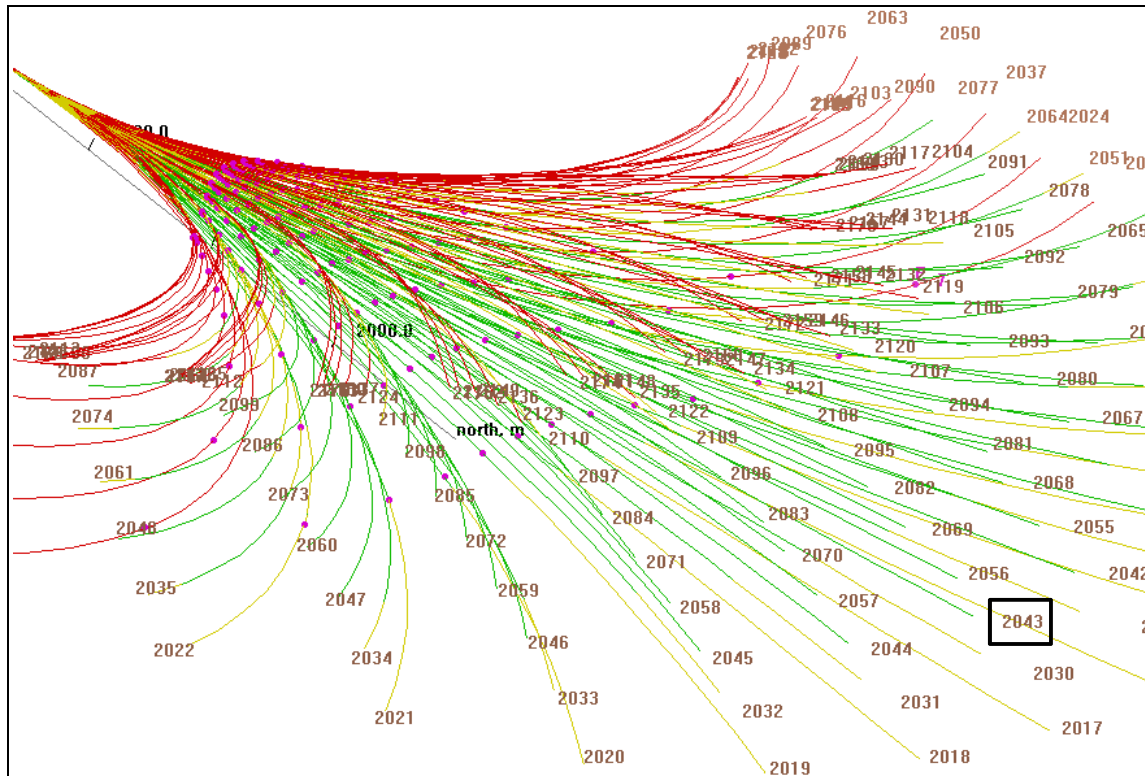


Figure 4.22: (a) $S_1 \Gamma_2 - F_{2043}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle” M_8 : Situational tree of flight.

The quantitative top-level evaluation from Figure 4.22 displays the flight trajectories as a function of integral safety spectra. The region under microburst interference can be readily viewed for the dangerous (red) situations when flights near the baseline, F_{2043} , at pitch angles approaching 30° deviate in flight path by a decrease in altitude. Initially, it appears that the Citation X possesses the capability to outlast a strong wind-shear profile.

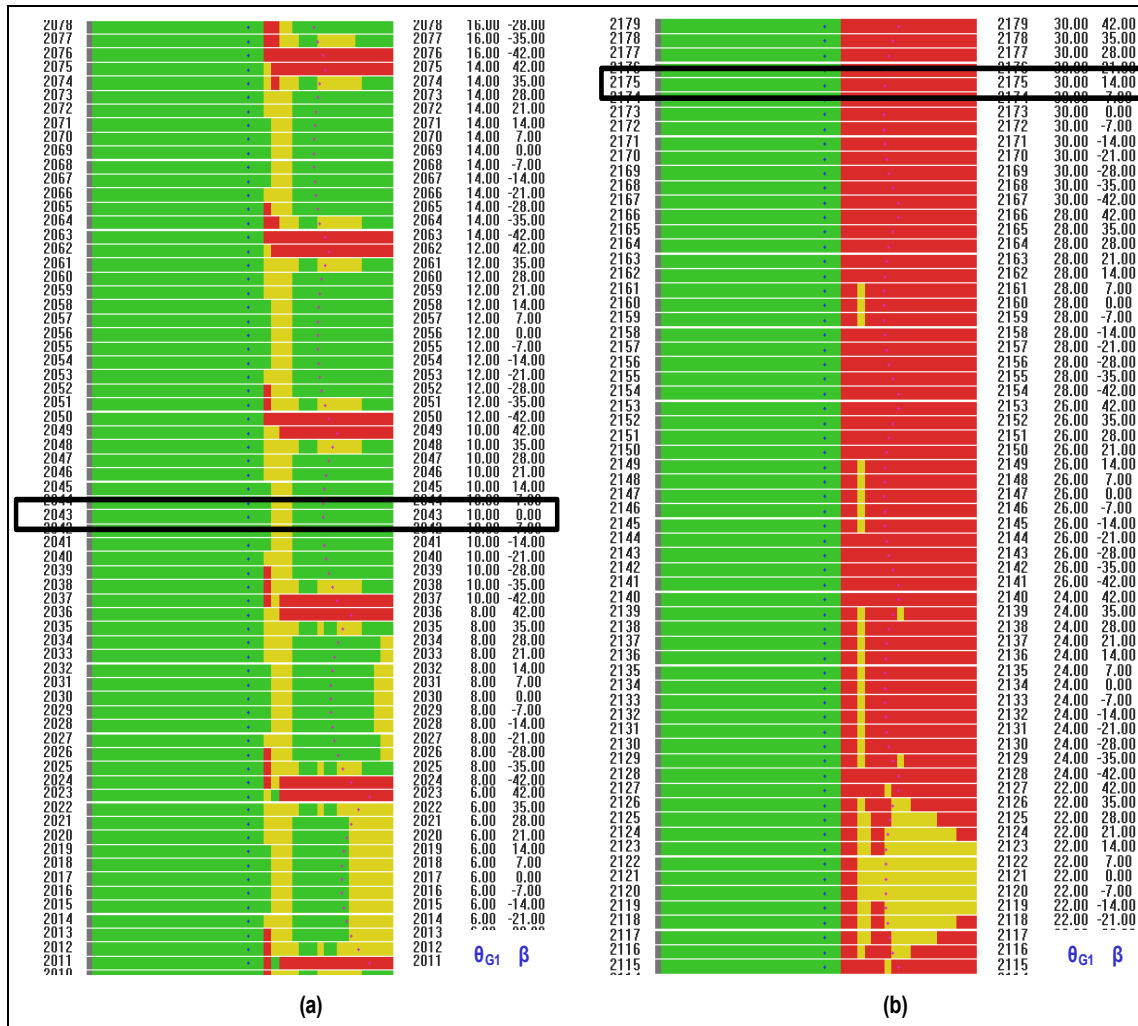


Figure 4.23: (a) $S_1 \Gamma_2 - F_{2043}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle” M_6 : Family of integral flight safety spectra.

Figure 4.23 assesses a subset of the integral spectra event chains neighboring the: (a) non-standard flight, F_{2175} , and (b) baseline flight, F_{2043} . Case A and its local flight situations are principally regarded as safe (green), though a conditionally safe (yellow) and dangerous region (red) do emerge at low pitch commanded flight paths and maximum and minimum commanded bank angle, respectively. The latter flight behavior due to bank angle is due to flight envelope constraints since the vehicle is beyond the wind-shear. Opposite this environment is Case B which observes the upper values for pitch commanded flight path θ_{G1} . Here the majority of

prohibitive situations (red) are caused by the close proximity to the wind-shear as pitch increases while the flights at bank angle limits are dangerous for the previous reason stated. Again, it is confirmed that in this Citation X simulation, the design does not fail in adverse weather condition.

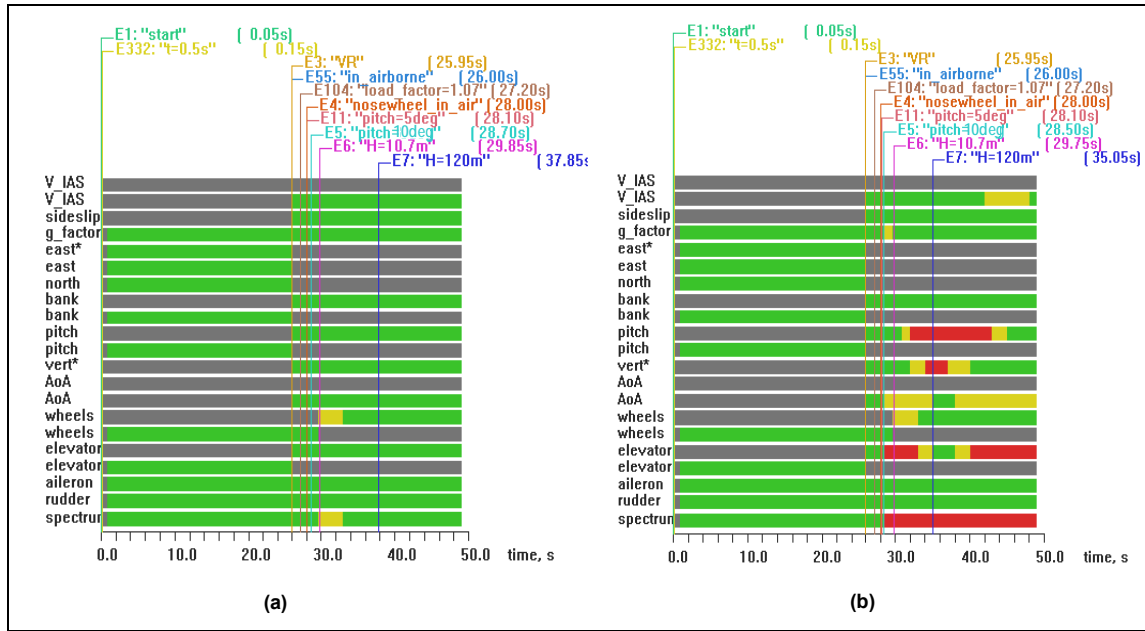


Figure 4.24: (a) $S_1 \Gamma_2 - F_{2043}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle” M_2 : Flight event time-history; M_4 : Partial safety spectrum; M_5 : integral safety spectrum.

A closer examination of F_{2043} and F_{2175} is presented through partial safety spectra in Figure 4.24. Note the events time-history at the top of the figure; the microburst is eventually at $t=28.7s$ becoming an active part of the scenario after $E_5 - AoA = 8^\circ$ to 10° (pitch = 10°). The silicon pilot in baseline Case A is indifferent to effects of the wind-shear, still representing a safe situation (green) at this stage. The landing gear retraction poses the largest challenge. The piloting tasks (T) and the control procedures (P) do not require change given that the wind height is beyond the zone of flight. With a $\theta_{G1}=30^\circ$ and $\beta=14^\circ$, the Case B pilot squarely encounters the wind-shear in its trajectory path as indicated by the red (dangerous) integral safety spectra. Consequently, the monitored variables in the longitudinal plane (elevator

deflection, angle of attack, and pitch angle) determine the type of flight risk change. Here, the horizontal tailplane elevator deflection angle, δ_e , approaches the saturation limit though the angle of attack followed by load factor and pitch angle recovers sufficiently to reduce chances of an incident or accident.

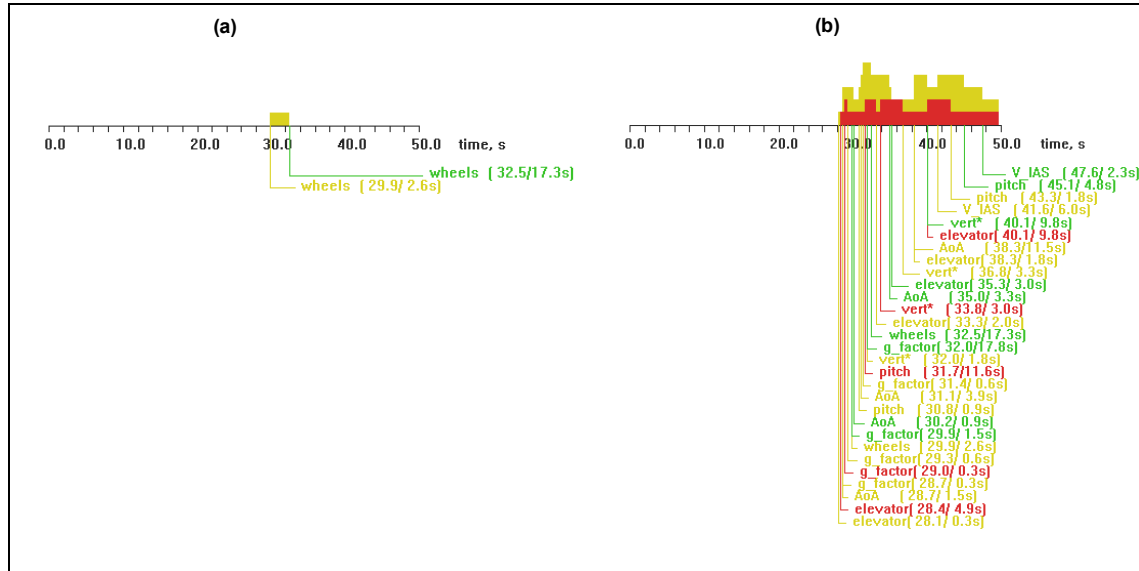


Figure 4.25: (a) $S_1 \Gamma_2 - F_{2043}$: “Normal Takeoff, Under Windshear, Variations of Flight Path Angle, and Bank Angle”; (b) $S_1 \Gamma_2 - F_{2175}$: “Normal Takeoff, Under Wind-Shear, Variations of Flight Path Angle, and Bank Angle” M_7 : Situation complexity buildup diagram.

With the above stated, the effects of pilot workload become a serious issue. Figure 4.25 illustrates Case A, F_{2043} , representing a single problem which can be managed by the pilot without concern. Conversely the monitored workload for Case B peaks at about $t=32s$ where five operational factors must be observed at the onset of the wind-shear: pitch angle, load factor, angle of attack, landing gear position, and elevator deflections. Through the end of the simulation, the workload remains relatively high and is only complicated by the continued variation of safety level for the flight variables.

Result

The silicon piloting recommendations and constraints at $S_1 \Gamma_2$ normal takeoff under wind-shear are as follows. Ideally, if a strong or higher wind intensity is anticipated, the takeoff

decision to abort must be initiated. In case the pilot inadvertently enters a stronger microburst zone during takeoff, the operational procedures must be in place to recommend that the reduce flaps procedure must be held as late as possible to decrease the flight risk. While the Citation X has been surviving the simulated direct wind-shear encounter and avoidance (by commanded bank angle), the opportunity for unexpected multifactor cause and effect relationships does exist to transition the system at any time into a critical flight condition. In a conceptual design setting, the decision-maker is, at this point, challenged to decide and communicate an actual decision-feedback addressing the level of operational risk that could endanger the aircraft in case remedial action is not implemented in either the design (i.e. improve the aerodynamics, propulsion systems, structures and material, etc.) or the operational procedure. Consequently, the illustrated macro-flight test emulation enforces the apprehensions of manufacturers, operators, flight test engineers, certification bodies, and incident/accident investigators with regards for types and occurrences of nonstandard operation of the aircraft.

With the effects of flight in adverse weather tested, the objective of the following flight set is to determine violations or additional risks at regular, critical, incorrect, and multifactor conditions of operation.

- **S₁ Γ₃** – Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Initial Bank Angle Errors

Deliverable Type

The graph-analytical format $\{M_6, M_7\}$ is used to introduce a situational tree of flight and a family of integral flight safety spectra in order to simulate the macro-flight test experience for study, see Figure 4.26 and 4.27 respectively. The set consists 1036 flights, $\{F_{3300}, \dots, F_{4336}\}$, with monitored variables $x_i = f(t)$, $x_i \in \{V_{IAS}, H, \dot{Z}, \alpha, \theta, \delta_e, \phi, \delta_a, \beta, \delta_r, \delta_f, \psi, \delta_{ig}, \gamma, T_1, T_2, E, \delta_{th}, n_z, M\}$ for $t=100s$.

Flight Description

In this experiment, the situational model, $S_1 = \Omega_1(\mathbf{E}) \cup \Omega_1(\mathbf{\Pi})$, is sensitive to variations of the following factors: (1) uncommanded bank angle error at E_4 (nose-wheel off runway), (2) commanded flight angle (θ_{G1}) at E_4 (nose-wheel off runway), and (3) bank angle (β) at E_8 ($V = 170\text{kn}$). The objective of this flight set is to determine violations or additional risks at regular, critical, incorrect, and multifactor conditions of operation. Thus, the variables monitored, x_i , are shown as integral summaries with tolerance values embedded as fuzzy constraints referenced earlier in Chapter 4.5.1. *Flight Test Scheduling – Part A: Step 1*.

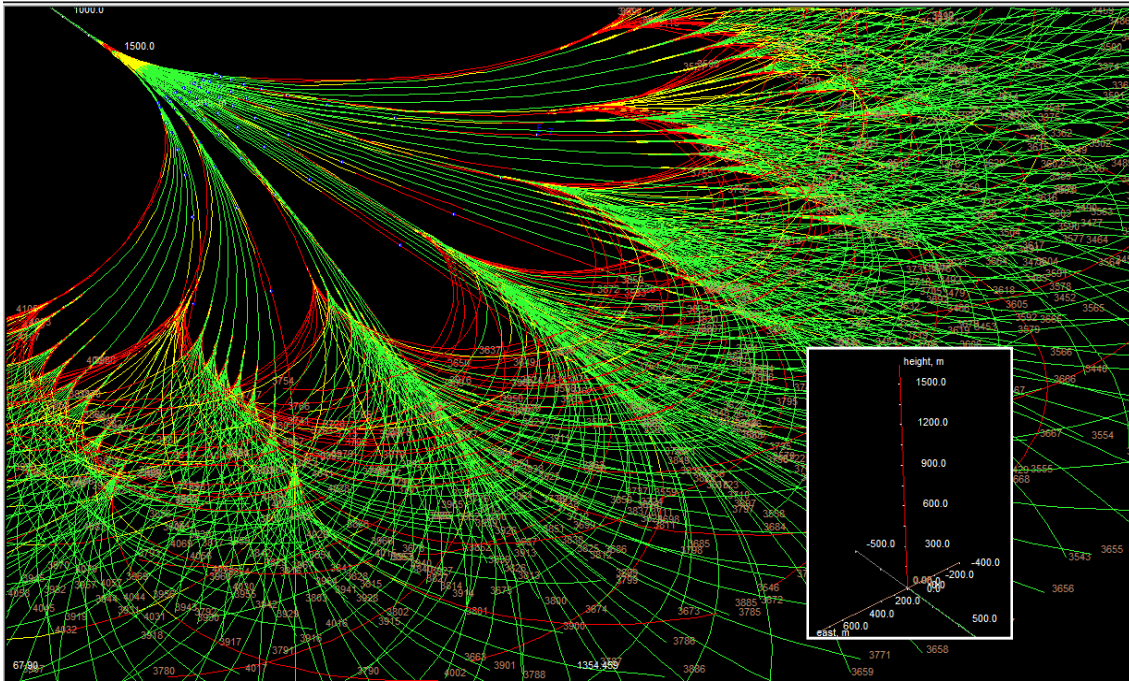


Figure 4.26: $S_1 \Gamma_3$: “Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Bank Angle Errors Introduced”, M_8 : Situational tree of flight.

The quantitative evaluation of the flight situational tree Figure 4.26 shows safety levels of integral spectra for:

- Shallow flight path (θ_{G1}) angles (2° - 3°) result in potentially unsafe or dangerous conditions that tend to become catastrophic after E_7 ($H = 35\text{ft}$) approaching sideslip limit conditions for any commanded bank angle.

- As the uncommanded bank angle (β_{error}) approaches zero, the number of prohibitive flight situations decreases. After E_7 ($H = 35\text{ft}$), the closer the commanded bank angle approaches zero, the smaller the risk of a potentially unsafe situation.
- With the pitch angle increasing to 10° , the limiting uncommanded bank angles $\beta_{\text{error}} = \{-15, -10, +10, +15\}$ [$^\circ$] are becoming critical thus a danger concern; depending on the commanded bank angle, this situation is improved as the pilot directs the vehicle to a flight path resembling that of the baseline.

The qualitative analysis, shown with Figure 4.27, for an active subset region for flight = $\{F_{3358}, \dots, F_{3416}\}$ contains the neighboring situations: $\beta_{\text{error}} = \{-15^\circ\}$, $\theta_{G1} = \{6^\circ, \dots, 10^\circ\}$, and $\beta = \{-42^\circ, \dots, +42^\circ\}$. The diagram is dominated by demanding flight dynamics at $\theta_{G1} = \{9^\circ, 10^\circ\}$ for every instance of commanded bank angle due to marginally adequate: (1) longitudinal control (elevator) power available, (2) directional control (rudder) power available, and (3) lateral control (aileron) power available. Thereby, cause and effect relationships imply that, if not yet, conditions will continue to deteriorate with the possible exception of conditionally safe (yellow) flights where positive commanded bank angles are restoring control though high angle of attack issues remain. The opportunity for overall safe flight increases as θ_{G1} lowers from 8° to 6° despite the higher risk flight at negative bank angles.

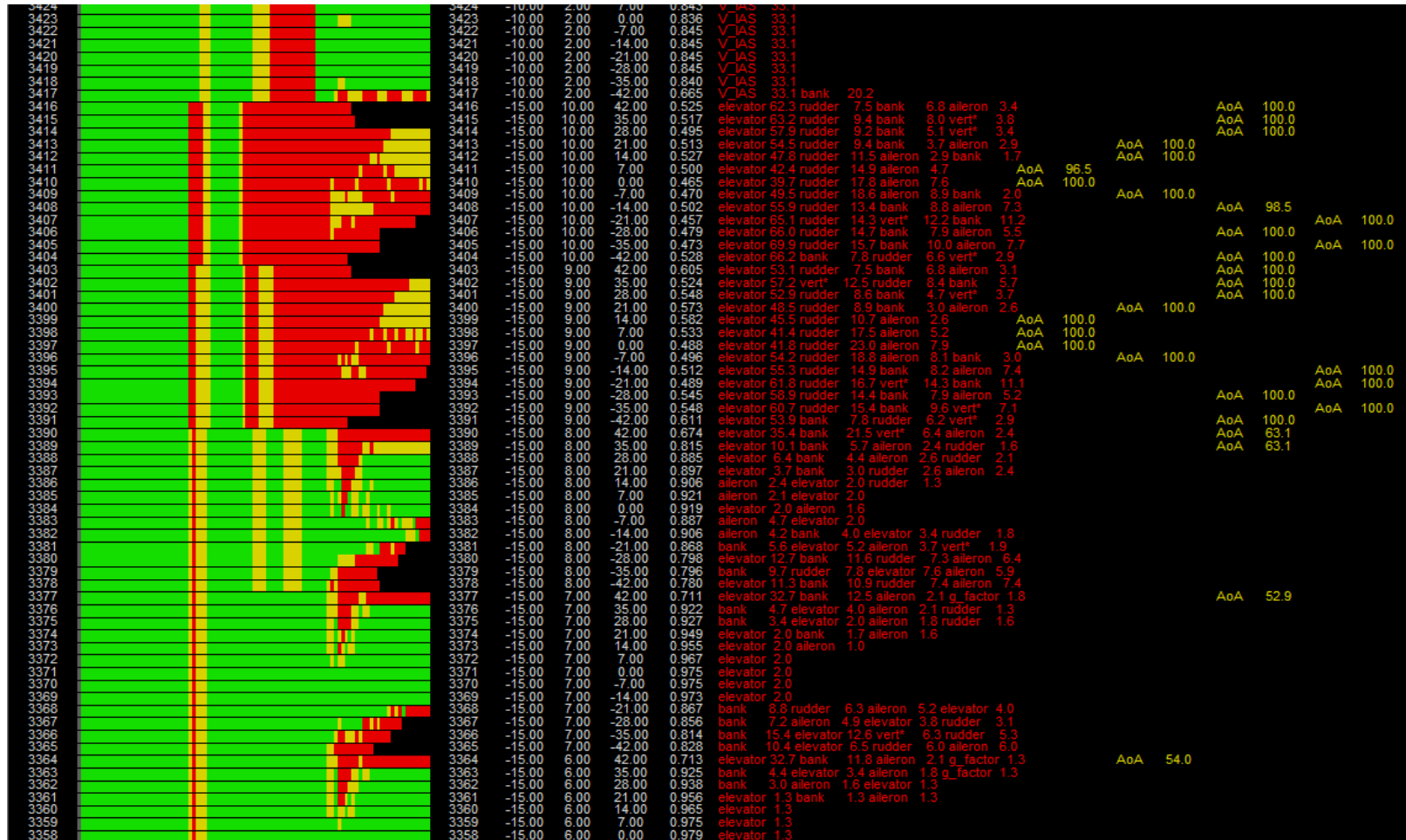


Figure 4.27: $S_1 \Gamma_3$: “Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Bank Angle Errors Introduced”, M_6 : Family of integral flight safety spectra.

Result

The silicon piloting recommendations and constraints at $S_1 \Gamma_3$ normal takeoff are as follows. If the Citation X inadvertently enters flight into an uncommanded sideslip flight condition, the 'silicon-pilot' must recognize the potential for an event chain-reaction due to control effector saturation for the longitudinal and lateral/direction axes, resulting in immediate corrective action to maneuver to a zone of non-dangerous flight without violating the critical angle of attack. If flight towards a non-dangerous flight zone does not present an operational option, the decision-maker must consider the acceptable risk level for situation occurrence and present alternatives for a design change. Consequently, this macro-flight test emulation enforces the apprehensions of aircraft designers, flight test engineers, certification bodies, and incident/accident investigators during non-standard operation of the aircraft.

Next, Citation X operational issues with single engine out during takeoff are examined.

- S_2 – Continued Takeoff, With Left-Engine Inoperative During Ground Roll

Deliverable Type

Graph-analytical format M_1 is used to plot the time histories to simulate a micro-flight test experience for study, see Figure 4.28. The series consists of one flight, F_{2185} , with monitored variables $x_i = f(t)$, $x_i \in \{V_{IAS}, H, \dot{Z}, \alpha, \theta, \delta_e, \phi, \delta_a, \beta, \delta_r, \delta_f, n_z, \delta_{ig}, \gamma, T_1, T_2, E, \delta_{th}, M, \Delta x_{cgf}\}$.

Flight Description

In this experiment, the situational model, $S_2 = \Omega_2(E) \cup \Omega_2(\Pi)$, does not observe any violation or additional risk beyond that encountered during emergency flight operations of the aircraft. Each of the variables monitored, x_i , are within the tolerance values referenced earlier in Chapter 4.5.1. *Flight Test Scheduling – Part A: Step 1*. Until the left engine fails at $t = 50$ sec, the flight behavior is highly indistinguishable from ' S_1 – normal takeoff', see Figure 4.21. For $t > 50$ sec the aircraft possesses adequate control power to return to the airport and the flight events are ended before E_6 (H = 1500 ft) since the constraining condition is understood. Note;

only the rudder deflection ($\delta_r = -25^\circ$) approaches a critical limit of 29.5° , while the elevator deflection, δ_e , and aileron deflection, δ_a , effector characteristics increase only moderately during the malfunction for OEI flight condition, $\delta_r = \text{Partial No. 3}$.

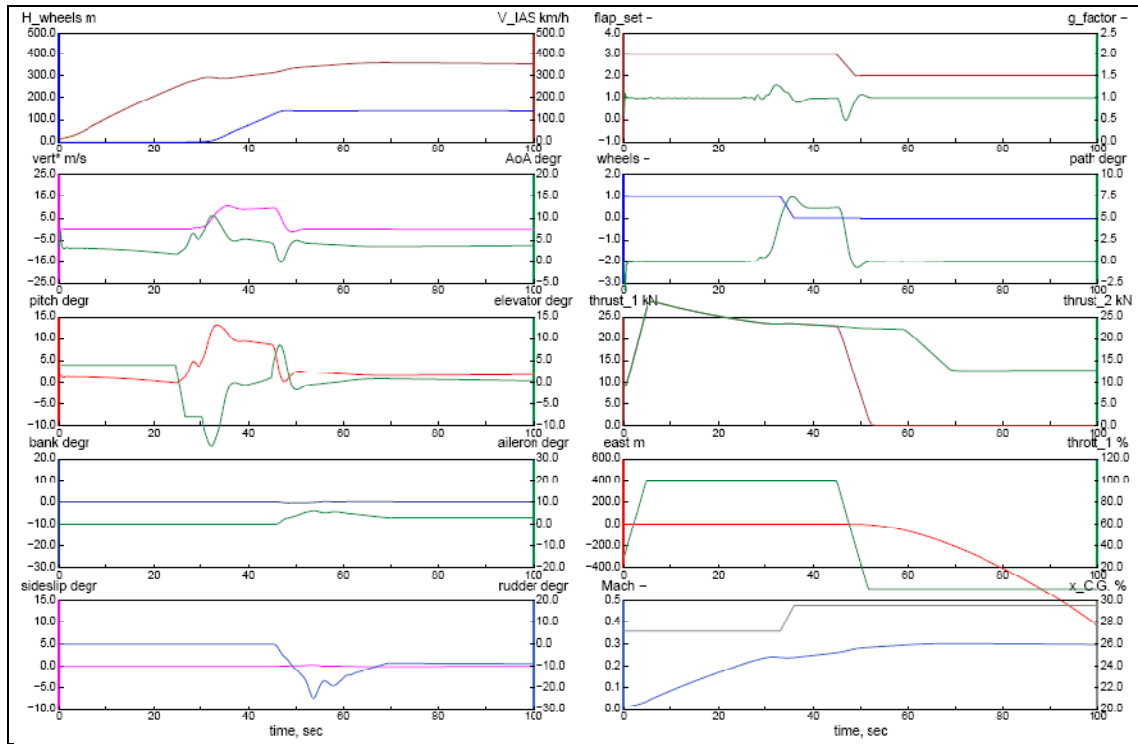


Figure 4.28: F_{2185} : “Continued Takeoff”, M_1 : Flight Variable Time History

Results

The silicon piloting recommendations and constraints at continued takeoff are as follows. If the decision speed (V_1) event has passed the pilot must be prepared with the correct recovery procedure to complete the mission and/or improve the immediate flight behavior. As such the controller effector characteristics should be well understood before making flight decisions in demanding conditions. This single, flight case provides a specific insight into a failure condition however is limited in terms of decision-maker overall insight for risk control and management.

4.5.4 Product Review

As a result of this Citation X study, it is identified that for a takeoff flight scenario the pilot and flight vehicle behavior is representative of that experienced in true flight for the S_1 (normal takeoff) and S_2 (continued takeoff) baselines.⁸² While it obviously is not possible to confirm every hypothesis (simulated) flight variation with real-world data, it is important to realize that the degree of safety depends not only on a baseline scenario but also on the perturbation of operational factors. That being said, for a decision-maker in the conceptual design environment, it is this anticipation of identifying flight safety constrained regions that may present an opportunity for design changes, overall resulting in project or program risk and cost management.

Since the Citation X is already a mature operational vehicle, this work is regarded more as a re-engineering exercise to demonstrate the the prototype system representing the newly defined 'flight safety' aircraft conceptual design discipline. Based on the safety characteristics presented, it remains a challenge to adequately suggest product feedback proposals to the customer group involved. Clearly, the assembled safety module is capable of producing an organized Citation X product evaluation feedback, including more aggressive hypothesis experiments for mission profile regions more directly represented in reduced form at conceptual design such as engine out conditions, stall conditions, minimum control speed, maneuvering flight, etc. with variations of pilot decision tactics and the operational flight environment. In general the objective would test the system response to design constraining flight conditions.

4.6 Summary

This chapter has detailed the step-by-step buildup for a conceptual design flight test emulation methodology and the functioning prototype software. In doing so, the overall methodology logic and enabling software elements have been validated to demonstrate functioning for the Cessna Citation X. Accordingly, the decision-maker has at his disposal the beginnings of a flight safety module for advanced configuration evaluation to actively search out design challenges.

CHAPTER 5
CONTRIBUTIONS SUMMARY AND RECOMMENDATIONS

5.1 Contributions Summary

From the onset of the development, the AVD Lab Product Life-Cycle Process has had the objective not being a theoretical concept, but rather a practical concept ready for immediate use in industry, research laboratories and government organizations. The presented research investigation has been a experiment conducted by the author to introduce a new discipline, flight safety, to conceptual desisgn. The aim has been from the outset to arrive at a commonsense approach to simulate flight test, operation, incident and accident investigation during the early aircraft conceptual design phase. In retrospect, the research contribution has been to develop the process and framework to address FT/O//AI uniquely with: (1) the data-richness compatible with the conceptual design phase, and (2) the ability to close the cause-and-effect 'holes' in the flight envelope by identifying known-unknowns and revealing unknown-unknowns to the decision-maker.

To accomplish such development environment, the development challenges encountered have been both unique and exciting. The activities have included: building a Fortran source-code (DATCOM^{MAX}), calibrating the research process with Dr. Burdun in a different time zone (Novosibirsk, Russia), adapting VATES being a disciplinary technology tool principally derived for real-world FT/O//AI to a first-order emulation capability of FT/O//AI by working with the data-richness akin to the conceptual design phase, and to learn the disciplinary trades of the technologist (disciplinary specialist). All told, learning has been taking place on both sides: by early exposure of the research objectives and individual tasks to international industry professionals and the author operating in the AVD Laboratory aiming at translating the

AVD Lab Product Life-Cycle – Flight Emulation FT/O//AI Process into a practical aircraft conceptual design discipline.

The following specific tasks have been undertaken to meet the research objectives:

A. Life-cycle Simulation Methodology Objectives

- **Establish a new safety discipline for conceptual design.** It is possible to introduce a new flight safety discipline with low-level data richness to conceptual design.
- **Organize a proactive decision-making flight test and safety emulation process.** Through the AVD Lab Product Life-Cycle – Flight Emulation FT/O//AI Process the decision-maker has amplified opportunity to control and manage risk virtually by representing the concerns of the specific customer groups (manufacturer, flight test examiner, operator, regulatory body, incident//accident investigators, pilot educator). This is illustrated through logical execution of the Cessna Citation X case study.
- **Communicate with pilots, test pilots, designers, and industry professionals to calibrate the process.** Throughout development, the prototype system has been striving to represent the state-of-the-art in FT/O//AI simulation during the conceptual design phase, thus to directly represent an industry relevant effort. Collaborators and partners from Intelonics, Technical University of Braunschweig, Wyle Laboratories, Lockheed Martin, NASA, Kohlman Systems Research, USAF, and Airbus Industrie have provided continuous suggestions while endorsing the overall approach and final development goals.
- **Produce a case study demonstrating validation and calibration at conceptual design.** Using the Cessna Citation X tail-aft configuration as the primary design case study, this low-speed exercise served to demonstrate the physical correctness of the M&S of the Citation X at conceptual design level.

Case Study Citation X Objectives

- **Develop a Citation X parametric definition (i.e. aerodynamics, propulsion, and weights and inertia models) from design re-engineering.** The VATES parametric definition input is constructed as follows: semi-empirical tool DATCOM^{MAX} (aerodynamics model), design synthesis system PrADO (propulsion, and weights and inertia models).
- **Develop formal flight test schedules for modeling and simulation (M&S) of normal and complex and neighboring flight scenarios (stability & control, performance).**

The following test schedule was determined for flight safety assessment at takeoff:

- S₁: Normal Takeoff
- S₂: Continued Takeoff – Speed Above V₁ (OEI): Return To Departure Airport Scenario
- S₁ Γ₂: Normal Takeoff, Under Wind-shear, Variations of Flight Path Angle, and Bank Angle
- S₁ Γ₃ – Normal Takeoff, Variations of Flight Path Angle, Bank Angle Variation, and Initial Bank Angle Errors

Due to time constraints, the stability & control and performance discipline assessments have not been formulated.

- **Validate the flight test schedules with industry Citation X experience.** The quality of the simulated flight tests can only be as good as the quality of the underlying parametric model of the Citation X. Therefore, the parametric model of the Citation X has been painstakingly re-engineered by utilizing the Citation X Operating Handbook⁷⁸, the Citation X Pilot Training Manual⁷⁷, and regular conversations with active Citation X pilots for Thompson Petroleum⁸¹.
- **Produce a set of technical and operational deliverables that communicate to the manager and engineer.** Graphical formats for predicting flight safety performance for the Cessna Citation X include:

- M_1 : flight variable time-history.
 - M_2 : flight event time-history.
 - M_4 : Partial safety spectra.
 - M_5 : Integral safety spectra.
 - M_6 : Family of integral flight safety spectra.
 - M_7 : Situation complexity buildup diagram.
 - M_8 : Situational tree of flight.
- **Examine the baseline and derivative flight scenarios to test the influences of design parameters.** At this stage, the Citation X has shown the capability to survive the baseline and derivative flight scenarios excluding any unrealistic hypothesis conditions. Without more predictive information, for takeoff, no influence to design parameters has been exposed.
 - **Validate the emulated flight test and flight safety results with industry Citation X experience.** The flight safety results are validated with regular communication with active Citation X pilots for Thompson Petroleum⁸². Results for the flight test simulation are beyond the scope of this MS research undertaking.
 - **Discuss possible control methods to feedback design recommendation to the product life-cycle.** No control method to feed back design recommendations is discussed since it is beyond the scope of the current research.

5.2 Recommendations for Future Work

Periodically, throughout this study it has been mentioned that the current research is in process of being accomplished through two research efforts: (1) Master of Science Thesis (M.S.) and (2) Doctor of Philosophy Dissertation (Ph.D.).

The continuation of the Thesis work will lead to a new 'safety discipline' that is activated during the inner conceptual design iteration, when the simulated flight vehicle is evaluated (iterated) and feedback is provided to influence the primary design variables for overall mission,

geometry, aerodynamics, stability and control, performance, propulsion, weights and inertias, etc. The contributions of the longer term PhD research efforts are:

1. a generic test schedule of flight situations for conceptual design level design to simulate novel and future flight vehicles;
2. the development of a feedback mechanism that controls the enhancement of parametric design variables;
3. the ability of the system to dynamically grow as the real product life-cycle data requirements advance.

APPENDIX A

ADDITIONAL PRODUCT LIFE-CYCLE
PROCESS WORK FOR CHAPTER 2

Appendix A contains the additional work performed to develop the results for 'Chapter 2: Conceptual Design Product Life-Cycle (Plc) And Safety Methodology Overview'. The titles are identical to those in the chapter.

Flight Test Simulation (Parametric)

Review of Simulator Types

DILLENSCHNEIDER [REF]

Two types of simulators are recognized: Static Simulation and Dynamic Simulation. They are representative of the overall capabilities for the process.

Static Simulation Two simulators are recognized: a *"fixed base-VFR (Visual Flight Rules) simulator"* and a *"fixed base-IFR (Instrument Flight Rules) V/STOL assault transport simulator"*. The first, an air combat simulator, *"occupies a fixed base single place fighter aircraft type cockpit"* with a conventional control arrangement, an *"instantaneous collimated maximum field of view of 80°"*, and image generation for the earth, sky, and opponent aircraft. The second is without visual display, is *"made up of all of the subsystems which comprise the flight control systems"*.

Dynamic Simulation One simulator is recognized: a *"moving base-VFR carrier approach simulator"*. It consists of a *"6 degree-of-freedom representation of the airplane, a 3 degree-of-freedom representation of the aircraft carrier..., and a single-place cockpit with instruments and appropriate control functions"*.

BALDWIN

One type of simulator is recognized: Static Simulation. The principal components and features for this air combat simulator include *"two 40-foot diameter domes with associated optics, image generation and graphics equipment, pilot stations located at the center of each dome, two operator control stations, computer complex, equipment monitor station, and facility support equipment"*.

RENDER [REF]

Two types of simulators are recognized: Static Simulation and Dynamic Simulation. They are representative of the overall capabilities for the process.

Static Simulation One simulator is recognized: the Microsoft Flight Simulator suite.

Dynamic Simulation One simulator is recognized: a *“light, twin-piston engine aircraft”* (Piper Navajo). It has a *“3-axis motion platform...to give pitch, roll, and heave”*, is without visual display, and includes instruments for primary flight, the engine, and position.

RASMUSSEN [REF]

One type of simulator is recognized: Static Simulation. The principal components and features for this Aviator Visual Design Simulator include *“aircraft interactive simulation development, data visualization, synthetic environment, simulation points-of-view, instrumentation”*, and *“local distributed interactive simulation”* without leaving the decision-makers workstation.

ANDERSON [REF]

Two types of simulators are recognized: Computer Simulation and Static Simulation. They are representative of the overall capabilities for a single simulator, the Pheagle, which is based on a F-4 Phantom/F-15 Eagle fixed base cockpit.

Computer Simulation For batch (neighborhood) simulation, the flight scenario is defined prior to the simulation. Principal components and features include commercial graphics cards, three screen visual display, and “analog display gauges” configured to four PCs.

Static Simulation In real-time pilot-in-the-loop capacity, the principal components and features for the fixed-base training cockpit include a conventional control arrangement, commercial graphics cards, three screen visual display, and “analog display gauges” configured to four PCs.

KELLETT [REF]

One type of simulator is recognized: Dynamic Simulation. The principal components and features for this Flight Engineering Systems Trainer include a *“two-seat cockpit on a 6 DOF motion platform, together with an Instructor Operating Station (IOS), computer rack and associated hydraulic and electric power services”, “dual powered flying control, instrument displays on a LCD screen, and outside-world visuals on a large monitor”*.

BURDUN [REF]

One type of simulator is recognized: Computer Simulation. The principal components and features for this Virtual Test and Evaluation method include six degree-of-freedom *“autonomy of experimentation (the pilot and a flight simulator are not involved), and a PC as the computational resource”*.

TOTAH [REF]

One type of simulator is recognized: Static Simulation. The principal components and features for the flight simulation module of the Integrated Vehicle Modeling Environment are a PC workstation *“derived from a six degree-of-freedom motion-based ACFS [Advanced Concepts Flight Simulator] simulator, and is complete with a full flight management system”*.

SCHARL [REF]

One type of simulator is recognized: Computer Simulation. The principal components and features for this dynamic (vehicle) modeling and (flight) simulation parametric and probabilistic dynamic model include six degree-of-freedom implementation, and PC as the computational resource.

Review of Tool Application

Analysis of Simulation Objectives

The following can be extracted directly from the text:

Since each process is developed for a unique set of requirements, there is no surprise that, collectively, a diverse spectrum of flight disciplines is involved. Four of the methods emulate performance objectives (Baldwin, Render, Rasmussen and Kellet) [REF], eight emulate test stability and control (Dillenschneider, Baldwin, Render, Anderson, Kellet, Burdun, Totah, and Scharl) [REF], four aim at emulating handling qualities (Dillenschneider, Baldwin, Kellet, and Scharl) [REF], and six are configured towards flight control design (Dillenschneider, Rasmussen, Anderson, Burdun, Totah, and Scharl) [REF]. Note that no single reference encompasses all four objectives and every process emulates stability and control.

Flight Test Scheduling

Operational Factors Modeling

DILLENCHNEIDER [REF]

It includes four separate applications/examples for a PLC process: *Air Combat Simulator*, *Carrier Approach Simulator*, and two *V/STOL Assault Transport Simulators*. Between these, the following characteristics are found to exist, Table A.1.

Table A.1: Operational Factors Parameters (Dillenschneider)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	None	
Rain	None	
Wind	Limited	gusts, crosswind, and turbulence
Non-standard Atmospheric Conditions	Limited	temperature only
Non-standard Runway Conditions	None	
System Failures:		
Engines	Complete	V/STOL propeller engines
Primary Control Effectors	Complete	elevators, ailerons, and rudder
Secondary Control Effectors	Limited	speed brakes
Landing Gear	None	
System Variation:		
Aircraft Weight	Complete	fuel load
C.G. Location	None	
Inertia	None	

BALDWIN [REF]

The process developed is dedicated primarily for *Air Combat Enhancements* to flight vehicle design. Table A.2 presents a summary of the results.

Table A.2: Operational Factors Parameters (Baldwin)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	Implicit	"atmospheric effects" visualized through the "Sky/earth subsystem"
Rain	Implicit	"atmospheric effects" visualized through the "Sky/earth subsystem"
Wind	Implicit	"atmospheric effects" visualized through the "Sky/earth subsystem"
Non-standard Atmospheric Conditions	Implicit	"atmospheric effects" visualized through the "Sky/earth subsystem"
Non-standard Runway Conditions	None	
System Failures:		
Engines	Implicit	"aircraft control, [and] normal and emergency procedures"
Primary Control Effectors	Implicit	"aircraft control, [and] normal and emergency procedures"
Secondary Control Effectors	Implicit	"aircraft control, [and] normal and emergency procedures"
Landing Gear	Implicit	"aircraft control, [and] normal and emergency procedures"
System Variation:		
Aircraft Weight	None	
C.G. Location	None	
Inertia	None	

RENDER [REF]

This PLC process described illustrates application through, the (1) *Piper Navajo* and (2) *Microsoft Flight Simulator Cessna 182*. The combined attributes of the system factors are presented with Table A.3.

Table A.3: Operational Factors Parameters (Render)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	None	
Rain	None	
Wind	Complete	"allow the wind strength and direction to be varied"
Non-standard Atmospheric Conditions	None	
Non-standard Runway Conditions	None	
System Failures:		
Engines	Complete	engines variations
Primary Control Effectors	Implicit	"range of system failures" and discussion of emergency procedures, and asymmetric flight
Secondary Control Effectors	Limited	"flap and undercarriage selections"
Landing Gear	Limited	"flap and undercarriage selections"
System Variation:		
Aircraft Weight	Complete	weight variation for MFS
C.G. Location	None	
Inertia	Complete	"inertia parameter" for MFS

RASMUSSEN [REF]

This simulation process focuses on flight control system design and testing. An operational factor investigation for this PLC process is in Table A.4.

Table A.4: Operational Factors Parameters (Rasmussen)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	None	
Rain	None	
Wind	None	
Non-standard Atmospheric Conditions	Implicit	the "environment configuration" module
Non-standard Runway Conditions	None	
System Failures:		
Engines	Complete	without specified criteria from discussion of "simulated mechanical failure"
Primary Control Effectors	Complete	without specified criteria from discussion of "simulated mechanical failure"
Secondary Control Effectors	Complete	without specified criteria from discussion of "simulated mechanical failure"
Landing Gear	Complete	without specified criteria from discussion of "simulated mechanical failure"
System Variation:		
Aircraft Weight	None	
C.G. Location	None	
Inertia	None	

ANDERSON [REF]

Anderson describes a PLC process focusing on design for handling qualities. This system illustrates the characteristics found in Table A.5.

Table A.5: Operational Factors Parameters (Anderson)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	None	
Rain	None	
Wind	Limited	"atmospheric turbulence" models
Non-standard Atmospheric Conditions	None	
Non-standard Runway Conditions	None	
System Failures:		
Engines	Implicit	the available operational flight modes
Primary Control Effectors	Implicit	the stability and control derivatives being "estimated using the batch computer program Digital DATCOM"
Secondary Control Effectors	Implicit	the stability and control derivatives being "estimated using the batch computer program Digital DATCOM"
Landing Gear	None	
System Variation:		
Aircraft Weight	None	
C.G. Location	None	
Inertia	None	

KELLETT [REF]

Anderson describes a PLC process developed through an academic, government, and industry collaboration. This system is overviewed with Table A.6.

Table A.6: Operational Factors Parameters (Kellett)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	None	
Rain	None	
Wind	None	
Non-standard Atmospheric Conditions	Limited	"barometric pressure" variation
Non-standard Runway Conditions	None	
System Failures:		
Engines	Complete	without specified criteria from the "flight model parameters" description
Primary Control Effectors	Complete	without specified criteria from the "flight model parameters" description
Secondary Control Effectors	Complete	"auxiliary aerodynamics" for flaps and speedbrakes
Landing Gear	Complete	a "set of gear diagnostics" the assess natural frequency, damping ratio, and balance
System Variation:		
Aircraft Weight	Complete	"flight model parameters" description
C.G. Location	Complete	"flight model parameters" description
Inertia	Complete	"flight model parameters" description

BURDUN [REF]

This PLC process is founded through an academic and research organization. It describes the parameters in Table A.7.

Table A.7: Operational Factors Parameters (Burdun)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	Complete	the “examined operational domain” description
Rain	Complete	the “examined operational domain” description
Wind	Complete	the “examined operational domain” description
Non-standard Atmospheric Conditions	Complete	the “examined operational domain” description
Non-standard Runway Conditions	Complete	the “examined operational domain” description
System Failures:		
Engines	Complete	the “examined operational domain” description
Primary Control Effectors	Complete	the “examined operational domain” description
Secondary Control Effectors	Complete	the “examined operational domain” description
Landing Gear	Complete	the “examined operational domain” description
System Variation:		
Aircraft Weight	Complete	the “examined operational domain” description
C.G. Location	Complete	the “examined operational domain” description
Inertia	Complete	the “examined operational domain” description

TOTAH [REF]

The Totah PLC process is the only methodology developed through a sole research-based organization. It is described in Table A.8.

Table A.8: Operational Factors Parameters (Totah)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	None	
Rain	None	
Wind	Complete	without specified criteria for the "turbulence model"
Non-standard Atmospheric Conditions	Complete	the "environmental conditions for both Earth and Mars" definitions
Non-standard Runway Conditions	None	
System Failures:		
Engines	Implicit	"automatically compensating [FCS] for a broader spectrum of damaged or malfunctioning aircraft"
Primary Control Effectors	Implicit	"automatically compensating [FCS] for a broader spectrum of damaged or malfunctioning aircraft"
Secondary Control Effectors	Implicit	"automatically compensating [FCS] for a broader spectrum of damaged or malfunctioning aircraft"
Landing Gear	Implicit	"automatically compensating [FCS] for a broader spectrum of damaged or malfunctioning aircraft"
System Variation:		
Aircraft Weight	None	
C.G. Location	None	
Inertia	None	

SCHARL [REF]

This PLC process is developed as a dissertation contribution. It describes the parameters in Table A.9.

Table A.9: Operational Factors Parameters (Scharl)

Weather Influences:	Recognition Status	Recognition Criteria (from text)
Icing	None	
Rain	None	
Wind	Limited	"change in vertical wind speed"
Non-standard Atmospheric Conditions	None	
Non-standard Runway Conditions	None	
System Failures:		
Engines	None	
Primary Control Effectors	None	
Secondary Control Effectors	None	
Landing Gear	None	
System Variation:		
Aircraft Weight	None	
C.G. Location	None	
Inertia	None	

Piloting Objective

DILLENCHNEIDER [REF]

Four types of simulators are identified by Dillenschneider. The results presented are standardized to a single simulator which reflects the total flight and pilot scheduling capability.

Table A.10 displays the findings.

Table A.10: Piloting Technique Options (Dillenschneider)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	"pilot is free to maneuver his simulated aircraft anywhere within its respective flight envelope"
Partial Library	None	
Full Library	None	

Flight Classifications:		
Normal	Complete	STANDARD
Complex	Complete	"Typical malfunction investigations...of first order failures in the propeller governor, control trim systems and stabilization systems"
Multi-factor	None	
Neighborhood	None	

BALDWIN [REF]

The process developed is dedicated primarily for air combat enhancements to flight vehicle design. Table A.11 summarizes the results.

Table A.11: Piloting Technique Options (Baldwin)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	"operator control station modes" for "single pilot normal flight operations, operator flown or AML [adaptive maneuvering logic] target"
Partial Library	Complete	"operator control station modes" for "single pilot normal flight operations, operator flown or AML [adaptive maneuvering logic] target"
Full Library	None	
Flight Classifications:		
Normal	Complete	STANDARD
Complex	Complete	routines for "normal and emergency procedures"
Multi-factor	Implicit	routines for "emergency procedures"
Neighborhood	None	

RENDER [REF]

With two simulators being illustrated in this process, the results presented a combined single simulator. The combined attributes of this process are explored in Table A.12.

Table A.12: Piloting Technique Options (Render)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	
Partial Library	Complete	sample exercises that demonstrate performance along each segment of the flight profile
Full Library	None	
Flight Classifications:		
Normal	Complete	STANDARD
Complex	Complete	"range of system failures" and discussion of emergency procedures and asymmetric flight
Multi-factor	Implicit	without specified criteria for "range of system failures", and discussion of emergency procedures and asymmetric flight
Neighborhood	None	

RASMUSSEN [REF]

This simulation process represents flight control system testing. The piloting technique investigation for this PLC process is summarized with Table A.13.

Table A.13: Piloting Technique Options (Rasmussen)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	a toolbox that provides the "ability to develop simulation programs"
Partial Library	Complete	"set scenarios" for prescribed flight modes
Full Library	None	

Flight Classifications:		
Normal	Complete	STANDARD
Complex	Complete	"simulated mechanical failure" and "modeled FCS [flight control system] failures"
Multi-factor	Implicit	"simulated mechanical failure" and "modeled FCS [flight control system] failures"
Neighborhood	None	

ANDERSON [REF]

Anderson describes a PLC process determined for handling quality design. This system is illustrated Table A.14.

Table A.14: Piloting Technique Options (Anderson)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	"interactive, real-time mode or as a constant time-step, batch simulation"
Partial Library	None	
Full Library	None	

Flight Classifications:		
Normal	Complete	STANDARD
Complex	Implicit	"atmospheric turbulence" models and derivative estimation through Digital DATCOM
Multi-factor	Implicit	"atmospheric turbulence" models and derivative estimation through Digital DATCOM
Neighborhood	Complete	allows "constant time-step, batch simulation"

KELLETT [REF]

Anderson describes a PLC process determined through an academic, government, and industry collaboration. It is shown in Table A.15.

Table A.15: Piloting Technique Options (Kellett)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	"hands-on use by students with flight experience, or demonstration by instructor"
Partial Library	Complete	exercises in takeoff performance, climb performance, longitudinal/lateral/directional dynamic stability, longitudinal static stability, level flight, stall, and landing performance
Full Library	None	
Flight Classifications:		
Normal	Complete	STANDARD
Complex	Complete	the "flight parameters model"
Multi-factor	Implicit	the "flight parameters model"
Neighborhood	None	

BURDUN [REF]

This PLC process is founded through an academic and research organization. It is described in Table A.16.

Table A.16: Piloting Technique Options (Burdun)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	STANDARD
Partial Library	Complete	flight control, and practical aerodynamics problems and that "flight scenarios can be repeated in exact detail" after a 'parametric definition' update
Full Library	None	
Flight Classifications:		
Normal	Complete	"systematic examination of the flight envelopes of new aircraft to identify potential problems"
Complex	Complete	"studying combined effects of failure modes, pilot errors and weather conditions"
Multi-factor	Complete	"studying combined effects of failure modes, pilot errors and weather conditions"
Neighborhood	None	

TOTAH [REF]

This PLC process is founded through research organization. It is found in Table A.17.

Table A.17: Piloting Technique Options (Totah)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	STANDARD
Partial Library	None	
Full Library	None	

Flight Classifications:		
Normal	Complete	STANDARD
Complex	Complete	applicability of “automatically compensating [FCS] for a broader spectrum of damaged or malfunctioning aircraft”
Multi-factor	Implicit	applicability of “automatically compensating [FCS] for a broader spectrum of damaged or malfunctioning aircraft”
Neighborhood	None	

SCHARL [REF]

This PLC process is developed for a dissertation contribution. Table A.18 presents it.

Table A.18: Piloting Technique Options (Scharl)

Flight Test Library Arrangement:	Recognition Status	Recognition Criteria (from text)
User-Specified	Complete	STANDARD
Partial Library	None	
Full Library	None	

Flight Classifications:		
Normal	Complete	STANDARD
Complex	Complete	"change in vertical wind" and "sudden need for obstacle avoidance"
Multi-factor	None	
Neighborhood	None	

Flight Test Assessment

Review of Intended Customer Focus

DILLENSCHNEIDER [REF]

Since three types of simulators are identified, the results presented are combined to a single simulator which reflects the total environment, Table A.19.

Table A.19: Customer Focus (Dillenscheider)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	Yes	development through an industry-based organization
Flight Test Examiner	Yes	V/STOL Assault Transport Simulator use during the “flight test program for pilot familiarization, exploration of new regimes, and verification of any design changes”
Certification Regulator	No	
Operator	No	
Incident/Accident Investigation Boards	No	
Pilot/Student Education	Yes	the Air Combat Simulator use to “evaluate proposed aircraft designs against various threat aircraft” and Carrier Approach Simulator use to “tailor the aircraft and control system for the precise task of carrier landing”

BALDWIN [REF]

For this dual-dome simulator the customers are presented in Table A.20.

Table A.20: Customer Focus (Baldwin)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	Yes	development through an industry-based organization
Flight Test Examiner	Yes	the "Flight Test Support Phase" which is used to "duplicate 'squawks' and anomalies encountered during flight test"
Certification Regulator	No	
Operator	Yes	capability for "simulating one-on-one, two-on-one, or one-on-two air combat scenarios"
Incident/Accident Investigation Boards	No	
Pilot/Student Education	Yes	capability for "simulating one-on-one, two-on-one, or one-on-two air combat scenarios"

RENDER [REF]

With two simulators being illustrated in this process, the results presented are combined to a single simulator, Table A.21.

Table A.21: Customer Focus (Render)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	No	
Flight Test Examiner	No	
Certification Regulator	No	
Operator	No	
Incident/Accident Investigation Boards	No	
Pilot/Student Education	Yes	the "Aeronautical Engineering course has been seeking a way to give undergraduate students this flying experience"

RASMUSSEN [REF]

For this M&S the results are in Table A.22.

Table A.22: Customer Focus (Rasmussen)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	Yes	"inclusion of an engineer-in-the-loop distributed simulation" that interfaces with the simulation "before the design leaves the designer's desk"
Flight Test Examiner	Yes	"visual and replay of results" for "hardware pilot-in-the-loop simulations, and flight tests"
Certification Regulator	No	
Operator	Yes	multiple simulations "can interact in the same virtual environment and can be one or many aircraft"
Incident/Accident Investigation Boards	No	
Pilot/Student Education	Yes	multiple simulations "can interact in the same virtual environment and can be one or many aircraft"

ANDERSON [REF]

For this process the customer survey is in Table A.23.

Table A.23: Customer Focus (Anderson)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	No	
Flight Test Examiner	No	
Certification Regulator	Yes	"help identify handling qualities differences between two [or more] configurations"
Operator	No	
Incident/Accident Investigation Boards	No	
Pilot/Student Education	Yes	"allow students to rapidly assess aircraft stability and control parameters and handling qualities metrics for their aircraft designs"

KELLETT [REF]

This PLC process audience survey is in Table A.24.

Table A.24: Customer Focus (Kellett)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	No	
Flight Test Examiner	No	
Certification Regulator	No	
Operator	No	
Incident/Accident Investigation Boards	No	
Pilot/Student Education	Yes	“allow students to conduct simulated flight test investigations” to “investigate the effects of aircraft design parameters”

BURDUN [REF]

The operational customers are found in Table A.25.

Table A.25: Customer Focus (Burdun)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	Yes	"virtual testing of an aircraft flight performance in the earlier design phases"
Flight Test Examiner	Yes	"rehearsal of complex test programs and reconstruction of recorded flight modes"
Certification Regulator	Yes	examples of "mapping airworthiness requirements"
Operator	No	
Incident/Accident Investigation Boards	Yes	"reconstruction of flight accidents; examination of operational domains around a flight accident/incident"
Pilot/Student Education	Yes	"validation of new piloting methods and automatic control systems under multi-factor conditions"

TOTAH [REF]

For this process the results are shown in Table A.26.

Table A.26: Customer Focus (Totah)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	Yes	"provide a value-added capability to conceptual design and aircraft synthesis process"
Flight Test Examiner	No	
Certification Regulator	No	
Operator	No	
Incident/Accident Investigation Boards	No	
Pilot/Student Education	No	

SCHARL [REF]

A customer description is illustrated in Table A.27.

Table A.27: Customer Focus (Scharl)

Comparison Criteria:	Recognition Status	Recognition Criteria (from text)
Design Manufacturer	Yes	"a design process incorporating dynamic modeling and simulation conducted in a parametric and probabilistic"
Flight Test Examiner	No	
Certification Regulator	No	
Operator	No	
Incident/Accident Investigation Boards	No	
Pilot/Student Education	No	

Review of Post-Processing Deliverables

DILLENCHNEIDER [REF]

Since three different simulators are used, the results are combined together. The results are presented in Table A.28.

Table A.28: Deliverable Options Available (Dillenschneider)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	Yes	1	1. "synthetic display...provides opponent azimuth, elevation, and range information"
Classical Flight Test Visualization	No	0	
Comparison Criteria (Technical):			
User-Specified Visualization	No	0	
Simulator-Based Visualization	Yes	2	1. "probability of conversion" of the superior a/c vs opponent a/c ; 2. "a curve of conversion probability vs the measure of performance ratio"
Classical Flight Test Visualization	Yes	2	1. "time histories of altitude error from nominal glide slope" approach, 2. tape system "displays of airspeed, rate of climb indicator, stall warning and normal acceleration"

BALDWIN [REF]

For this dual-dome simulator the characteristics are included in Table A.29.

Table A.29: Deliverable Options Available (Baldwin)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	Yes	0	
Comparison Criteria (Technical):			
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	No	0	

RENDER [REF]

With two simulators being illustrated in this process, the results presented are standardized within the capability assessment of a single simulator, Table A.30.

Table A.30: Deliverable Options Available (Render)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	No	1	1. heads-up-display observes "primary flight instruments, engine instruments", and "navigational facilities"
Comparison Criteria (Technical):			
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	No	0	

RASMUSSEN [REF]

For this simulator the post-processing capability is found in Table A.31.

Table A.31: Deliverable Options Available (Rasmussen)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	Yes	1	1. flight path markers
Classical Flight Test Visualization	Yes	1	1. heads-up-display observes attitude, altitude, angle of attack, forward speed, etc.
Comparison Criteria (Technical):			
User-Specified Visualization	No	0	
Simulator-Based Visualization	Yes	2	1. time history charts display simulation parameters, 2. velocity vector indicator based on "angle of attack and the sideslip angle" variation
Classical Flight Test Visualization	Yes	1	1. wing-tip markers "depict the time history of wing-tip positions

ANDERSON[REF]

For this process the visualizations of interest are presented in Table A.32.

Table A.32: Deliverable Options Available (Anderson)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	Yes	2	1. "telephone pole glideslope indicators", 2. "up and away target task"
Classical Flight Test Visualization	Yes	1	1. heads-up-display observes simulation paramters
Comparison Criteria (Technical):			
User-Specified Visualization	No	0	
Simulator-Based Visualization	Yes	1	1. stick shaping force profiles
Classical Flight Test Visualization	No	0	

KELLETT [REF]

The deliverable scheme for Kellett is available in Table A.33.

Table A.33: Deliverable Options Available (Kellett)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	No	0	
Comparison Criteria (Technical):			
User-Specified Visualization	Yes	1	1. 90 flight parameters can be selected and observed
Simulator-Based Visualization	Yes	2	diagnostics included for 1. static margin, thrust/weight ratio, wing loading, cruise speed, max lift to drag ratio, 2. gear natural frequency, gear damping ratio, gear balance
Classical Flight Test Visualization	Yes	1	1. cockpit instrumentation observes "air data, attitude, heading and basic engine parameters"

BURDUN [REF]

For this methodology the results are in Table A.34.

Table A.34: Deliverable Options Available (Burdun)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	No	0	
Comparison Criteria (Technical):			
User-Specified Visualization	Yes	1	1. time history charts for any observed parameters
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	Yes	1	1. time history charts from any previous flight simulations

TOTAH [REF]

The data summary for Totah is found in Table A.35.

Table A.35: Deliverable Options Available (Totah)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	No	0	
Comparison Criteria (Technical):			
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	Yes	1	1. time history charts for pitch, load factor, mach, and primary control surface deflections

SCHARL [REF]

The Scharl methodology description is found in Table A.36.

Table A.36: Deliverable Options Available (Scharl)

Comparison Criteria (Operational):	Recognition Status	Visual Type Count	Recognition Criteria (from text)
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	No	0	
Comparison Criteria (Technical):			
User-Specified Visualization	No	0	
Simulator-Based Visualization	No	0	
Classical Flight Test Visualization	Yes	1	1. time history charts for Euler angles and rates, angle of attack, and speed, altitude, deflection angles

APPENDIX B

GEOMETRY DESCRIPTION FOR
CESSNA CITATION X

The following a physical description of the Cessna Citation X. This data is used to model the parametric definition for VATES.

Table B.1: Principle Dimensions

Principle Dimensions:						
			Ref			
Length overall	22040.0	mm	3	72'	3.72"	ft inch
Span	19400.0	mm	1	63'	7.78"	ft inch
Height (on gear - static)	5840.0	mm	3	19'	1.92"	ft inch
Height (gear up)		mm		0'	0	ft inch
Planform Area	48.96	m ²	1		527.001	ft ²

Table B.2: Wing Description

Wing:						
Reference area	49.00	m ²	Ref	5	527	ft ²
Wetted Area		m ²			0	ft ²
Exposed Wing area * **		m ²			0	ft ²
Span**	19500.00	mm	3	63'	11.72"	ft inch
Aspect ratio**	7.750	-	5			
Taper ratio (C _{tip} / C _{centerline})**		-				
Mean aerodynamic chord	3010.0	mm	3		118.50	inch
X-Location of 25% MAC		mm		0'	0.00"	ft inch
Dihedral angle	2.00	deg	3			
Maximum Wing Thickness		-				
Wing incidence	4.28	deg				
Wing reference point within the A/C System						
X	6700.0	mm	Measured	21'	11.78"	ft inch
Y	0.0	mm	Measured	0'	0.00"	ft inch
Z	-290.0	mm	Measured	0'	-11.42"	ft inch
Leading edge sweep	40.1	deg	3			
Trailing edge sweep		deg				
Quarter chord sweep	37.7	deg	3			
Chord						
Centerline (Y = 0) (theoretical value)	4870.0	mm			191.73	inch
Root	4300.0	mm			169.29	inch
Tip	870.0	mm			34.25	inch
		mm ****			0.00	inch ****
Airfoil						
	root	Supercritical		3		
	tip	Supercritical		3		
Relative thickness						
Root	12.8	%			Approx measured	
Tip	8.3	%			Approx measured	
		%				
Incidence Angle relative to A/C X-Axis						
Root	4.28	deg				
Tip	-2.04	deg				
		deg				
Relative spar locations @ kink						
	front spar	%				
	main (center) spar	%				
	rear spar	%				
Tank volume***						
LH wing tank	1990	liter		2	524	US gal
Center tank	7475	liter		2	893	US gal
RH wing tank	1990	liter		2	524	US gal
gross	11455	liter	calc		1940	US gal
net (@ 89% gross)	10195	liter	calc		1727	US gal

Table B.3: Spoilers and High Lift Devices Description

Spoilers:				
<u>Outer wing:</u>				
Number of spoilers per half span	-			
Total area per half span	m ²		0.0	ft ²
Inboard Y-datum	mm	0'	0.00"	ft inch
Total length per half span(incl. gaps)	mm	0'	0.00"	ft inch
Depth				
- inboard	%			
- outboard	%			
max. deflection (ground)	deg			
High Lift Devices:				
<u>Trailing Edge</u>				
Inner wing:				
Flap type	Fowler			
Area per half span	m ²		0.0	ft ²
Inboard Y-datum	mm	0'	0.00"	ft inch
Flap length per half span (trailing edge)	mm	0'	0.00"	ft inch
Relative chord				
- inboard(y-datum)	%	in		
- outboard(kink)	%	in		
Relative flap shroud location				
- inboard(y-datum)	%			
- outboard(kink)	%			
Deflection (max.)	deg			
Definition Drawing:				
Mid wing:				
Flap type	Fowler			
Area per half span	m ²		0.0	ft ²
Inboard Y-datum	mm	0'	0.00"	ft inch
Flap length per half span (trailing edge)	mm	0'	0.00"	ft inch
Relative chord				
- inboard(y-datum)	%	in		
- outboard(kink)	%	in		
Relative flap shroud location				
- inboard(y-datum)	%			
- outboard(kink)	%			
Deflection (max.)	deg			

Table B.4: Horizontal Tail Description

Horizontal Tail:						
Area	11.150	m ²	3		120.02	ft ²
Wetted Area		m ²			0.0	ft ²
Span	7950.0	mm	3	26'	0.99"	ft inch
Aspect ratio	5.67	-	calc			
Taper ratio		-				
Mean aerodynamic chord	1540.0	mm			60.63	inch
Lever (25% MAC)		mm		0'	0.00"	ft inch
Incidence angle	0		3			
maximum		deg				
minimum		deg				
Dihedral angle	0.00	deg	3			
Reference point within the A/C system						
X	17649.0	mm	3	57'	10.84"	ft inch
Y	0.0	mm	3	0'	0.00"	ft inch
Z	3617.0	mm	3	11'	10.40"	ft inch
Quarter chord sweep	40.0	deg	3			
Chord						
center section	2120.0	mm	3		83.46	inch
tip section	740.0	mm	3		29.13	inch
Airfoil						
Relative thickness						
center section		%				
tip section		%				
Relative volume		-				

Table B.5: Vertical Tail Description

Vertical Tail:						
Area	10.310	m ²	3		110.98	ft ²
Wetted Area		m ²			0	ft ²
Span	3200.0	mm	3	10'	5.98"	ft inch
Aspect Ratio	1.00	-	calc			
Taper Ratio	0.600	-				
Mean aerodynamic chord	3280.0	mm	3		129.13	inch
Lever (25% MAC)		mm		0'	0.00"	ft inch
Reference point within the A/C System						
X	13770.0	mm	Measured	45'	2.13"	ft inch
Y	0.0	mm		0'	0.00"	ft inch
Z	1304.5	mm	Measured	4'	3.36"	ft inch
Quarter chord sweep	52.0	deg	3			
Chord						
root	4010.0	mm	3		157.87	inch
tip	2410.0	mm	3		94.88	inch
Airfoil						
Relative thickness						
root		%				
tip		%				
Relative volume		-				
Rudder:						
Area (leading edge)		m ²			0.0	ft ²
Area to hingeline		m ²			0.0	ft ²
Relative chord (leading edge)		%				
Root		%				

Table B.6: Fuselage and Landing Gear Description

Fuselage:						
Reference Length	17780.0	mm	3	58'	4.00"	ft inch
Height	1930.0	mm	3		75.98	inch
Width		mm		0'	0.00"	ft inch
Planform Area		m ²			0	ft ²
Surface Wetted Area		m ²			0	ft ²
Max Cross-Section Area		m ²			0	ft ²
Fuselage Ref. Point within the A/C System						
X	0.0	mm	3	0'	0.00"	ft inch
Y	0.0	mm	3	0'	0.00"	ft inch
Z	0.0	mm		0'	0.00"	ft inch
Design Eye Point (DEP)						
X		mm		0'	0.00"	ft inch
Y	±	mm		0'	0.00"	ft inch
Z		mm		0'	0.00"	ft inch
Landing Gear:						
Wheel base	3210.0	mm	3	10'	6.38"	ft inch
Wheel track	8740.0	mm	3	28'	8.09"	ft inch
Tyre dimensions						
MLG						
NLG						
Inflation pressure						
MLG		bar				psi
NLG		bar				psi
Reference point within the A/C System Main Gear 1						
X	10639.0	mm	3	34'	10.86"	ft inch
Y		mm		0'	0.00"	ft inch
Z		mm		0'	0.00"	ft inch
Reference point within the A/C System Main Gear 2						
X	10639.0	mm	3	34'	10.86"	ft inch
Y		mm		0'	0.00"	ft inch
Z		mm		0'	0.00"	ft inch
Reference point within the A/C System Nose Gear						
X	1920.0	mm	3	6'	3.59"	ft inch
Y	0.0	mm		0'	0.00"	ft inch
Z		mm		0'	0.00"	ft inch

Table B.7: Power Plant Description

Power Plant:						
Manufacturer	Rolls Royce					
Type	Allison AE3007C1					
Number of engines	2					
Take-off thrust						
- normal	28.7	kN	1		6443	lbf
- APR	30.1	kN			6764	lbf
SFC*	2.000	kg/kg/h			2.000	lb/lbf/h
Bare Engine weight		kg			0	lbs
Propulsion System weight		kg			0	lbs
Overall pressure ratio		-				
Bypass ratio	5.00	-				
Nacelle wetted area for total A/C		m ²			0	ft ²
Pylon wetted area for total A/C		m ²			0.0	ft ²
Reference point within the A/C System (Ref. pt. engine = Fanref. plane / axis of rotation)						
X ****	10961	mm	3	35'	11.54"	ft inch
Y ****	±	mm		± 0'	0.00"	ft inch
Z ****		mm		0'	0.00"	ft inch
Toe in angle	±	deg				
Engine incidence within the A/C System		deg				
No. of strakes per nacelle	0	-				
Ref. Area nacelle strake		m ²			0.000	ft ²
Reference point within the A/C System (Ref. pt. engine = Fanref. plane / axis of rotation)						
X ****		mm		0'	0.00"	ft inch
Y ****	±	mm		± 0'	0.00"	ft inch
Z ****		mm		0'	0.00"	ft inch
Toe in angle	±	deg				
Engine incidence within the A/C System		deg				
No. of strakes per nacelle		-				
Ref. Area nacelle strake		m ²			0.000	ft ²

Table B.8: Design Masses

Design Masses:					
Empty Weight	10035	kg	1	22,123	lbs
Gross Weight	16370	kg	1	36,089	lbs
Based on:					
Manufac. Mass Empty		kg		0	lbs
Operating Mass Empty **	10035	kg	1	22123	lbs
Max. structural payload **		kg		0	lbs
The design masses are:					
Max. zero fuel mass	11068	kg	1	24400	lbs
Max. landing mass	14424	kg	1	31799	lbs
Max. take-off mass	16511	kg	2	36400	lbs
Max. ramp mass	16375	kg	1	36100	lbs
Max. fuel mass; useable ***	5897	kg	2	13000	lbs

APPENDIX C

ADDITIONAL FLIGHT TEST SCENARIOS AND
RESULTS FOR CITATION X

Additional test situations being considered for the Citation X include the following low-speed mission profile segments: normal go-around, single engine go-around, normal approach, single engine approach, normal landing, single engine landing, and emergency landing. Directed graphs are prepared and the simulator executed for normal go-around and single engine go-around. The results are illustrated as flight variable time-history plots (M_1).

Flight Test Schedule

1 GO-AROUND

- **NORMAL GO-AROUND**

FLIGHT EVENTS

E₁: start scenario

E₂: altitude is decision altitude $H=200-450$ ft

E₃: speed is about $V_{REF}+10$ knots [see table speed value for prescribed MTOW weight]

E₄: AOA is about $\alpha=5^\circ$

E₅: AOA is about $\alpha=10^\circ$

E₆: speed $V_{REF} + 15$ KIAS is achieved or altitude is about $H=1000$ ft AGL [see table speed value for prescribed MTOW weight]

E₇: speed V_{ENR} (190 KIAS) is achieved

E₈: end scenario

PILOTING TASKS

T₁: steer elevator by flight director ($\delta_e=XXX^\circ$) [positive rate of climb + 10°]

T₂: keep bank and sideslip angles at about 0° in climb by ailerons ($\delta_a=XXX^\circ$) and rudder ($\delta_r=XXX^\circ$)

CONTROL PROCEDURE

P₁: wheels-down

P₂: thrust at TO/MC (100% N1)

P₃: down elevator by $\delta_e=XXX^\circ$ ($\theta=10^\circ$)

P₄: extend flaps from $\delta_f=0$ to 35 deg (or 5 deg if climb gradient a factor)

P₅: wheels-up

P₆: retract flaps from 35° to 15°

P₇: reverse action by up elevator ($\delta_e=XXX^\circ$)

P₈: thrust at CLB power (XXX% N1)

- **SINGLE ENGINE GO-AROUND**

FLIGHT EVENTS

E₁: start scenario

E₂: altitude is greater than equal to decision altitude $H \geq 200-450$ ft

E₃: speed is about $V_{REF}+10$ knots [see table speed value for prescribed MTOW weight]

E₄: AOA is about $\alpha=5^\circ$

E₅: AOA is about $\alpha=10^\circ$

E₆: speed $V_{REF} + 15$ KIAS is achieved or altitude is about $H=1000$ ft AGL [see table speed value for prescribed MTOW weight]

E₇: speed V_{ENR} (190 KIAS) is achieved

E₈: end scenario

PILOTING TASKS

T₁: steer elevator by flight director ($\delta_e=XXX^\circ$) [positive rate of climb + 10°]

T₂: keep bank and sideslip angles at about 0° by ailerons ($\delta_a=XXX^\circ$) and rudder ($\delta_r=XXX^\circ$)

CONTROL PROCEDURE

P₁: wheels-down

P₂: thrust at TO/MC (100% N1)

P₃: down elevator by $\delta_e=XXX^\circ$ ($\theta=10^\circ$)

P₄: extend flaps from $\delta_f= 0$ to 15 deg (or 5 deg if climb gradient a factor)

P₅: wheels-up

P₆: retract flaps from 15° to 5°

P₇: reverse action by up elevator ($\delta_e=XXX^\circ$)

P₈: thrust at CLB power (XXX% N1)

2 APPROACH

- **PRECISION (NORMAL) APPROACH**

FLIGHT EVENTS

En: altitude is about 1000 ft

En: speed is about XXX knots

En: AOA is about XX deg

En: AOA is about XX deg

En: speed is about $V_{REF} +10$ knots

En: speed V_{REF} is achieved ($V=118$ knots)

PILOTING TASKS

Tn: stabilize pitch by elevator to hold altitude

Tn: keep bank and sideslip angles at about zero in descent by ailerons and rudder

Tn: steer the glideslope by elevator (g~3 deg)

CONTROL PROCEDURE

Pn: move flaps from 0 to 15 deg

Pn: wheels-down

Pn: move flaps from 15 to 35 deg

Pn: thrust is about 50% N1

- **SINGLE ENGINE PRECISION APPROACH**

FLIGHT EVENTS

En: altitude is about 1000 ft

En: speed is about **VAPP or VREF knots (flaps at 15 deg)**

En: AOA is about XX deg

En: AOA is about XX deg

En: speed is about VREF +10 knots (flaps at 15 deg)

En: speed VREF is achieved (V=118 knots)

PILOTING TASKS

Tn: stabilize pitch by elevator to hold altitude

Tn: keep bank and sideslip angles at about zero in descent by ailerons and rudder

Tn: steer the glideslope by elevator (decent angle about 3 deg)

CONTROL PROCEDURE

Pn: move flaps from 0 to 5 deg (210 KIAS) or 15 deg (210 KIAS)

Pn: wheels-down

Pn: retract speed brakes

Pn: thrust is about 50% N1

- **ENGINE FAILURE ON FINAL**

FLIGHT EVENTS

En: altitude is about 1000 ft

En: speed is about **VREF +10 KIAS (flaps 15 deg)**

En: AOA is about XX deg

En: AOA is about XX deg

En: speed VREF is achieved (V=118 knots)

PILOTING TASKS

Tn: steer the pitch time-history specified by elevator

Tn: keep bank and sideslip angles at about zero in descent by ailerons and rudder

CONTROL PROCEDURE

Pn: move flaps from 0 to 15 deg (if landing flaps 35 deg) or from 0 to 5 deg (if landing flaps 15 deg)

Pn: retract speed brakes

Pn: wheels-down

Pn: thrust is at idle

Pn: extend speed brakes

Pn: elevator down by XX deg

Pn: reverse action by elevator (XX deg down)

3 LANDING

- **NORMAL LANDING**

FLIGHT EVENTS

En: speed is about VREF +10 knots

En: speed VREF is achieved (V=118 knots)

En: nose wheel on runway

PILOTING TASKS

Tn: stabilize pitch by elevator

Tn: keep bank and sideslip angles at about zero in descent by ailerons and rudder

CONTROL PROCEDURE

Pn: thrust is at idle

Pn: extend speed brakes

Pn: elevator down by XX deg

Pn: reverse action by elevator (XX deg down)

Pn: apply brakes

Pn: thrust reverser at XX

- **SINGLE ENGINE LANDING**

FLIGHT EVENTS

En: speed is about VREF +10 knots (flaps at 15 deg)

En: speed VREF is achieved (V=118 knots)

En: nose wheel on runway

PILOTING TASKS

Tn: stabilize pitch by elevator to hold altitude

Tn: keep bank and sideslip angles at about zero in descent by ailerons and rudder

CONTROL PROCEDURE

Pn: thrust is at idle

Pn: extend speed brakes

Pn: elevator down by XX deg

Pn: reverse action by elevator (XX deg down)

Pn: apply brakes

Pn: thrust reverser at XX

- **EMERGENCY LANDING**

FLIGHT EVENTS

En: altitude is about XXX ft

En: speed is about XXX KIAS

En: AOA is about XX deg

En: speed VREF is achieved

En: nose wheel on runway

PILOTING TASKS

Tn: steer the pitch time-history specified by elevator

Tn: keep bank and sideslip angles at about zero in descent by ailerons and rudder

CONTROL PROCEDURE

Pn: retract speed brakes

Pn: move flaps from 0 to 15 deg

Pn: wheels-down

Pn: elevator down by XX deg

Pn: reverse action by elevator (XX deg down)

Pn: apply brakes

Pn: thrust reverser at XX

Flight Test Simulation

194

Flight Event

Piloting Task

- T1: Steer elevator by flight director ($\delta e = ?$) [Positive rate of climb +10]
- T2: Keep bank and sideslip at about 0 by aileron ($\delta a = 0$) and rudder ($\delta r = 0$)

Control Procedure

- P1: Wheels-down
- P2: Trust at TO/MC (100% N1)
- P3: Down elevator ($\theta = 10^\circ$)
- P4: Extend flaps ($\delta f = 0$ to 35)
- P5: Wheels-up
- P6: Retract flaps ($\delta f = 35$ to 15)
- P7: Up elevator (reverse P3 δe)
- P8: Thrust at CLB (XXX% N1)

Operational Environment

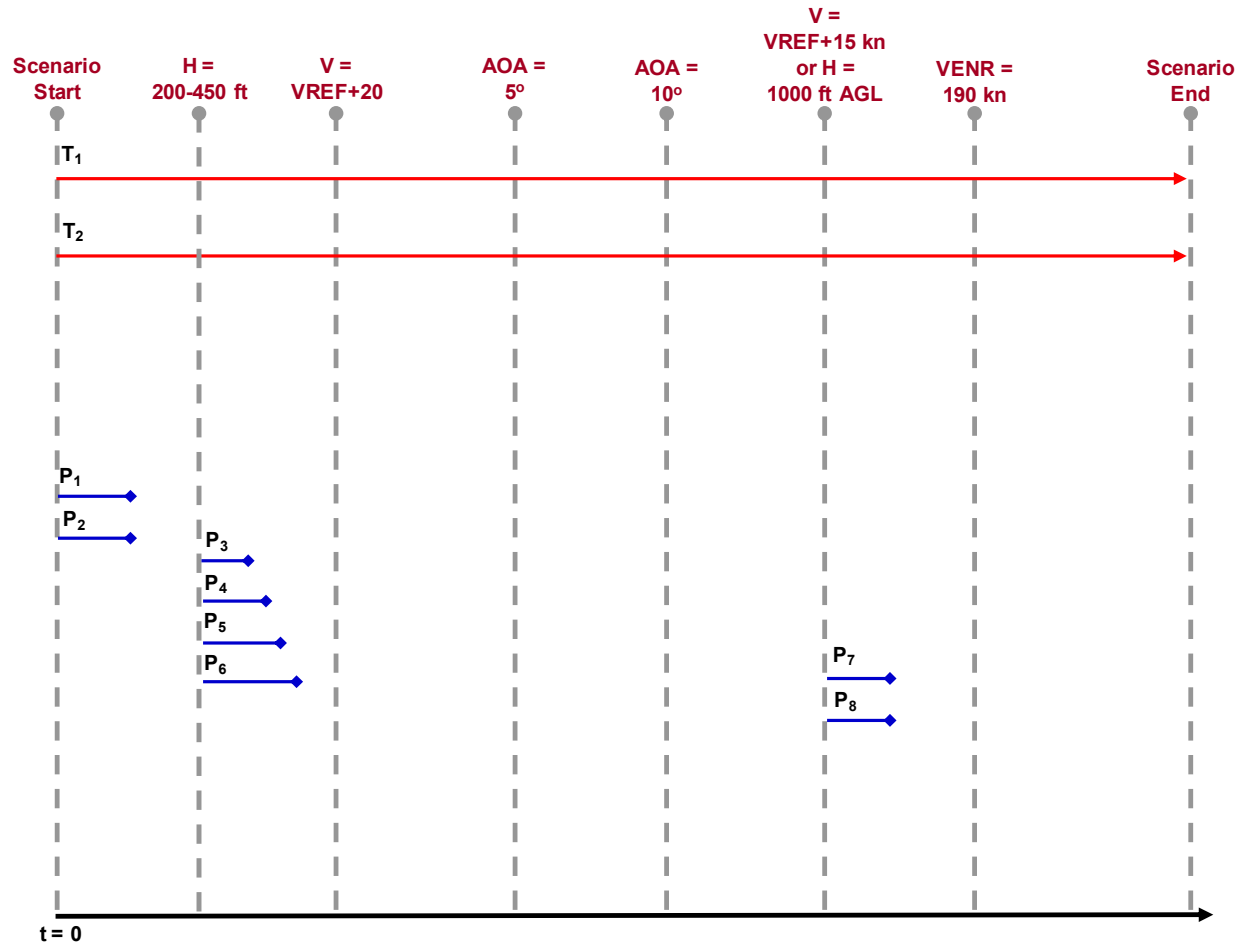


Figure C.1: S_3 = Go-Around

Flight Event

Piloting Task

- T1: Steer elevator by flight director ($\delta e = ?$) [Positive rate of climb +10
- T2: Keep bank and sideslip at about 0 by aileron ($\delta a = 0$) and rudder ($\delta r = 0$)

Control Procedure

- P1: Wheels-down
- P2: REO, Trust at TO/MC (100% N1)
- P3: Down elevator ($\theta = 10^\circ$)
- P4: Extend flaps ($\delta f = 0$ to 15)
- P5: Wheels-up
- P6: Retract flaps ($\delta f = 15$ to 5)
- P7: Up elevator (reverse P3 δe)
- P8: Thrust at CLB (XXX% N1)

Operational Environment

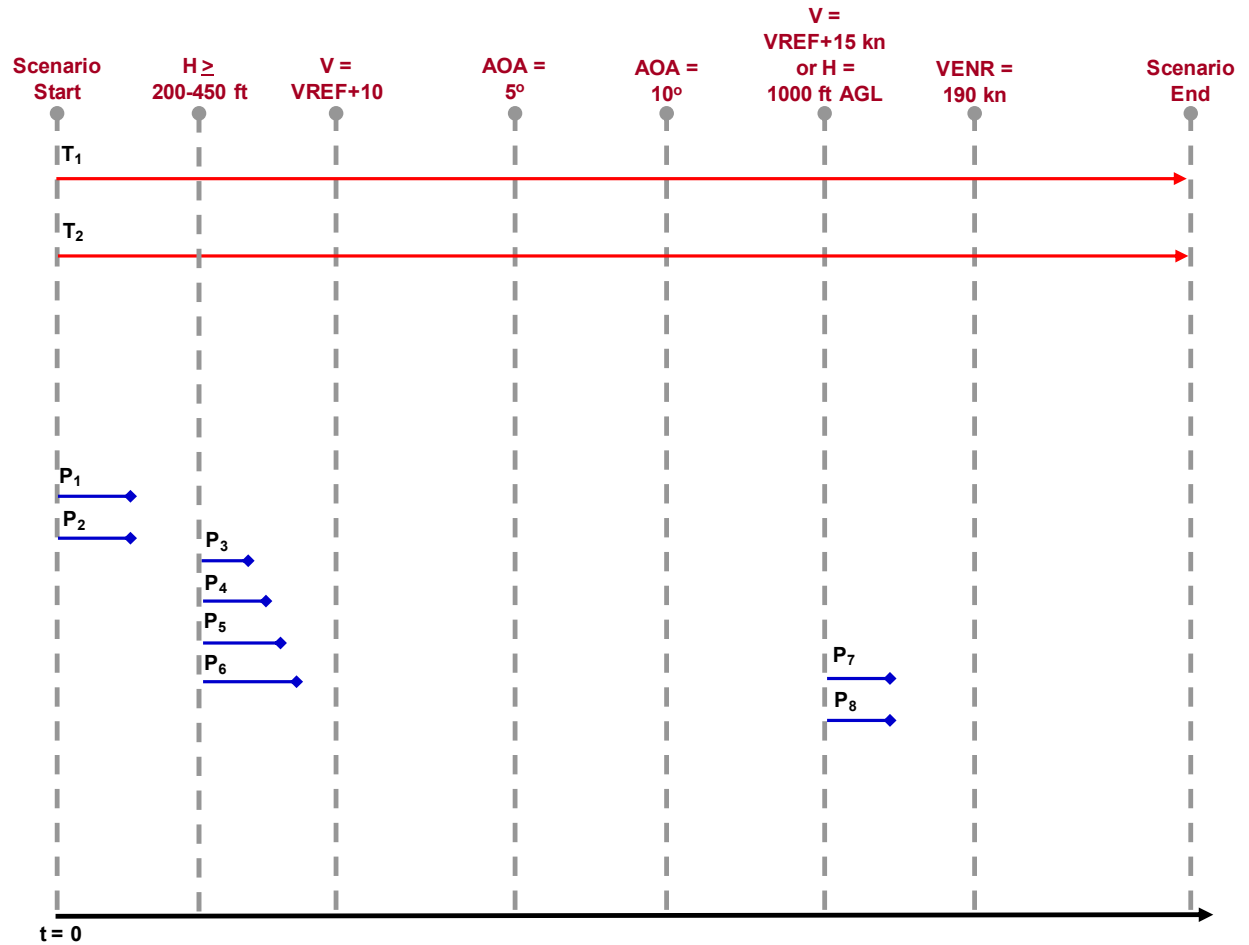


Figure C.2: S_4 = Single Engine Go-Around

Flight Test Assessment

- Normal Go-Around

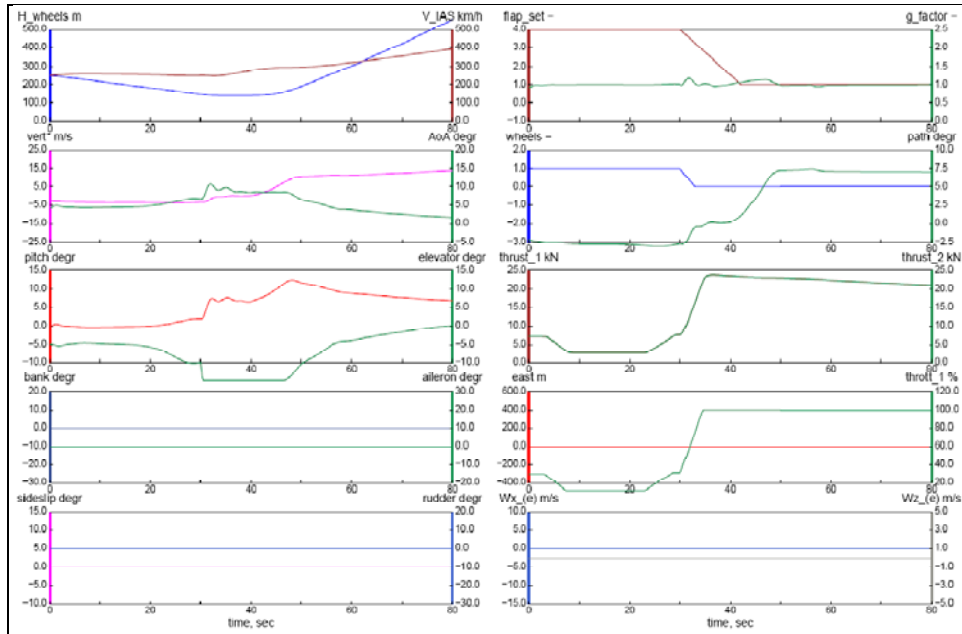


Figure C.3: F_{4130} – “Normal Go-around”, M_1 – Flight Variable Time-History Plot

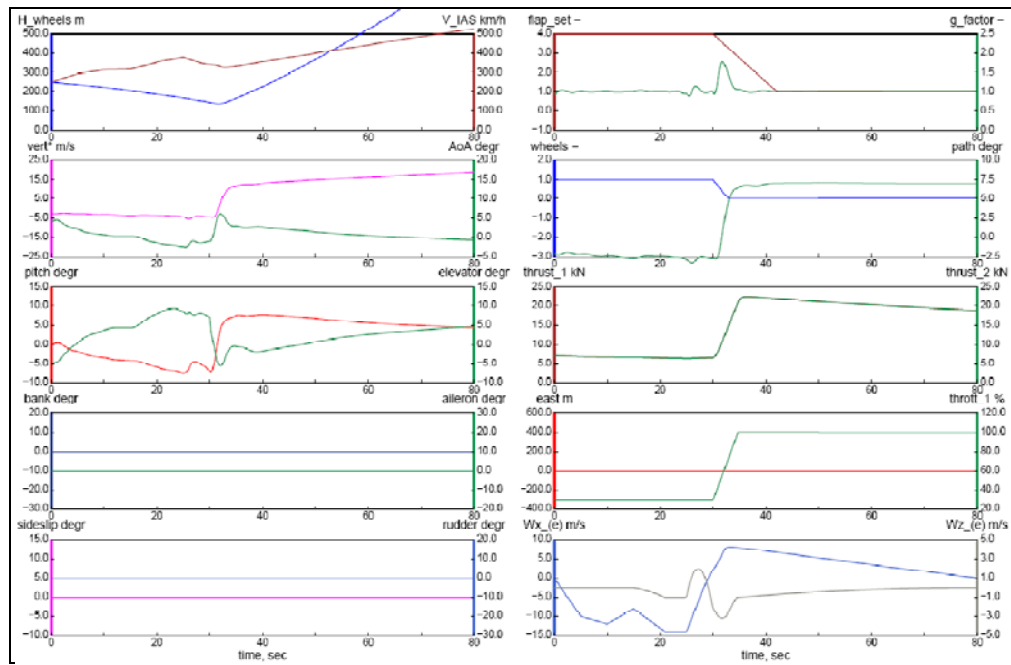


Figure C.4: F_{4132} – “Normal Go-around, With Wind-Shear”, M_1 – Flight Variable Time-History Plot

- Single Engine Go-Around

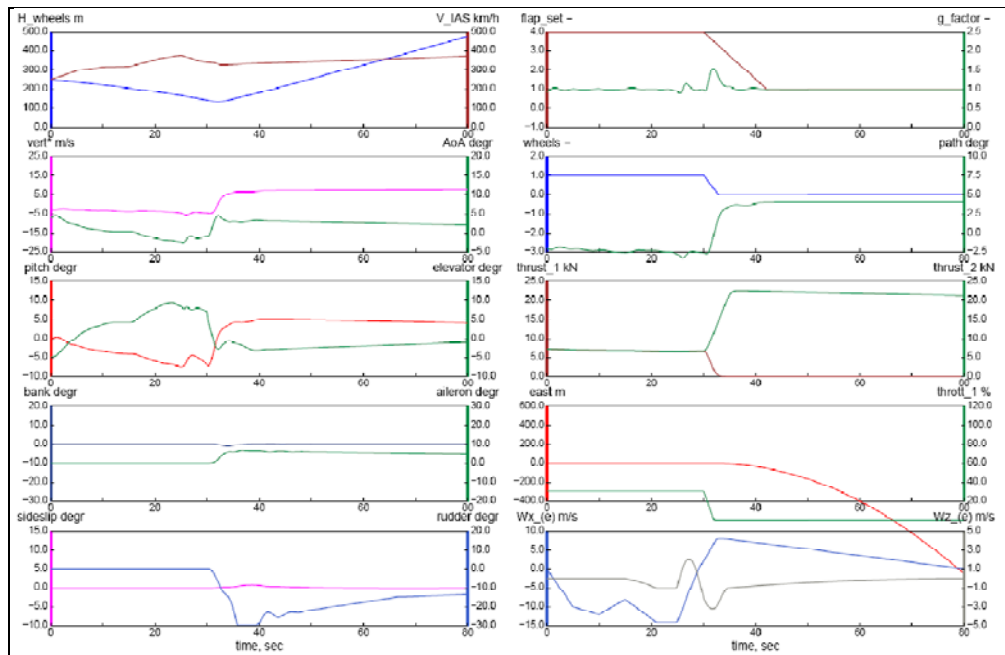


Figure C.5: F_{4135} – “Go-around, Left Side Engine Out, With Wind-Shear”, M_1 – Flight Variable Time-History Plot

APPENDIX D

CONSTANT.INP AND VARIABLE.INP
(VATES DATA)

52	-	0.0000	-	min	1.0
53	-	0.0000	-	min	1.0
54	-	0.0000	-	min	1.0
55	-	0.0000	-	min	1.0
56	-	0.0000	-	min	1.0
57	-	0.0000	-	min	1.0
!	58	number of flap setting	4.0000	-	min 1.0
!	59	1st flap setting (clean)	0.0000	degr	min 1.0
!	60	2nd flap setting (partial)	5.0000	degr	min 1.0
!	61	3rd flap setting (partial)	15.0000	degr	min 1.0
!	62	4th flap setting (full)	35.0000	degr	min 1.0
	63	(reserved constant)	0.0000	-	nom 1.0
	64	(reserved constant)	0.0000	-	nom 1.0
	65	(reserved constant)	0.0000	-	nom 1.0
	66	(reserved constant)	0.0000	-	nom 1.0
	67	(reserved constant)	0.0000	-	nom 1.0
	68	(reserved constant)	0.0000	-	nom 1.0
	69	(reserved constant)	0.0000	-	nom 1.0
!	70	standard glideslope angle	-3.0000	degr	nom 1.0
	71	just a coefficient	2.2000	-	nom 1.0
	72	(reserved constant)	0.0000	-	nom 1.0
	73	(reserved constant)	0.0000	-	nom 1.0
	74	(reserved constant)	0.0000	-	nom 1.0
	75	(reserved constant)	0.0000	-	nom 1.0
	76	(reserved constant)	0.0000	-	nom 1.0
	77	(reserved constant)	0.0000	-	nom 1.0
	78	(reserved constant)	0.0000	-	nom 1.0
	79	(reserved constant)	0.0000	-	nom 1.0
	80	code of current hottest variable	349.0000	-	nom 1.0
	81	code of spectrum variable in X	350.0000	-	nom 1.0
	82	(reserved constant)	0.0000	-	nom 1.0
	83	(reserved constant)	0.0000	-	nom 1.0
	84	(reserved constant)	0.0000	-	nom 1.0
!	85	k dmz (y cg)	1.0000	-	nom 1.0
*					
!	86	k ax cg	-1.0000	-	nom 1.0
!	87	k dmz (x cg)	1.0000	-	nom 1.0
!	88	k mx reaction engine	1.0000	-	nom 1.0
!	89	k mx gyro eng rolling	1.0000	-	nom 1.0
!	90	k my gyro eng pitching	1.0000	-	nom 1.0
!	91	k mz gyro eng yawing	1.0000	-	nom 1.0
*					
!	92	k mx gyro gear rolling	1.0000	-	nom 1.0
!	93	k my gyro gear pitching	1.0000	-	nom 1.0
!	94	k mz gyro gear yawing	1.0000	-	nom 1.0
*					
!	95	x1 mom eng	-1.0000	-	nom 1.0
!	96	x2 mom eng	1.0000	-	nom 1.0
!	97	y1 mom eng	-1.0000	-	nom 1.0
!	98	y2 mom eng	1.0000	-	nom 1.0
!	99	z1 mom eng	-1.0000	-	nom 1.0
!	100	z2 mom eng	1.0000	-	nom 1.0
*					
!	101	x1 mom lg	-1.0000	-	nom 1.0
!	102	x2 mom lg	1.0000	-	nom 1.0
!	103	y1 mom lg	-1.0000	-	nom 1.0
!	104	y2 mom lg	1.0000	-	nom 1.0
!	105	z1 mom lg	-1.0000	-	nom 1.0
!	106	z2 mom lg	1.0000	-	nom 1.0
*					
!	107	k_fx aero long	1.0000	-	nom 1.0
!	108	k_fy aero vert	1.0000	-	nom 1.0
!	109	k_fz aero side	1.0000	-	nom 1.0
!	110	k_mx aero rolling	1.0000	-	nom 1.0
!	111	k_my aero yawing	1.0000	-	nom 1.0
!	112	k_mz aero pitching	1.0000	-	nom 1.0
*					
!	113	k_fx lg long	1.0000	-	nom 1.0
!	114	k_fy lg vert	1.0000	-	nom 1.0
!	115	k_fz lg side	1.0000	-	nom 1.0
!	116	k_mx lg rolling	1.0000	-	nom 1.0
!	117	k_my lg yawing	1.0000	-	nom 1.0
!	118	k_mz lg pitching	1.0000	-	nom 1.0

!	119	k_fx eng long	1.0000	-		nom	1.0
!	120	k_fy eng vert	1.0000	-		nom	1.0
!	121	k_fz eng side	1.0000	-		nom	1.0
!	122	k_mx eng rolling	1.0000	-		nom	1.0
!	123	k_my eng yawing	1.0000	-		nom	1.0
!	124	k_mz eng pitching	1.0000	-		nom	1.0
*							
	125	-	0.0000	-		min	1.0
!	126	minimum flap position	0.0000	degr	flaps	min	1.0
	127	minimum speed brake	0.0000	degr		min	1.0
	128	-	0.0000	degr		min	1.0
!	129	min flap setting	1.0000	-		min	1.0
!	130	min wheels on/off switch	0.0000	-	wheels	min	1.0
!	131	min stabiliser	-1.20000	-		min	1.0
!	132	min elevator	-15.0000	degr	elevator	min	1.0
!	133	min ailerons	-15.0000	degr	aileron	min	1.0
!	134	min rudder	-29.5000	degr	rudder	min	1.0
!	135	min throttle position, engine 1	-50.0000	%	thrott_1	min	1.0
!	136	min throttle position, engine 2	-50.0000	%	thrott_2	min	1.0
!	137	min wheels 1 friction coeff	0.0400	-		min	1.0
!	138	min wheels 2 friction coeff	0.0400	-		min	1.0
!	139	min wheels 3 friction coeff	0.0400	-		min	1.0
	140	(reserved constant)	0.0000	-		min	1.0
!	141	minimum (front) c.g.	15.0000	%	x_C.G.	min	1.0
	142	-	0.0000	-		min	1.0
	143	-	0.0000	-		min	1.0
!	144	min engine 1 on/off switch	0.0000	-		min	1.0
!	145	min engine 2 on/off switch	0.0000	-		min	1.0
	146	min spoiler	0.0000	degr		min	1.0
	147	(reserved constant)	0.0000	-		min	1.0
	148	(reserved constant)	0.0000	-		min	1.0
	149	(reserved constant)	0.0000	-		min	1.0
*							
	150	(reserved constant)	0.0000	-		max	1.0
!	151	maximum flap position	35.0000	degr	flaps	max	1.0
	152	maximum speed brake	40.0000	degr		max	1.0
	153	-	0.0000	degr		max	1.0
!	154	max flap setting	4.0000	-		max	1.0
!	155	max wheels control switch	1.0000	-	wheels	max	1.0
!	156	max stabiliser	12.0000	degr		max	1.0
!	157	max elevator	19.0000	degr	elevator	max	1.0
!	158	max ailerons	15.0000	degr	aileron	max	1.0
!	159	max rudder	29.5000	degr	rudder	max	1.0
!	160	max throttle position, engine 1	100.0000	%	thrott_1	max	1.0
!	161	max throttle position, engine 2	100.0000	%	thrott_2	max	1.0
!	162	max wheels 1 roll friction coeff	1.0000	-		max	1.0
!	163	max wheels 2 roll friction coeff	1.0000	-		max	1.0
!	164	max wheels 3 roll friction coeff	1.0000	-		max	1.0
	165	(reserved constant)	0.0000	-		min	1.0
!	166	maximum (aft) c.g. location	35.0000	%	x_C.G.	max	1.0
	167	(reserved constant)	0.0000	-		min	1.0
	168	(reserved constant)	0.0000	-		min	1.0
!	169	max engine 1 on/off switch	1.0000	-		min	1.0
!	170	max engine 2 on/off switch	1.0000	-		min	1.0
!	171	max spoiler	40.0000	degr		min	1.0
	172	(reserved constant)	0.0000	-		min	1.0
	173	(reserved constant)	0.0000	-		min	1.0
	174	(reserved constant)	0.0000	-		min	1.0
*							
	175	(reserved constant)	0.0000	-		max	1.0
!	176	maximum flap rate	7.5000	degr/s		max	1.0
	177	maximum speed brake rate	20.0000	-		max	1.0
	178	-	0.0000	degr/s		max	1.0
!	179	max flap setting change rate	0.2500	-/s		max	1.0
!	180	max wheels control switch rate	0.3500	-/s		max	1.0
!	181	max stabiliser rate	0.0000	-		max	1.0
!	182	max elevator rate	15.0000	degr/s		max	1.0
!	183	max ailerons rate	15.0000	degr/s		max	1.0
!	184	max rudder rate	15.0000	degr/s		max	1.0
!	185	max throttle rate, engine 1	25.0000	%/s		max	1.0
!	186	max throttle rate, engine 2	25.0000	%/s		max	1.0
!	187	max wheels 1 roll friction rate	1.0000	-/s		max	1.0
!	188	max wheels 2 roll friction rate	1.0000	-/s		max	1.0
!	189	max wheels 3 roll friction rate	1.0000	-/s		max	1.0

190	(reserved constant)	0.0000	-	max	1.0
! 191	maximum c.g. travel rate	5.0000	%/s	max	1.0
192	(reserved constant)	0.0000	-	max	1.0
193	(reserved constant)	0.0000	-	max	1.0
! 194	max engine 1 on/off switch rate	0.3300	-	max	1.0
! 195	max engine 2 on/off switch rate	0.3300	-	max	1.0
196	max spoiler rate	20.0000	degr/s	max	1.0
197	(reserved constant)	0.0000	-	max	1.0
198	(reserved constant)	0.0000	-	max	1.0
199	(reserved constant)	0.0000	-	max	1.0
*					
200		0.0000	-	nom	1.0
! 201	number of engines	2.0000	-	nom	1.0
! 202	x-arm of engine #1 CG / 25% MAC	-2.0000	m	nom	1.0
! 203	x-arm of engine #2 CG / 25% MAC	-2.0000	m	nom	1.0
204		0.0000	-	nom	1.0
205		0.0000	-	nom	1.0
! 206	z-arm of engine #1 / fuz. datum	0.0000	m	nom	1.0
! 207	z-arm of engine #2 / fuz. datum	0.0000	m	nom	1.0
208		0.0000	-	nom	1.0
209		0.0000	-	nom	1.0
! 210	y-arm of engine #1 / fuz. datum	1.0000	m	nom	1.0
! 211	y-arm of engine #2 / fuz. datum	-1.0000	m	nom	1.0
212		0.0000	-	nom	1.0
213		0.0000	-	nom	1.0
! 214	engine 1 x-axis vert incid(XoZ)	2.0000	degr	nom	1.0
! 215	engine 2 x-axis vert incid(XoZ)	2.0000	degr	nom	1.0
216		0.0000	-	nom	1.0
217		0.0000	-	nom	1.0
! 218	engine 1 x-axis hor incide(XoY)	0.0000	degr	nom	1.0
! 219	engine 2 x-axis hor incide(XoY)	0.0000	degr	nom	1.0
220		0.0000	-	nom	1.0
221		0.0000	-	nom	1.0
! 222	engine 1 Ix moment	0.0000	-	nom	1.0
! 223	engine 2 Ix moment	0.0000	-	nom	1.0
224		0.0000	-	nom	1.0
225		0.0000	-	nom	1.0
226	(reserved constant)	0.0000	-	nom	1.0
227	(reserved constant)	0.0000	-	nom	1.0
228	(reserved constant)	0.0000	-	nom	1.0
229	(reserved constant)	0.0000	-	nom	1.0
230	(reserved constant)	0.0000	-	nom	1.0
! 231	throttle for thrust reversing	-50.0000	%	nom	1.0
232	(reserved constant)	0.0000	-	nom	1.0
233	(reserved constant)	0.0000	-	nom	1.0
234	(reserved constant)	0.0000	-	nom	1.0
235	(reserved constant)	0.0000	-	nom	1.0
! 236	DDVV thrust-speed control par.	0.5000	km/h	nom	1.0
! 237	DDTT thrust-speed control par.	1.0000	sec	nom	1.0
! 238	DP constant	0.5000	-	nom	1.0
239	(reserved constant)	0.0000	-	nom	1.0
*					
240	-	1.0000	-	nom	1.0
241	-	1.0000	-	nom	1.0
242	-	1.0000	-	nom	1.0
243	-	1.0000	-	nom	1.0
! 244	reverse P rating -114 model only	0.3300	-	nom	1.0
245	-	1.0000	-	nom	1.0
! 246	s LG correction factor	1.0000	-	nom	1.0
*					
! 247	a1-a3 factor	1.0000	-	nom	1.0
! 248	a2-a4 factor	1.0000	-	nom	1.0
! 249	f_am 1 factor	0.8000	-	nom	1.0
! 250	f_am 2-3 factor	0.8000	-	nom	1.0
*					
! 251	number of landing gear units	3.0000	-	nom	1.0
! 252	number of wheel pairs in 1st uni	1.0000	-	nom	1.0
! 253	number of wheel pairs in 2nd uni	1.0000	-	nom	1.0
! 254	number of wheel pairs in 3rd uni	1.0000	-	nom	1.0
255		0.0000	-	nom	1.0
256	(reserved constant)	0.0000	-	nom	1.0
! 257	width of 1st unit wheel	0.1650	m	nom	1.0
! 258	width of 2nd unit wheel	0.2040	m	nom	1.0
! 259	width of 3rd unit wheel	0.2040	m	nom	1.0

260		0.0000	-	nom	1.0
261	(reserved constant)	0.0000	-	nom	1.0
! 262	1st unit wheel diameter	0.4600	m	nom	1.0
! 263	2nd unit wheel diameter	0.6600	m	nom	1.0
! 264	3rd unit wheel diameter	0.6600	m	nom	1.0
265		0.0000	-	nom	1.0
266	(reserved constant)	0.0000	-	nom	1.0
! 267	x-arm of 1 L.G.unit/fore MAC edg	3.7800	m	nom	1.0
! 268	x-arm of 2 L.G.unit/fore MAC edg	-2.0990	m	nom	1.0
! 269	x-arm of 3 L.G.unit/fore MAC edg	-2.0990	m	nom	1.0
270		0.0000	-	nom	1.0
271	(reserved constant)	0.0000	-	nom	1.0
! 272	wheel stiffness 1 gear (1/10^6)	1.6000	N/m	nom	1.0
! 273	wheel stiffness 2 gear (1/10^6)	1.6000	N/m	nom	1.0
! 274	wheel stiffness 3 gear (1/10^6)	1.6000	N/m	nom	1.0
275		0.0000	-	nom	1.0
276	(reserved constant)	0.0000	-	nom	1.0
! 277	damp coeff compressed 1	0.0020	-	nom	1.0
! 278	damp coeff compressed 2	0.0380	-	nom	1.0
! 279	damp coeff compressed 3	0.0380	-	nom	1.0
280		0.0000	-	nom	1.0
281	(reserved constant)	0.0000	-	nom	1.0
! 282	damp coeff 1 gear (extend, *10-6)	0.6360	N/m/s	nom	1.0
! 283	damp coeff 2 gear (extend, *10-6)	3.1240	N/m/s	nom	1.0
! 284	damp coeff 3 gear (extend, *10-6)	3.1240	N/m/s	nom	1.0
285		0.0000	-	nom	1.0
286	(reserved constant)	0.0000	-	nom	1.0
! 287	Coeff. "A0" amort. 1 gear, *10-6)	0.0570	N	nom	1.0
! 288	Coeff. "A0" amort. 2 gear, *10-6)	0.1400	N	nom	1.0
! 289	Coeff. "A0" amort. 3 gear, *10-6)	0.1400	N	nom	1.0
290		0.0000	-	nom	1.0
291	(reserved constant)	0.0000	-	nom	1.0
! 292	Coeff. "A1" amort. 1 gear, *10-6)	0.0000	N/m	nom	1.0
! 293	Coeff. "A1" amort. 2 gear, *10-6)	0.0000	N/m	nom	1.0
! 294	Coeff. "A1" amort. 3 gear, *10-6)	0.0000	N/m	nom	1.0
295		0.0000	-	nom	1.0
! 296	Ix one wheel lg 1	0.0000	kg*m2	nom	1.0
! 297	Ix one wheel lg 2	0.0000	kg*m2	nom	1.0
! 298	Ix one wheel lg 3	0.0000	kg*m2	nom	1.0
299		0.0000	-	nom	1.0
300	(reserved constant)	0.0000	-	nom	1.0
301	(reserved constant)	0.0000	-	nom	1.0
! 302	y-coord. nose N1 l.g./fuz.datum	0.0000	m	nom	1.0
! 303	y-coord. right N2 l.g./fuz.datum	-3.1500	m	nom	1.0
! 304	y-coord. left N3 l.g./fuz.datum	3.1500	m	nom	1.0
305		0.0000	-	nom	1.0
306	(reserved constant)	0.0000	-	nom	1.0
! 307	1st l.g. unit tyre pressure	4.5000	atm	nom	1.0
! 308	2nd l.g. unit tyre pressure	5.0000	atm	nom	1.0
! 309	3rd l.g. unit tyre pressure	5.0000	atm	nom	1.0
310		0.0000	-	nom	1.0
311	(reserved constant)	0.0000	-	nom	1.0
312	(reserved constant)	0.0000	-	nom	1.0
313	(reserved constant)	0.0000	-	nom	1.0
314	(reserved constant)	0.0000	-	nom	1.0
! 315	minimum shock absorber speed	-1.3000	m/s	min	1.0
! 316	maximum shock absorber speed	1.3000	m/s	max	1.0
317	(reserved constant)	0.0000	-	nom	1.0
318	(reserved constant)	0.0000	-	nom	1.0
319	(reserved constant)	0.0000	-	nom	1.0
320	(reserved constant)	0.0000	-	nom	1.0
321	(reserved constant)	0.0000	-	nom	1.0
! 322	Coeff. "Ak" amort. 1 gear (*10-6)	0.5700	N/(m**k)	nom	1.0
! 323	Coeff. "Ak" amort. 2 gear (*10-6)	13.8800	N/(m**k)	nom	1.0
! 324	Coeff. "Ak" amort. 3 gear (*10-6)	13.8800	N/(m**k)	nom	1.0
325	(reserved constant)	3.0800	-	nom	1.0
326	(reserved constant)	0.0000	-	nom	1.0
327	(reserved constant)	2.2500	-	nom	1.0
328	(reserved constant)	3.0800	-	nom	1.0
329	(reserved constant)	3.0800	-	nom	1.0
330	(reserved constant)	3.0800	-	nom	1.0
331	(reserved constant)	0.0000	-	nom	1.0
! 332	x-dist. btwn wheel pair axes	0.0000	m	nom	1.0
! 333	coeff A1 in gear model	12.3000	-	nom	1.0

```

! 334 coeff A2 in gear model      -47.7000 -          nom 1.0
! 335 coeff A3 in gear model      59.5000 -          nom 1.0
! 336 nosewheel max turn angle (+-) 12.0000 degr        nom 1.0
! 337 max wheels break coefficient  0.2500 -          nom 1.0
! 338 rudder-nosewheel gain       0.3300 -          nom 1.0
*
! 339 alpha_min                   -45.0000 degr      AoA    min 1.0
! 340 alpha_max                    45.0000 degr      AoA    max 1.0
! 341 alphadot_min                 -45.0000 degr/s   AoA*   min 1.0
! 342 alphadot_max                 45.0000 degr/s   AoA*   max 1.0
! 343 beta_min                     -45.0000 degr     sideslip min 1.0
! 344 beta_max                     45.0000 degr     sideslip max 1.0
! 345 betadot_min                 -45.0000 degr/s   sideslp* min 1.0
! 346 betadot_max                 45.0000 degr/s   sideslp* max 1.0
! 347 x C.G.base (in aero experim) 23.1000 %         x_C.G. nom 1.0
! 348 z C.G.base (in aero experim)  0.4000 m         z_C.G. nom 1.0
! 349 (reserved constant)          0.0000 -          nom 1.0
! 350 K (moments of inertia)        1.5000 -          nom 1.0
! 351 (reserved constant)          0.0000 -          nom 1.0
! 352 (reserved constant)          0.0000 -          nom 1.0
! 353 (reserved constant)          0.0000 -          nom 1.0
! 354 (reserved constant)          0.0000 -          nom 1.0
! 355 (reserved constant)          0.0000 -          nom 1.0
! 356 (reserved constant)          0.0000 -          nom 1.0
! 357 total number of ODE of motion 25.0000 -          nom 1.0
&end

```

- The following is the 'variable.inp' input file in VATES data standard.

204

```

&model_variable
* Model: Citation X
* 1 - code
* 2 - name
* 3 - unit
* 4 - definition
* 5 - left graphic limit
* 6 - right graphic limit
* 7 - scaling
* -----
* 1      2      3      4      5      6      7
* -----
&format (3x, i3, 2x, 2(a8, 2x), a34, 2x, 2(f10.3, 1x), f5.1)
xxxx xxxxxxxx xxxxxxxx xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xxxxxxxx xxxxxxxx xxxxxx

  1 AoA      degr      wing angle of attack          -5.000  20.000  1.0
  2 Mach     -         Mach number                0.000   0.500  1.0
  3 elevator degr      elevator                -10.000 15.000  1.0
  4 aileron  degr      aileron deflection (generic) -20.000 30.000  1.0
  5 stabilzr degr      horizontal tail (movable)    0.000   0.000  1.0
  6 speed_br degr      speed brake                 0.000  50.000  1.0
  7 spoiler  degr      spoiler                    0.000   0.000  1.0
  8 ----- -         reserved variable           0.000   0.000  1.0
  9 flap_set -         flaps setting/configuration(1..5) 0.000   5.000  1.0
 10 rudder   degr      rudder (NB: imperial/British syst) -30.000 20.000  1.0
 11 sideslip degr      sideslip angle              -10.000 15.000  1.0
*
 12 bank    degr      bank angle                  -30.000 20.000  1.0
 13 yaw     degr      yaw angle                   -150.000 150.000  1.0
 14 pitch   degr      pitch angle                  -10.000 15.000  1.0
*
 15 Vx      m/s       U velocity/air (body axes) long  0.000  500.000  1.0
 16 Vz      m/s       W velocity/air (body axes) norm -100.000 100.000  1.0
 17 Vy      m/s       V velocity/air (body axes) side -100.000 100.000  1.0
 18 airspeed km/h     airspeed                    0.000  400.000  1.0
*
 19 north   m         north distance               -500.000 2000.000  1.0
 20 height  m         altitude w.r.t. CG position    0.000  1500.000  1.0
 21 east    m         east distance                 -400.000 600.000  1.0
*
 22 p       degr/s    roll rate (body axes)         -7.500   5.000  1.0
 23 r       degr/s    yaw rate (body axes)         -5.000   7.500  1.0

```


24	q	degr/s	pitch rate (body axes)	-7.500	5.000	1.0
25	flaps	degr	flaps position	-10.000	40.000	1.0
26	AOA*	degr/s	angle of attack rate	-7.500	5.000	1.0
27	yaw*	degr/s	yaw rate (earth axes)	-7.500	5.000	1.0
28	bank*	degr/s	roll rate (earth axes)	-7.500	5.000	1.0
29	pitch*	degr/s	pitch rate (earth axes)	-5.000	7.500	1.0
30	dx_C.G.	%	x_C.G. - x_C.G._base	-5.000	7.500	1.0
31	north*	m/s	north speed (earth axes)	0.000	100.000	1.0
32	vert*	m/s	vertical speed (earth axes)	-25.000	25.000	1.0
33	east*	m/s	east speed (earth axes)	-20.000	30.000	1.0
34	heading	degr	heading angle	-50.000	50.000	1.0
35	long.acc	-	load factor (tangential)	-0.500	0.500	1.0
36	g_factor	-	load factor (normal)	0.000	2.500	1.0
37	side.acc	-	load factor (side)	-0.250	0.250	1.0
38	p_(s)	rad/s	roll rate (stability axes)	-0.100	0.150	1.0
39	r_(s)	rad/s	yaw rate (stability axes)	-0.100	0.150	1.0
40	q_(s)	rad/s	pitch rate (stability axes)	-0.100	0.150	1.0
41	time	s	current flight time, seconds	0.000	100.000	1.0
42	time_mm	min	current flight time, minutes	0.000	5.000	1.0
43	s_shck1	m	nose gear unit shocker move	0.000	0.250	1.0
44	s_shck2	m	right-hand gear unit shocker move	0.000	0.250	1.0
45	s_shck3	m	left-hand gear unit shocker move	0.000	0.250	1.0
46	x_long	degr	control stick forward-aft travel	-25.000	25.000	1.0
47	s_whl1	m	nose wheels tire deformation	0.000	0.050	1.0
48	s_whl2	m	right wheels tire deformation	0.000	0.050	1.0
49	s_whl3	m	left wheels tire deformation	0.000	0.050	1.0
50	x_side	degr	control stick left-right travel	-25.000	25.000	1.0
51	s_shck1*	m/s	nose gear unit shocker speed	-0.250	0.250	1.0
52	s_shck2*	m/s	right gear unit shocker speed	-0.200	0.300	1.0
53	s_shck3*	m/s	left gear unit shocker speed	-0.300	0.200	1.0
54	x_pedals	mm	rudder pedals travel	-300.000	200.000	1.0
55	Fx_g1(e)	kN	x-axis nose gear force (earth)	0.000	100.000	1.0
56	Fx_g2(e)	kN	x-axis right gear force (earth)	0.000	100.000	1.0
57	Fx_g3(e)	kN	x-axis left gear force (earth)	0.000	100.000	1.0
58	-----	-	reserved variable	0.000	0.000	1.0
59	F_shck1	kN	internal force in nose shocker	0.000	100.000	1.0
60	F_shck2	kN	internal force in right shocker	0.000	100.000	1.0
61	F_shck3	kN	internal force in left shocker	0.000	100.000	1.0
62	-----	-	reserved variable	0.000	0.000	1.0
63	thrott_1	%	engine # 1 throttle	20.000	120.000	1.0
64	thrott_2	%	engine # 2 throttle	0.000	0.000	1.0
65	-----	-	reserved variable	0.000	0.000	1.0
66	-----	-	reserved variable	0.000	0.000	1.0
67	fuel_brn	kg	total fuel consumed	0.000	1000.000	1.0
68	U_air(s)	m/s	U velocity/air (stab. long)	0.000	250.000	1.0
69	W_air(s)	m/s	W velocity/air (stab.,side)	-50.000	50.000	1.0
70	V_air(s)	m/s	V velocity/air (stab. norm)	-50.000	50.000	1.0
71	thrust_1	kN	engine # 1 thrust	-5.000	20.000	1.0
72	thrust_2	kN	engine # 2 thrust	-5.000	20.000	1.0
73	-----	-	reserved variable	-5.000	5.000	1.0
74	-----	-	reserved variable	-5.000	5.000	1.0
75	-----	-	reserved variable	-5.000	5.000	1.0
76	path	degr	flight path angle	-2.500	10.000	1.0
77	V_IAS	km/h	instrumental speed	0.000	500.000	1.0
78	x_C.G.	%	C.G. location on MAC (long)	20.000	30.000	1.0
79	Fy_g1(e)	kN	nose gear side force (earth)	-100.000	100.000	1.0
80	Fy_g2(e)	kN	right gear side force (earth)	-100.000	100.000	1.0
81	Fy_g3(e)	kN	left gear side force (earth)	-100.000	100.000	1.0
82	-----	-	(reserved variable)	0.000	0.000	1.0
83	fuel	kg	fuel storage mass	0.000	5000.000	1.0
84	Fz_g1(e)	kN	nose gear vertical force (earth)	-50.000	50.000	1.0
85	Fz_g2(e)	kN	right gear vertical force (earth)	-50.000	50.000	1.0
86	Fz_g3(e)	kN	left gear vertical force (earth)	-50.000	50.000	1.0
87	-----	-	(reserved variable)	0.000	500.000	1.0
88	V_path	m/s	ground path speed in XY earth frm	0.000	500.000	1.0
89	wheels	-	gear position control [0;1]	-1.000	4.000	1.0
90	s_shock	m	general shocker move (work var)	0.000	0.250	1.0
91	mass*	kg/s	vehicle mass consumption rate	-30.000	0.000	1.0
92	payload	kg	payload	0.000	5000.000	1.0

*									
93	CD_(s)	-	drag coefficient/stability frame	0.000	0.250	1.0			
94	CY_(s)	-	sideforce coefficient/stability	-0.150	0.100	1.0			
95	CL_(s)	-	lift coefficient/stability	0.000	2.500	1.0			
96	CLL(s)	-	rolling moment coeff/stability	-0.100	0.150	1.0			
97	CM_(s)	-	pitching moment coefficient/stab	-0.150	0.100	1.0			
98	CN_(s)	-	yawing moment coefficient/stab	-0.100	0.150	1.0			
*									
99	V_ind.gr	km/h	indicator ground speed	0.000	1000.000	1.0			
100	dt_intgr	s	integration step	0.000	0.500	1.0			
101	roh/roh0	-	relative atmospheric density	0.000	1.000	1.0			
102	dens.atm	kg/m3	atmospheric density	0.000	2.500	1.0			
103	temp.atm	Kelvin	atmospheric temperature	200.000	300.000	1.0			
104	pres.atm	mm_Hg	atmospheric pressure	0.000	1000.000	1.0			
105	a_sound	m/s	speed of sound	0.000	500.000	1.0			
106	mass	kg	vehicle mass	0.000	25000.000	1.0			
*									
107	Fx_a(b)	kN	longi aerodynamic force (body)	-25.000	0.000	1.0			
108	Fy_a(b)	kN	side aerodynamic force (body)	-10.000	15.000	1.0			
109	Fz_a(b)	kN	normal aerodynamic force (body)	-200.000	0.000	1.0			
110	Mx_a(b)	kN*m	rolling moment moment (body)	-15.000	10.000	1.0			
111	My_a(b)	kN*m	pitching moment moment (body)	-20.000	80.000	1.0			
112	Mz_a(b)	kN*m	yawing moment moment (body)	-15.000	10.000	1.0			
*									
113	Fx_e(b)	kN	x-axis force due to thrust (body)	-10.000	40.000	1.0			
114	Fy_e(b)	kN	y-axis force due to thrust (body)	-1.000	4.000	1.0			
115	Fz_e(b)	kN	z-axis force due to thrust (body)	-1.000	1.500	1.0			
116	Mx_e(b)	kN*m	x-axis moment due to thrust (body)	0.000	5.000	1.0			
117	My_e(b)	kN*m	y-axis moment due to thrust (body)	-20.000	5.000	1.0			
118	Mz_e(b)	kN*m	z-axis moment due to thrust (body)	-25.000	25.000	1.0			
*									
119	Fx_g(b)	kN	x-axis force due to gear (body)	-5.000	5.000	1.0			
120	Fy_g(b)	kN	y-axis force due to gear (body)	-10.000	15.000	1.0			
121	Fz_g(b)	kN	z-axis force due to gear (body)	-100.000	0.000	1.0			
122	Mx_g(b)	kN*m	x-axis moment due to gear (body)	-25.000	25.000	1.0			
123	My_g(b)	kN*m	y-axis moment due to gear (body)	-40.000	60.000	1.0			
124	Mz_g(b)	kN*m	z-axis moment due to gear (body)	-2.500	10.000	1.0			
*									
125	I_xx	kg*m2	x-axis moment of inertia in roll	0.000	250000.000	1.0			
126	I_zz	kg*m2	z-axis moment of inertia in yaw	0.000	250000.000	1.0			
127	I_yy	kg*m2	y-axis moment of inertia in pitch	0.000	250000.000	1.0			
128	I_xz	kg*m2	xz-axes product of inertia	0.000	50000.000	1.0			
*									
129	yaw**	degr/s2	yaw acceleration (earth)	-10.000	15.000	1.0			
130	headng*	degr/s	heading angle rate	-15.000	10.000	1.0			
131	path*	degr/s	flight path angle rate	-10.000	15.000	1.0			
*									
132	north**	m/s2	north linear acceleration (old)	-10.000	10.000	1.0			
133	height**	m/s2	height linear acceleration (old)	-10.000	10.000	1.0			
134	east**	m/s2	east linear acceleration (old)	-10.000	10.000	1.0			
*									
135	Wx_(e)	m/s	head-tail wind	-15.000	10.000	1.0			
136	Wy_(e)	m/s	crosswind	-20.000	30.000	1.0			
137	Wz_(e)	m/s	up-down wind	-5.000	5.000	1.0			
138	wind	m/s	wind total speed	-50.000	50.000	1.0			
139	Wx*(e)	m/s2	head-tail* wind	-5.000	5.000	1.0			
140	Wy*(e)	m/s2	side* wind	-5.000	5.000	1.0			
141	Wz*(e)	m/s2	updown* wind	-5.000	5.000	1.0			
142	wind*	m/s2	wind total speed rate	-5.000	5.000	1.0			
143	sideslp*	degr/s	sideslip angle rate	-15.000	10.000	1.0			
144	n/w_angl	degr	nose wheel turn angle	-15.000	10.000	1.0			
*									
145	Vkx*(b)	m/s2	U velocity rate (body) long	-5.000	5.000	1.0			
146	Vkz*(b)	m/s2	W velocity rate (body) norm	-5.000	5.000	1.0			
147	Vky*(b)	m/s2	V velocity rate (body) side	-5.000	5.000	1.0			
148	V_trraj*	m/s2	total linear acceleration	-5.000	5.000	1.0			
*									
149	bank**	degr/s2	roll acceleration (body)	-5.000	5.000	1.0			
150	yaw**	degr/s2	yaw acceleration (body)	-5.000	5.000	1.0			
151	pitch**	degr/s2	pitch acceleration (body)	-5.000	5.000	1.0			
*									
152	V_kx_(b)	m/s	U velocity (body) long	0.000	250.000	1.0			
153	V_kz_(b)	m/s	W velocity (body) norm	-25.000	25.000	1.0			
154	V_ky_(b)	m/s	V velocity (body) side	-25.000	25.000	1.0			

155	V_traj	m/s	total velocity along path	0.000	250.000	1.0
*						
156	d_wh1	degr	nose wheel angular parameter	-25.000	25.000	1.0
157	d_wh21	degr	lg # 2 wheel ang. param.	-25.000	25.000	1.0
158	d_wh22	degr	lg # 2 wheel ang. param.	-25.000	25.000	1.0
159	d_wh31	degr	lg # 3 wheel ang. param.	-25.000	25.000	1.0
160	d_wh32	degr	lg # 3 wheel ang. param.	-25.000	25.000	1.0
161	-----	-	reserved variable	-25.000	25.000	1.0
162	a_long	m	long	-0.500	2.000	1.0
163	a_side	m	side	-0.100	0.150	1.0
164	a_norm	m	normal	-0.100	0.400	1.0
165	dz_C.G.	m	(z_C.G. - z_C.G. base) normal	-0.200	0.300	1.0
166	z_C.G.	m	C.G. location along normal axis	0.300	0.800	1.0
167	-----	-	reserved variable	0.000	100.000	1.0
168	-----	-	reserved variable	0.000	100.000	1.0
169	-----	-	reserved variable	0.000	100.000	1.0
170	-----	-	reserved variable	0.000	2.500	1.0
171	-----	-	reserved variable	0.000	2.500	1.0
172	-----	-	reserved variable	0.000	100.000	1.0
173	-----	-	reserved variable	0.000	100.000	1.0
174	-----	-	reserved variable	0.000	100.000	1.0
175	-----	-	reserved variable	0.000	100.000	1.0
176	-----	-	reserved variable	0.000	100.000	1.0
177	-----	-	reserved variable	0.000	100.000	1.0
178	-----	-	reserved variable	0.000	100.000	1.0
179	stop	-	stop(1.0) or simulation(0.0)switch	0.000	5.000	1.0
180	brk_nose	-	nose wheel 'brakes on/off' switch	0.000	1.000	1.0
181	brk_right	-	right wheel 'brakes on/off' switch	0.000	1.000	1.0
182	brk_left	-	left wheel 'brakes on/off' switch	0.000	1.000	1.0
*						
183	throttle	-	generalized throttle	25.000	125.000	1.0
184	TAS	km/h	reserved variable	0.000	0.000	1.0
185	thrust	kN	generalized thrust	0.000	0.000	1.0
*						
186	H_wheels	m	altitude/bottom of main wheel	0.000	1500.000	1.0
187	(H:MAC)	-	H to MAC ratio	0.000	50.000	1.0
188	psi_w(e)	degr	wind direction in XY plane (earth)	-50.000	50.000	1.0
189	phi_w(e)	degr	wind direction in XZ plane (earth)	-100.000	150.000	1.0
190	speed*	m/s2	airspeed derivative	-10.000	15.000	1.0
191	V*_path	m/s2	ground speed derivative	-10.000	15.000	1.0
192	r/climb	%	rate of climb or descent	-10.000	15.000	1.0
193	distance	m	ground distance covered in flight	0.000	2500.000	1.0
194	ground	-	ground proximity factor = f(H:MAC)	0.000	2.500	1.0
195	CL(s)	-	lift coefficient (stability axes)	0.000	2.500	1.0
196	L/D(s)	-	L/D stability frames	0.000	25.000	1.0
197	-----	-	DO NOT USE!!!!!! - must be empty	0.000	0.000	1.0
198	always_0	-	always equal to 0 1.0	-1.000	4.000	1.0
199	always_1	-	always equal to 1 (work variable)	-1.000	4.000	1.0
200	event	-	latest recognized event	0.000	50.000	1.0
201	dt_out	s	time increment in output tables	0.000	2.500	1.0
*						
202	trigger	-	integration advance trigger	0.000	0.500	1.0
203	clock_on	-	"flight clock on" trigger	5.000	50.000	1.0
*						
204	dyn_pres	kg/m/s2	total (dynamic) pressure	0.000	15000.000	1.0
205	e0	-	quaternion 1st parameter	0.000	50.000	1.0
206	e1	-	quaternion 2nd parameter	0.000	50.000	1.0
207	e2	-	quaternion 3rd parameter	0.000	50.000	1.0
208	e3	-	quaternion 4th parameter	0.000	20.000	1.0
209	distanc*	m/s	rate of distance change	0.000	20.000	1.0
210	aircraft	-	aircraft code	0.000	5.000	1.0
211	delay	s	output table recording delay, s	0.000	20.000	1.0
212	call_prt	-	0.000	5.000	1.0	
213	aero_prt	-	interim aerodynamics printout	0.000	5.000	1.0
214	-----	-	DO NOT USE!!!!!! - must be empty	0.000	0.000	1.0
215	-----	-	0.000	15.000	1.0	
216	-----	-	DO NOT USE!!!!!! - must be empty	0.000	0.000	1.0
*						
217	rudder!	degr	rudder (Russian) = -rudder (US)	-30.000	20.000	1.0
218	L/D(b)	-	Lift-over-Drag ratio (body)	0.000	25.000	1.0
219	CD(b)	-	drag force coefficient/body	0.000	0.250	1.0
220	CY(b)	-	side force coefficient/body	-0.150	0.100	1.0
221	CL(b)	-	lift force coefficient/body	0.000	2.500	1.0
222	CLl(b)	-	rolling moment coefficient/body	-0.100	0.150	1.0

223	CM(b)	-	pitching moment coefficient/body	-0.150	0.100	1.0
224	CN(b)	-	yawing moment coefficient/body	-0.100	0.150	1.0
225	CD_WBF	-	wing+body+flaps drag	0.000	0.250	1.0
226	CD_HTE	-	drag due to HT+elevator	-0.100	0.150	1.0
227	CD_sb	-	drag due to speed brake	0.000	0.100	1.0
228	CD_s	-	drag due to spoiler	0.000	0.100	1.0
229	CD_whee	-	drag due to wheels	0.000	0.100	1.0
230	CD_grnd	-	drag due to ground effect	0.000	0.100	1.0
231	-----	-	reserved variable	0.000	0.100	1.0
232	-----	-	reserved variable	0.000	0.100	1.0
233	CD_rain	-	drag due to rain	0.000	0.100	1.0
234	CD_ice	-	drag due to ice	0.000	0.100	1.0
235	-----	-	reserved variable	0.000	0.100	1.0
236	-----	-	reserved variable	0.000	0.100	1.0
237	-----	-	reserved variable	0.000	0.100	1.0
238	CM_WBF	-	pitching moment due to W+B+F	-0.250	0.000	1.0
239	CM_HTE	-	pitching moment due to HT+elev	-0.150	0.100	1.0
240	CM_whee	-	pitching moment due to wheels	-0.150	0.100	1.0
241	CM_AoA*	-	pitching moment due to AoA*	-0.005	0.005	1.0
242	CM_q	-	pitching moment due to pitch rate	-0.005	0.005	1.0
243	CM_xcog	-	pitching moment due to x.CG shift	-0.050	0.050	1.0
244	CM_zcog	-	pitching moment due to z.CG shift	-0.100	0.150	1.0
245	CM_grnd	-	pitching moment due to ground	-0.250	0.000	1.0
246	CM_rain	-	pitching moment due to rain	-0.150	0.100	1.0
247	CM_ice	-	pitching moment due to icing	-0.150	0.100	1.0
248	-----	-	reserved variable	0.000	0.100	1.0
249	-----	-	reserved variable	0.000	0.100	1.0
250	duration	s	duration of flight situation	0.000	100.000	1.0
251	mu_decel	-	tire-runway adhesion factor	0.000	1.000	1.0
252	delta_T	C	atmospheric temperature deviation	0.000	200.000	1.0
253	delta_P	mm_Hg	atmospheric pressure deviation	-15.000	35.000	1.0
254	dy_C.G.	m	y_C.G. y z_C.G. base (side)	-1.000	1.500	1.0
255	y_C.G.	m	y_C.G. location (side)	-1.000	1.500	1.0
256	-----	-	reserved variable	0.000	0.100	1.0
257	ele.trim	degr	reserved variable	-5.000	5.000	1.0
258	rud.trim	degr	reserved variable	0.000	0.100	1.0
259	ail.trim	degr	reserved variable	0.000	0.100	1.0
260	engine1	-	engine 1 switch	0.000	5.000	1.0
261	engine2	-	engine 2 switch	0.000	0.100	1.0
262	-----	-	reserved variable	0.000	0.100	1.0
263	dV_aero	km/h	airspeed indic. error due to aero	-25.000	25.000	1.0
264	dV_compr	km/h	airspeed indic. error due to compr	0.000	50.000	1.0
265	V_IND	km/h	indicator airspeed	0.000	50.000	1.0
266	CL_WBF	-	lift coefficient due to W+B+F	-0.100	0.150	1.0
267	CL_HTE	-	lift coefficient due to HT+elev	-0.100	0.150	1.0
268	CL_sbrk	-	lift due to speed brake	-0.100	0.150	1.0
269	CL_spoil	-	lift due to spoiler	-0.100	0.150	1.0
270	CL_grnd	-	lift coefficient due to ground	-0.100	0.150	1.0
271	CL_AoA*	-	lift coefficient due to AoA*	-0.100	0.150	1.0
272	CL_q	-	lift coefficient due to pitch rate	-0.100	0.150	1.0
273	-----	-	reserved variable	0.000	0.100	1.0
274	CL_rain	-	lift coefficient due to rain	-0.100	0.150	1.0
275	CL_ice	-	lift coefficient due to icing	-0.100	0.150	1.0
276	CLL_beta	-	rolling moment due to sideslip	-0.100	0.150	1.0
277	CLL_rudd	-	rolling moment due to rudder	-0.150	0.100	1.0
278	CLL_ail	-	rolling moment due to ailerons	-0.100	0.150	1.0
279	CLL_spoi	-	rolling moment due to spoiler	-0.100	0.150	1.0
280	CLL_p	-	rolling moment due to roll rate	-0.100	0.150	1.0
281	CLL_r	-	rolling moment due to yaw rate	-0.150	0.100	1.0
282	-----	-	reserved variable	-0.100	0.150	1.0
283	-----	-	reserved variable	-0.100	0.150	1.0
284	-----	-	reserved variable	-0.100	0.150	1.0
285	CN_beta	-	yawing moment due to sideslip	-0.100	0.150	1.0
286	CN_rudd	-	yawing moment due to rudder	-0.150	0.100	1.0
287	CN_ail	-	yawing moment due to ailerons	-0.100	0.150	1.0

288	CN_soil	-	yawing moment due to spoilers	0.000	0.100	1.0
289	CN_xg	-	yawing moment due to x_CG shift	-0.100	0.150	1.0
290	CN_x	-	yawing moment due to yaw rate	-0.100	0.150	1.0
291	CN_p	-	yawing moment due to roll rate	-0.100	0.150	1.0
292	-----	-	reserved variable	-0.100	0.150	1.0
293	-----	-	reserved variable	-0.100	0.150	1.0
294	eps_gl	degr	reserved variable	-100.000	100.000	1.0
295	Z*/L*	-	Z*/L* parameter	-500.000	500.000	1.0
296	pp2_ct	-	parameter	0.000	2.500	1.0
297	eps_cl	degr	reserved variable	-100.000	100.000	1.0
298	delta_h	m	reserved variable	-100.000	100.000	1.0
299	-----	-	reserved variable	0.000	0.100	1.0
300	-----	-	reserved variable	0.000	0.100	1.0
301	-----	-	reserved variable	0.000	0.100	1.0
302	-----	-	reserved variable	-100.000	100.000	1.0
303	-----	-	reserved variable	-100.000	100.000	1.0
304	-----	-	reserved variable	-100.000	100.000	1.0
305	-----	-	(reserved variable)	0.000	10.000	1.0
306	-----	-	(reserved variable)	0.000	10.000	1.0
307	-	-	lambda-parameter (Cy)	0.000	10.000	1.0
308	-	-	lambda-parameter (mz)	0.000	10.000	1.0
309	-----	-	(reserved variable)	0.000	10.000	1.0
310	-----	-	(reserved variable)	0.000	10.000	1.0
311	-----	-	(reserved variable)	0.000	10.000	1.0
312	-----	-	(reserved variable)	0.000	10.000	1.0
313	-----	-	(reserved variable)	0.000	10.000	1.0
314	-----	-	(reserved variable)	0.000	10.000	1.0
315	CY_beta	-	sideforce due to beta	-0.150	0.100	1.0
316	CY_rudd	-	sideforce due to rudder	-0.150	0.100	1.0
317	CY_ail	-	sideforce due to ailerons	-0.100	0.150	1.0
318	CY_spoil	-	sideforce due to spoilers	-0.100	0.150	1.0
319	CY_p	-	sideforce due to roll rate	-0.100	0.150	1.0
320	bank*(s)	degr/s	roll rate (stability)	-50.000	50.000	1.0
321	ptch*(s)	degr/s	pitch rate (stability)	-50.000	50.000	1.0
322	yaw*(s)	degr/s	yaw rate (stability)	-50.000	50.000	1.0
323	bank*(w)	degr/s	roll rate (wind)	-50.000	50.000	1.0
324	ptch*(w)	degr/s	pitch rate (wind)	-50.000	50.000	1.0
325	yaw*(w)	degr/s	yaw rate (wind)	-50.000	50.000	1.0
326	Reynolds	-	Reynolds number	0.000	50.000	1.0
327	bank(s)	degr	bank angle (stability axes)	-700.000	300.000	1.0
328	pitch(s)	degr	pitch angle (stability axes)	0.000	200.000	1.0
329	yaw(s)	degr	yaw angle (stability axes)	-100.000	100.000	1.0
330	bank(w)	degr	bank angle (wind axes)	-250.000	250.000	1.0
331	pitch(w)	degr	pitch angle (wind axes)	-50.000	50.000	1.0
332	yaw(w)	degr	yaw angle (wind axes)	-250.000	250.000	1.0
333	Mx_gyre	kN*m	gyroscope rolling moment	-10.000	15.000	1.0
334	My_gyre	kN*m	gyroscope pitching	-10.000	15.000	1.0
335	Mz_gyre	kN*m	gyroscope yawing	-10.000	15.000	1.0
336	Mx_gyrw	kN*m	gyroscope rolling	-10.000	15.000	1.0
337	My_gyrw	kN*m	gyroscope pitching	-10.000	15.000	1.0
338	Mz_gyrw	kN*m	gyroscope yawing	-10.000	15.000	1.0
339	p*_(e)	degr/s2	roll acceleration (earth)	-50.000	50.000	1.0
340	q*_(e)	degr/s2	pitch acceleration (earth)	-50.000	50.000	1.0
341	r*_(e)	degr/s2	yaw acceleration (earth)	-50.000	50.000	1.0
342	-----	%	reserved variable	-100.000	100.000	1.0
343	-----	%	reserved variable	-100.000	100.000	1.0
344	-----	%	reserved variable	-100.000	100.000	1.0
345	-----	%	reserved variable	-100.000	100.000	1.0
346	-----	%	reserved variable	-100.000	100.000	1.0
347	-----	%	reserved variable	-100.000	100.000	1.0
348	-----	%	reserved variable	-100.000	100.000	1.0

349	hottest	-	code of current "hottest" variable	0.000	10.000	1.0
350	spectrum	-	flight safety spectrum	0.000	10.000	1.0
351	^H	-	altitude spectrum	0.000	10.000	1.0
352	^IAS	-	indicated airspeed spectrum	0.000	10.000	1.0
353	^H*	-	vertical rate spectrum	0.000	10.000	1.0
354	^AoA	-	AoA spectrum	0.000	10.000	1.0
355	^sideslp	-	sideslip spectrum	0.000	10.000	1.0
356	^pitch	-	pitch spectrum	0.000	10.000	1.0
357	^bank	-	bank spectrum	0.000	10.000	1.0
358	^load_f	-	load factor spectrum	0.000	10.000	1.0
359	^elev	-	elevator spectrum	0.000	10.000	1.0
360	^aileron	-	aileron spectrum	0.000	10.000	1.0
361	i_moment	-		0.000	10.000	1.0
*						
362	-	-	(reserved variable)	0.000	10.000	1.0
363	-	-	(reserved variable)	0.000	10.000	1.0
364	-	-	(reserved variable)	0.000	10.000	1.0
365	omega_e1	rad/s	rotation frequency engine # 1	0.000	50.000	1.0
366	omega_e2	rad/s	rotation frequency engine # 2	0.000	50.000	1.0
367	-	-		0.000	0.250	1.0
*						
368	Mx_gyrel	kN*m	gyro rolling	-10.000	15.000	1.0
369	Mx_gyre2	kN*m	gyro rolling	-10.000	15.000	1.0
370	-	-		-0.150	0.100	1.0
*						
371	My_gyrel	kN*m	gyro pitching	-10.000	15.000	1.0
372	My_gyre2	kN*m	gyro pitching	-10.000	15.000	1.0
373	-	-		0.000	2.500	1.0
*						
374	Mz_gyrel	kN*m	gyro yawing	-10.000	15.000	1.0
375	Mz_gyre2	kN*m	gyro yawing	-10.000	15.000	1.0
376	-	-	(reserved variable)	0.000	10.000	1.0
*						
377	rpm_wh1	rpm	wheels r.p.m., gear # 1	-50.000	100.000	1.0
378	rpm_wh2	rpm	wheels r.p.m., gear # 2	-50.000	100.000	1.0
379	rpm_wh3	rpm	wheels r.p.m., gear # 3	-50.000	100.000	1.0
380	-----	-	(reserved variable)	0.000	10.000	1.0
381	omega_w1	rad/s		0.000	50.000	1.0
382	omega_w2	rad/s		0.000	50.000	1.0
383	omega_w3	rad/s		0.000	50.000	1.0
384	-----	-	(reserved variable)	0.000	10.000	1.0
*						
385	Mx_gyrw1	kN*m	gyro rolling	-10.000	15.000	1.0
386	Mx_gyrw2	kN*m	gyro rolling	-10.000	15.000	1.0
387	Mx_gyrw3	kN*m	gyro rolling	-10.000	15.000	1.0
388	-	-		-0.100	0.150	1.0
*						
389	My_gyrw1	kN*m	pitching	-10.000	15.000	1.0
390	My_gyrw2	kN*m	pitching	-10.000	15.000	1.0
391	My_gyrw3	kN*m	pitching	-10.000	15.000	1.0
392	-	-		-0.150	0.100	1.0
*						
393	Mz_gyrw1	kN*m	gyro yawing moment (wheels 1)	-10.000	15.000	1.0
394	Mz_gyrw2	kN*m	gyro yawing	-10.000	15.000	1.0
395	Mz_gyrw3	kN*m	gyro yawing	-10.000	15.000	1.0
396	-	-		-0.100	0.150	1.0
397	TOPFGW	kg	take-off gross weight	0.000	10000.000	1.0
398	reserved	-	(reserved variable)	0.000	10.000	1.0
399	gear_m	-		0.000	25.000	1.0
400	-	-	(reserved variable)	0.000	10.000	1.0
*						
401	IAS_exp	km/h	experimental V_IAS	0.0	500.000	1.0
402	H_exp	m	experimental altitude	0.0	1000.000	1.0
403	-----	-	(reserved variable)	0.000	10.000	1.0
404	pit_con	degr	goal pitch angle	-50.0	50.000	1.0
405	AoA_exp	degr	experimental AoA	0.0	50.000	1.0
406	ny_exp	-	experimental load factor	-1.5	2.500	1.0
407	dist_exp	m	experimental distance	0.0	10000.000	1.0
408	pit_exp	degr	experimental pitch angle	-50.0	50.000	1.0
409	AoA_con	degr	goal AoA	0.0	50.000	1.0
410	ele_exp	degr	(reserved variable)	-25.000	25.000	1.0
411	-----	-	(reserved variable)	0.000	10.000	1.0
412	-----	-	(reserved variable)	0.000	10.000	1.0
413	-----	-	(reserved variable)	0.000	10.000	1.0

```

414 ----- - (reserved variable) 0.000 10.000 1.0
415 ----- - (reserved variable) 0.000 10.000 1.0
416 ----- - (reserved variable) 0.000 10.000 1.0
417 ----- - (reserved variable) 0.000 10.000 1.0
418 ----- - (reserved variable) 0.000 10.000 1.0
419 I_icing - ice buildup intensity
420 I_rain mm/h rain intensity 0.000 500.000 1.0
421 Zadeh - Zadeh fuzzy set membership func 0.000 1.000 1.0
422 ^rudder - rudder safety spectrum 0.000 10.000 1.0
423 ^north - north displacement spectrum 0.000 10.000 1.0
424 ^east - east displacement spectrum 0.000 10.000 1.0
425 ^east* - side velocity spectrum 0.000 10.000 1.0
426 ^wheels - wheels spectrum 0.000 10.000 1.0
427 ----- - (reserved variable) 0.000 10.000 1.0
428 ----- - (reserved variable) 0.000 10.000 1.0
429 ----- - (reserved variable) 0.000 10.000 1.0
430 - - !!dummy variable!! - do NOT use!! 0.000 10.000 1.0
*
431 tang_a_w m/s2 tangential acceleration (wind) -50.000 50.000 1.0
432 late_a_w m/s2 lateral acceleration (wind) -50.000 50.000 1.0
433 norm_a_w m/s2 normal acceleration (wind) -50.000 50.000 1.0
*
434 rol_ac_w degr/s2 rolling acceleration (wind) -50.000 50.000 1.0
435 pit_ac_w degr/s2 pitching acceleration (wind) -50.000 50.000 1.0
436 yaw_ac_w degr/s2 yawing acceleration (wind) -50.000 50.000 1.0
*
437 fwd_ac_e m/s2 forward flight acceleration (earth) -50.000 50.000 1.0
438 sid_ac_e m/s2 side acceleration (earth) -50.000 50.000 1.0
439 ver_ac_e m/s2 vertical acceleration (earth) -50.000 50.000 1.0
*
440 rol_ac_e degr/s2 rolling acceleration (earth) -50.000 50.000 1.0
441 pit_ac_e degr/s2 pitching acceleration (earth) -50.000 50.000 1.0
442 yaw_ac_e degr/s2 yawing acceleration (earth) -50.000 50.000 1.0
*
443 CD(w) - drag force coefficient(wind) 0.000 0.250 1.0
444 CY(w) - side force coefficientV -0.150 0.100 1.0
445 CL(w) - lift force coefficient(wind) 0.000 2.500 1.0
446 CLl(w) - rolling moment coefficient(wind) -0.100 0.150 1.0
447 CM(w) - pitching moment coefficient(wind) -0.150 0.100 1.0
448 CN(w) - yawing moment coefficient (wind) -0.100 0.150 1.0
449 L/D(w) - Lift-over-Drag ratio (wind) 0.000 25.000 1.0
450 ----- - (reserved variable) 0.000 10.000 1.0
send

```

APPENDIX E

AERODYNAMICS MODEL FOR CITATION X
IN VATES DATA STANDARD

There are 19 files that comprise the aerodynamics definition for the Citation X in the VATES data standard. They are constructed with Digital DATCOMmax (a modified version of Digital DATCOM) Their descriptions and contents follow: DCLEAN1.INP, DCLEAN2.INP, DDICE.INP, DLACE1.INP, DLACE2.INP, DLOCE_00.INP, DLOCE_N05.INP, DLOCE_N10.INP, DLOCE_N15.INP, DLOCE_P05.INP, DLOCE_P10.INP, DLOCE_P15.INP, DLOCE_P20.INP, KLOCE.INP, SPDBRK.INP, LDGR.INP, GRD_1430.INP, GRD_4845.INP, GRD_9690.INP.

- DCLEAN.inp (static derivatives)

```

&ARG01      C      PROTOCOL      0      DCLEAN1
&ARG02      C      TEST_CONDITION  0      TEST0001.CND
&ARG03      C      REPORT_CODE    0      18-11
&ARG04      X      AOA             1      REF. BELOW
&ARG05      X      MACH            2      REF. BELOW
&ARG06      X      FLAP_SET        9      REF. BELOW
&ARG07      X      STABILZR        5      0.0
&ARG08      X      ELEVATOR        3      0.0
&ARG09      X      RUDDER          10     0.0
&ARG10      X      AILERON         4      0.0
&ARG11      X      SIDESLIP        11     0.0
*
&SNAME      &ARG04      &ARG05      &ARG06      &FUN01      &FUN02      &FUN03      &FUN04      &FUN05      &FUN06      &FUN07      &FUN08
&UNAME      AOA        MACH        FLAP_SET   CLWB        CDWB        CMWB        CYB        CLLB        CNB        CLAD        CMAD
&UCODE      1          2          9          0          0          0          0          0          0          0          0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*STATIC DERIVATIVES
*
&VALUE      -4.000000  0.100000  1.000000  -0.093624  0.019332  0.213181  -0.011985  -0.001441  0.001437  0.027967  -0.091756
&VALUE      -2.000000  0.100000  1.000000  0.070395  0.018562  0.182420  -0.011985  -0.001755  0.001437  0.028052  -0.092035
&VALUE      0.000000  0.100000  1.000000  0.233604  0.020923  0.059219  -0.011985  -0.002066  0.001437  0.028192  -0.092495
&VALUE      2.000000  0.100000  1.000000  0.394665  0.026329  -0.067208  -0.011985  -0.002369  0.001437  0.028209  -0.092551
&VALUE      4.000000  0.100000  1.000000  0.552103  0.034782  -0.193700  -0.011985  -0.002660  0.001437  0.028053  -0.092040
&VALUE      6.000000  0.100000  1.000000  0.704136  0.045871  -0.317953  -0.011985  -0.002934  0.001437  0.027736  -0.091000
&VALUE      8.000000  0.100000  1.000000  0.849892  0.059198  -0.439900  -0.011985  -0.003190  0.001437  0.027259  -0.089432
&VALUE      10.000000  0.100000  1.000000  0.986679  0.074402  -0.554227  -0.011985  -0.003424  0.001437  0.026569  -0.087171
&VALUE      12.000000  0.100000  1.000000  1.113937  0.091174  -0.659580  -0.011985  -0.003634  0.001437  0.025722  -0.084391
&VALUE      14.000000  0.100000  1.000000  1.235514  0.109879  -0.758117  -0.011985  -0.003828  0.001437  0.025404  -0.083349
&VALUE      16.000000  0.100000  1.000000  1.349413  0.130678  -0.846615  -0.011985  -0.004001  0.001437  0.025577  -0.083916
&VALUE      18.000000  0.100000  1.000000  1.454144  0.153565  -0.924697  -0.011985  -0.004150  0.001437  0.025541  -0.083796
&VALUE      20.000000  0.100000  1.000000  1.549475  0.178519  -0.991561  -0.011985  -0.004275  0.001437  0.022324  -0.073242
&VALUE      22.000000  0.100000  1.000000  1.619349  0.201522  -0.281739  -0.011985  -0.004332  0.001437  0.010046  -0.032958
&VALUE      24.000000  0.100000  1.000000  1.601727  0.212364  -0.304310  -0.011985  -0.004149  0.001437  -0.009436  0.030957
&VALUE      26.000000  0.100000  1.000000  1.442532  0.207631  -0.321997  -0.011985  -0.003580  0.001437  -0.018233  0.059822
&VALUE      28.000000  0.100000  1.000000  1.317979  0.220120  -0.321938  -0.011985  -0.003126  0.001437  -0.012016  0.039423
&VALUE      30.000000  0.100000  1.000000  1.209819  0.237141  -0.279091  -0.011985  -0.002747  0.001437  -0.007258  0.023814
*
&VALUE      -4.000000  0.200000  1.000000  -0.093567  0.017169  0.212437  -0.011954  -0.001437  0.001301  0.028015  -0.091913
&VALUE      -2.000000  0.200000  1.000000  0.071317  0.016433  0.181162  -0.011954  -0.001758  0.001301  0.028092  -0.092167
&VALUE      0.000000  0.200000  1.000000  0.235298  0.018592  0.058040  -0.011954  -0.002076  0.001301  0.028217  -0.092577
&VALUE      2.000000  0.200000  1.000000  0.397016  0.023562  -0.068316  -0.011954  -0.002386  0.001301  0.028218  -0.092581
&VALUE      4.000000  0.200000  1.000000  0.554997  0.031327  -0.194775  -0.011954  -0.002683  0.001301  0.028045  -0.092014
&VALUE      6.000000  0.200000  1.000000  0.707444  0.041515  -0.319039  -0.011954  -0.002963  0.001301  0.027711  -0.090917
&VALUE      8.000000  0.200000  1.000000  0.853517  0.053771  -0.440988  -0.011954  -0.003224  0.001301  0.027220  -0.089306
&VALUE      10.000000  0.200000  1.000000  0.990538  0.067760  -0.555295  -0.011954  -0.003462  0.001301  0.026520  -0.087008
&VALUE      12.000000  0.200000  1.000000  1.117954  0.083198  -0.660657  -0.011954  -0.003677  0.001301  0.025658  -0.084180
&VALUE      14.000000  0.200000  1.000000  1.239599  0.100514  -0.759154  -0.011954  -0.003874  0.001301  0.025324  -0.083086
&VALUE      16.000000  0.200000  1.000000  1.353475  0.119913  -0.847495  -0.011954  -0.004051  0.001301  0.025481  -0.083601
&VALUE      18.000000  0.200000  1.000000  1.458077  0.141425  -0.925329  -0.011954  -0.004203  0.001301  0.025399  -0.083330

```

&VALUE	20.000000	0.200000	1.000000	1.553229	0.165082	-0.991949	-0.011954	-0.004331	0.001301	0.021883	-0.071796
&VALUE	22.000000	0.200000	1.000000	1.621279	0.186974	-0.279989	-0.011954	-0.004384	0.001301	0.009137	-0.029979
&VALUE	24.000000	0.200000	1.000000	1.594740	0.197128	-0.302779	-0.011954	-0.004179	0.001301	-0.009461	0.031040
&VALUE	26.000000	0.200000	1.000000	1.438953	0.195940	-0.319837	-0.011954	-0.003616	0.001301	-0.016320	0.053544
&VALUE	28.000000	0.200000	1.000000	1.326853	0.211099	-0.321082	-0.011954	-0.003191	0.001301	-0.009033	0.029636
&VALUE	30.000000	0.200000	1.000000	1.230345	0.230402	-0.280056	-0.011954	-0.002838	0.001301	-0.004052	0.013295
*											
&VALUE	-4.000000	0.300000	1.000000	-0.093113	0.016725	0.213078	-0.011900	-0.001431	0.001209	0.027832	-0.091312
&VALUE	-2.000000	0.300000	1.000000	0.072925	0.016054	0.178094	-0.011900	-0.001765	0.001209	0.027866	-0.091425
&VALUE	0.000000	0.300000	1.000000	0.237637	0.018234	0.055280	-0.011900	-0.002095	0.001209	0.027905	-0.091553
&VALUE	2.000000	0.300000	1.000000	0.399538	0.023162	-0.070571	-0.011900	-0.002415	0.001209	0.027819	-0.091271
&VALUE	4.000000	0.300000	1.000000	0.557130	0.030789	-0.196305	-0.011900	-0.002720	0.001209	0.027555	-0.090406
&VALUE	6.000000	0.300000	1.000000	0.708445	0.040728	-0.319509	-0.011900	-0.003006	0.001209	0.027130	-0.089011
&VALUE	8.000000	0.300000	1.000000	0.852828	0.052613	-0.439996	-0.011900	-0.003270	0.001209	0.026570	-0.087174
&VALUE	10.000000	0.300000	1.000000	0.987727	0.066107	-0.552551	-0.011900	-0.003511	0.001209	0.025815	-0.084696
&VALUE	12.000000	0.300000	1.000000	1.112493	0.080911	-0.655725	-0.011900	-0.003725	0.001209	0.024886	-0.081647
&VALUE	14.000000	0.300000	1.000000	1.230995	0.097465	-0.751594	-0.011900	-0.003921	0.001209	0.024469	-0.080281
&VALUE	16.000000	0.300000	1.000000	1.341268	0.115985	-0.836578	-0.011900	-0.004095	0.001209	0.024513	-0.080426
&VALUE	18.000000	0.300000	1.000000	1.441909	0.136515	-0.911071	-0.011900	-0.004243	0.001209	0.024119	-0.079131
&VALUE	20.000000	0.300000	1.000000	1.531392	0.158873	-0.972931	-0.011900	-0.004361	0.001209	0.018927	-0.062097
&VALUE	22.000000	0.300000	1.000000	1.587694	0.178499	-0.272689	-0.011900	-0.004388	0.001209	0.003908	-0.012822
&VALUE	24.000000	0.300000	1.000000	1.503745	0.180553	-0.294391	-0.011900	-0.004025	0.001209	-0.009295	0.030495
&VALUE	26.000000	0.300000	1.000000	1.387914	0.188532	-0.304423	-0.011900	-0.003572	0.001209	-0.009341	0.030648
&VALUE	28.000000	0.300000	1.000000	1.300445	0.205503	-0.303212	-0.011900	-0.003210	0.001209	0.000297	-0.000976
&VALUE	30.000000	0.300000	1.000000	1.241787	0.229130	-0.255741	-0.011900	-0.002964	0.001209	0.006777	-0.022235
*											
&VALUE	-4.000000	0.400000	1.000000	-0.092609	0.016581	0.213328	-0.011815	-0.001420	0.001127	0.027726	-0.090965
&VALUE	-2.000000	0.400000	1.000000	0.075351	0.015978	0.174717	-0.011815	-0.001772	0.001127	0.027714	-0.090928
&VALUE	0.000000	0.400000	1.000000	0.241493	0.018239	0.052073	-0.011815	-0.002120	0.001127	0.027661	-0.090754
&VALUE	2.000000	0.400000	1.000000	0.404195	0.023231	-0.073329	-0.011815	-0.002455	0.001127	0.027482	-0.090166
&VALUE	4.000000	0.400000	1.000000	0.561942	0.030876	-0.198343	-0.011815	-0.002772	0.001127	0.027121	-0.088980
&VALUE	6.000000	0.400000	1.000000	0.712601	0.040761	-0.320542	-0.011815	-0.003068	0.001127	0.026599	-0.087268
&VALUE	8.000000	0.400000	1.000000	0.855763	0.052503	-0.439689	-0.011815	-0.003341	0.001127	0.025967	-0.085195
&VALUE	10.000000	0.400000	1.000000	0.988955	0.065760	-0.550632	-0.011815	-0.003587	0.001127	0.025152	-0.082519
&VALUE	12.000000	0.400000	1.000000	1.111465	0.080206	-0.651899	-0.011815	-0.003805	0.001127	0.024147	-0.079225
&VALUE	14.000000	0.400000	1.000000	1.227183	0.096289	-0.745506	-0.011815	-0.004003	0.001127	0.023644	-0.077572
&VALUE	16.000000	0.400000	1.000000	1.334172	0.114225	-0.827554	-0.011815	-0.004176	0.001127	0.023459	-0.076966
&VALUE	18.000000	0.400000	1.000000	1.431159	0.134065	-0.899335	-0.011815	-0.004322	0.001127	0.021833	-0.071631
&VALUE	20.000000	0.400000	1.000000	1.508299	0.154254	-0.245105	-0.011815	-0.004412	0.001127	0.013983	-0.045877
&VALUE	22.000000	0.400000	1.000000	1.524951	0.167742	-0.268100	-0.011815	-0.004336	0.001127	0.000559	-0.001834
&VALUE	24.000000	0.400000	1.000000	1.428969	0.170467	-0.286695	-0.011815	-0.003935	0.001127	-0.004938	0.016202
&VALUE	26.000000	0.400000	1.000000	1.361031	0.185501	-0.290914	-0.011815	-0.003615	0.001127	-0.000587	0.001927
&VALUE	28.000000	0.400000	1.000000	1.313589	0.205995	-0.289444	-0.011815	-0.003360	0.001127	0.008092	-0.026551
&VALUE	30.000000	0.400000	1.000000	1.277731	0.231521	-0.240912	-0.011815	-0.003177	0.001127	0.013423	-0.044039
*											
&VALUE	-4.000000	0.500000	1.000000	-0.091978	0.016416	0.212828	-0.011690	-0.001403	0.001043	0.027657	-0.090741
&VALUE	-2.000000	0.500000	1.000000	0.078817	0.015885	0.170633	-0.011690	-0.001779	0.001043	0.027596	-0.090539
&VALUE	0.000000	0.500000	1.000000	0.247212	0.018254	0.048085	-0.011690	-0.002148	0.001043	0.027442	-0.090036
&VALUE	2.000000	0.500000	1.000000	0.411428	0.023356	-0.076855	-0.011690	-0.002502	0.001043	0.027161	-0.089114
&VALUE	4.000000	0.500000	1.000000	0.569943	0.031080	-0.201076	-0.011690	-0.002836	0.001043	0.026694	-0.087580
&VALUE	6.000000	0.500000	1.000000	0.720476	0.040978	-0.322251	-0.011690	-0.003145	0.001043	0.026070	-0.085531
&VALUE	8.000000	0.500000	1.000000	0.862918	0.052655	-0.440083	-0.011690	-0.003428	0.001043	0.025361	-0.083206
&VALUE	10.000000	0.500000	1.000000	0.994785	0.065751	-0.549413	-0.011690	-0.003682	0.001043	0.024476	-0.080304
&VALUE	12.000000	0.500000	1.000000	1.115402	0.079923	-0.648935	-0.011690	-0.003906	0.001043	0.023392	-0.076746
&VALUE	14.000000	0.500000	1.000000	1.228656	0.095620	-0.740505	-0.011690	-0.004107	0.001043	0.022798	-0.074796
&VALUE	16.000000	0.500000	1.000000	1.332625	0.113061	-0.819874	-0.011690	-0.004282	0.001043	0.022450	-0.073657
&VALUE	18.000000	0.500000	1.000000	1.426115	0.132301	-0.889117	-0.011690	-0.004427	0.001043	0.019756	-0.064817
&VALUE	20.000000	0.500000	1.000000	1.495424	0.151130	-0.237717	-0.011690	-0.004501	0.001043	0.009845	-0.032299
&VALUE	22.000000	0.500000	1.000000	1.465197	0.157781	-0.261768	-0.011690	-0.004295	0.001043	-0.000296	0.000971
&VALUE	24.000000	0.500000	1.000000	1.395750	0.166627	-0.276729	-0.011690	-0.003966	0.001043	-0.001004	0.003295
&VALUE	26.000000	0.500000	1.000000	1.344447	0.182653	-0.278282	-0.011690	-0.003693	0.001043	0.004204	-0.013793
&VALUE	28.000000	0.500000	1.000000	1.326040	0.206615	-0.276076	-0.011690	-0.003519	0.001043	0.012344	-0.040498
&VALUE	30.000000	0.500000	1.000000	1.301998	0.232770	-0.229432	-0.011690	-0.003370	0.001043	0.016478	-0.054063
*											
&VALUE	-4.000000	0.100000	2.000000	-0.079805	0.019332	0.213179	-0.011985	-0.001476	0.001437	0.027959	-0.091730
&VALUE	-2.000000	0.100000	2.000000	0.084217	0.018562	0.182410	-0.011985	-0.001790	0.001437	0.028045	-0.092014
&VALUE	0.000000	0.100000	2.000000	0.247427	0.020923	0.059203	-0.011985	-0.002101	0.001437	0.028188	-0.092481
&VALUE	2.000000	0.100000	2.000000	0.408489	0.026329	-0.067227	-0.011985	-0.002405	0.001437	0.028205	-0.092539
&VALUE	4.000000	0.100000	2.000000	0.565929	0.034782	-0.193723	-0.011985	-0.002695	0.001437	0.028050	-0.092030
&VALUE	6.000000	0.100000	2.000000	0.717962	0.045871	-0.317979	-0.011985	-0.002970	0.001437	0.027733	-0.090990
&VALUE	8.000000	0.100000	2.000000	0.863718	0.059198	-0.439927	-0.011985	-0.003226	0.001437	0.027256	-0.089424
&VALUE	10.000000	0.100000	2.000000	1.000506	0.074403	-0.554257	-0.011985	-0.003459	0.001437	0.026567	-0.087163
&VALUE	12.000000	0.100000	2.000000	1.127764	0.091175	-0.659609	-0.011985	-0.003669	0.001437	0.025718	-0.084377
&VALUE	14.000000	0.100000	2.000000	1.249341	0.109879	-0.758148	-0.011985	-0.003863	0.001437	0.025398	-0.083329

&VALUE	16.000000	0.100000	2.000000	1.363241	0.130678	-0.846648	-0.011985	-0.004037	0.001437	0.025570	-0.083892
&VALUE	18.000000	0.100000	2.000000	1.467973	0.153565	-0.924735	-0.011985	-0.004186	0.001437	0.025532	-0.083767
&VALUE	20.000000	0.100000	2.000000	1.563305	0.178519	-0.991600	-0.011985	-0.004311	0.001437	0.022312	-0.073204
&VALUE	22.000000	0.100000	2.000000	1.633178	0.201520	-0.281777	-0.011985	-0.004367	0.001437	0.010034	-0.032922
&VALUE	24.000000	0.100000	2.000000	1.615555	0.212362	-0.304344	-0.011985	-0.004184	0.001437	-0.009441	0.030976
&VALUE	26.000000	0.100000	2.000000	1.456357	0.207628	-0.322022	-0.011985	-0.003616	0.001437	-0.018251	0.059880
&VALUE	28.000000	0.100000	2.000000	1.332063	0.220181	-0.322885	-0.011985	-0.003162	0.001437	-0.012042	0.039570
&VALUE	30.000000	0.100000	2.000000	1.223158	0.237006	-0.277365	-0.011985	-0.002783	0.001437	-0.007226	0.023707
*											
&VALUE	-4.000000	0.200000	2.000000	-0.079840	0.017169	0.212435	-0.011954	-0.001473	0.001301	0.028007	-0.091888
&VALUE	-2.000000	0.200000	2.000000	0.085047	0.016434	0.181153	-0.011954	-0.001794	0.001301	0.028086	-0.092147
&VALUE	0.000000	0.200000	2.000000	0.249030	0.018592	0.058025	-0.011954	-0.002112	0.001301	0.028213	-0.092563
&VALUE	2.000000	0.200000	2.000000	0.410749	0.023562	-0.068336	-0.011954	-0.002422	0.001301	0.028215	-0.092569
&VALUE	4.000000	0.200000	2.000000	0.568731	0.031327	-0.194798	-0.011954	-0.002719	0.001301	0.028042	-0.092003
&VALUE	6.000000	0.200000	2.000000	0.721178	0.041516	-0.319065	-0.011954	-0.002999	0.001301	0.027708	-0.090907
&VALUE	8.000000	0.200000	2.000000	0.867252	0.053771	-0.441015	-0.011954	-0.003260	0.001301	0.027217	-0.089297
&VALUE	10.000000	0.200000	2.000000	1.004274	0.067760	-0.555325	-0.011954	-0.003498	0.001301	0.026517	-0.087000
&VALUE	12.000000	0.200000	2.000000	1.131689	0.083198	-0.660686	-0.011954	-0.003712	0.001301	0.025653	-0.084166
&VALUE	14.000000	0.200000	2.000000	1.253335	0.100514	-0.759185	-0.011954	-0.003910	0.001301	0.025318	-0.083065
&VALUE	16.000000	0.200000	2.000000	1.367211	0.119912	-0.847528	-0.011954	-0.004087	0.001301	0.025474	-0.083577
&VALUE	18.000000	0.200000	2.000000	1.471815	0.141425	-0.925367	-0.011954	-0.004239	0.001301	0.025390	-0.083302
&VALUE	20.000000	0.200000	2.000000	1.566967	0.165081	-0.991987	-0.011954	-0.004367	0.001301	0.021871	-0.071758
&VALUE	22.000000	0.200000	2.000000	1.635017	0.186972	-0.280028	-0.011954	-0.004420	0.001301	0.009127	-0.029943
&VALUE	24.000000	0.200000	2.000000	1.608477	0.197125	-0.302812	-0.011954	-0.004215	0.001301	-0.009466	0.031058
&VALUE	26.000000	0.200000	2.000000	1.452687	0.195936	-0.319861	-0.011954	-0.003652	0.001301	-0.016338	0.053604
&VALUE	28.000000	0.200000	2.000000	1.340744	0.211129	-0.321661	-0.011954	-0.003226	0.001301	-0.009051	0.029694
&VALUE	30.000000	0.200000	2.000000	1.243593	0.230276	-0.278340	-0.011954	-0.002874	0.001301	-0.004030	0.013221
*											
&VALUE	-4.000000	0.300000	2.000000	-0.079546	0.016725	0.213076	-0.011900	-0.001467	0.001209	0.027824	-0.091288
&VALUE	-2.000000	0.300000	2.000000	0.086493	0.016054	0.178084	-0.011900	-0.001801	0.001209	0.027860	-0.091405
&VALUE	0.000000	0.300000	2.000000	0.251208	0.018235	0.055265	-0.011900	-0.002131	0.001209	0.027901	-0.091539
&VALUE	2.000000	0.300000	2.000000	0.413110	0.023162	-0.070590	-0.011900	-0.002451	0.001209	0.027815	-0.091260
&VALUE	4.000000	0.300000	2.000000	0.570702	0.030789	-0.196328	-0.011900	-0.002756	0.001209	0.027552	-0.090396
&VALUE	6.000000	0.300000	2.000000	0.722018	0.040728	-0.319534	-0.011900	-0.003042	0.001209	0.027128	-0.089002
&VALUE	8.000000	0.300000	2.000000	0.866402	0.052613	-0.440022	-0.011900	-0.003306	0.001209	0.026568	-0.087166
&VALUE	10.000000	0.300000	2.000000	1.001301	0.066107	-0.552580	-0.011900	-0.003547	0.001209	0.025813	-0.084688
&VALUE	12.000000	0.300000	2.000000	1.126068	0.080911	-0.655753	-0.011900	-0.003761	0.001209	0.024882	-0.081634
&VALUE	14.000000	0.300000	2.000000	1.244570	0.097465	-0.751625	-0.011900	-0.003957	0.001209	0.024463	-0.080261
&VALUE	16.000000	0.300000	2.000000	1.354842	0.115985	-0.836609	-0.011900	-0.004131	0.001209	0.024506	-0.080403
&VALUE	18.000000	0.300000	2.000000	1.455485	0.136514	-0.911107	-0.011900	-0.004279	0.001209	0.024111	-0.079104
&VALUE	20.000000	0.300000	2.000000	1.544968	0.158872	-0.972967	-0.011900	-0.004397	0.001209	0.018916	-0.062062
&VALUE	22.000000	0.300000	2.000000	1.601271	0.178497	-0.272725	-0.011900	-0.004424	0.001209	0.003899	-0.012791
&VALUE	24.000000	0.300000	2.000000	1.517319	0.180550	-0.294420	-0.011900	-0.004061	0.001209	-0.009300	0.030512
&VALUE	26.000000	0.300000	2.000000	1.401487	0.188528	-0.304443	-0.011900	-0.003608	0.001209	-0.009361	0.030711
&VALUE	28.000000	0.300000	2.000000	1.314189	0.205536	-0.303844	-0.011900	-0.003246	0.001209	-0.000284	-0.000933
&VALUE	30.000000	0.300000	2.000000	1.254899	0.229013	-0.254116	-0.011900	-0.003000	0.001209	0.006767	-0.022200
*											
&VALUE	-4.000000	0.400000	2.000000	-0.079289	0.016581	0.213327	-0.011815	-0.001456	0.001127	0.027718	-0.090941
&VALUE	-2.000000	0.400000	2.000000	0.088673	0.015978	0.174709	-0.011815	-0.001809	0.001127	0.027708	-0.090908
&VALUE	0.000000	0.400000	2.000000	0.254818	0.018239	0.052058	-0.011815	-0.002156	0.001127	0.027657	-0.090740
&VALUE	2.000000	0.400000	2.000000	0.417521	0.023231	-0.073348	-0.011815	-0.002491	0.001127	0.027479	-0.090155
&VALUE	4.000000	0.400000	2.000000	0.575269	0.030877	-0.198365	-0.011815	-0.002809	0.001127	0.027118	-0.088970
&VALUE	6.000000	0.400000	2.000000	0.725928	0.040761	-0.320566	-0.011815	-0.003105	0.001127	0.026596	-0.087259
&VALUE	8.000000	0.400000	2.000000	0.869090	0.052503	-0.439715	-0.011815	-0.003377	0.001127	0.025965	-0.085187
&VALUE	10.000000	0.400000	2.000000	1.002283	0.065760	-0.550659	-0.011815	-0.003623	0.001127	0.025149	-0.082512
&VALUE	12.000000	0.400000	2.000000	1.124793	0.080206	-0.651926	-0.011815	-0.003841	0.001127	0.024144	-0.079213
&VALUE	14.000000	0.400000	2.000000	1.240512	0.096289	-0.745535	-0.011815	-0.004039	0.001127	0.023638	-0.077553
&VALUE	16.000000	0.400000	2.000000	1.347500	0.114224	-0.827584	-0.011815	-0.004213	0.001127	0.023452	-0.076944
&VALUE	18.000000	0.400000	2.000000	1.444488	0.134064	-0.899370	-0.011815	-0.004358	0.001127	0.021825	-0.071606
&VALUE	20.000000	0.400000	2.000000	1.521629	0.154253	-0.245138	-0.011815	-0.004449	0.001127	0.013974	-0.045846
&VALUE	22.000000	0.400000	2.000000	1.538280	0.167740	-0.268133	-0.011815	-0.004372	0.001127	0.000551	-0.001807
&VALUE	24.000000	0.400000	2.000000	1.442296	0.170464	-0.286721	-0.011815	-0.003972	0.001127	-0.004944	0.016221
&VALUE	26.000000	0.400000	2.000000	1.374357	0.185497	-0.290933	-0.011815	-0.003652	0.001127	-0.000608	0.001996
&VALUE	28.000000	0.400000	2.000000	1.326988	0.206005	-0.289722	-0.011815	-0.003396	0.001127	0.008079	-0.026508
&VALUE	30.000000	0.400000	2.000000	1.290653	0.231417	-0.239487	-0.011815	-0.003214	0.001127	0.013395	-0.043949
*											
&VALUE	-4.000000	0.500000	2.000000	-0.079014	0.016416	0.212827	-0.011690	-0.001440	0.001043	0.027650	-0.090718
&VALUE	-2.000000	0.500000	2.000000	0.091783	0.015886	0.170624	-0.011690	-0.001816	0.001043	0.027590	-0.090520
&VALUE	0.000000	0.500000	2.000000	0.260179	0.018254	0.048071	-0.011690	-0.002184	0.001043	0.027438	-0.090023
&VALUE	2.000000	0.500000	2.000000	0.424397	0.023356	-0.076873	-0.011690	-0.002538	0.001043	0.027158	-0.089103
&VALUE	4.000000	0.500000	2.000000	0.582912	0.031080	-0.201097	-0.011690	-0.002872	0.001043	0.026691	-0.087571
&VALUE	6.000000	0.500000	2.000000	0.733446	0.040978	-0.322274	-0.011690	-0.003181	0.001043	0.026067	-0.085523
&VALUE	8.000000	0.500000	2.000000	0.875888	0.052655	-0.440108	-0.011690	-0.003464	0.001043	0.025359	-0.083199
&VALUE	10.000000	0.500000	2.000000	1.007755	0.065751	-0.549440	-0.011690	-0.003719	0.001043	0.024474	-0.080297

&VALUE	12.000000	0.500000	2.000000	1.128372	0.079923	-0.648961	-0.011690	-0.003942	0.001043	0.023388	-0.076734
&VALUE	14.000000	0.500000	2.000000	1.241627	0.095620	-0.740533	-0.011690	-0.004144	0.001043	0.022792	-0.074778
&VALUE	16.000000	0.500000	2.000000	1.345596	0.113060	-0.819903	-0.011690	-0.004319	0.001043	0.022444	-0.073636
&VALUE	18.000000	0.500000	2.000000	1.439087	0.132300	-0.889150	-0.011690	-0.004463	0.001043	0.019749	-0.064795
&VALUE	20.000000	0.500000	2.000000	1.508396	0.151129	-0.237748	-0.011690	-0.004538	0.001043	0.009836	-0.032272
&VALUE	22.000000	0.500000	2.000000	1.478169	0.157779	-0.261798	-0.011690	-0.004332	0.001043	-0.000303	0.000996
&VALUE	24.000000	0.500000	2.000000	1.408719	0.166624	-0.276753	-0.011690	-0.004002	0.001043	-0.001011	0.003316
&VALUE	26.000000	0.500000	2.000000	1.357414	0.182649	-0.278299	-0.011690	-0.003730	0.001043	0.004182	-0.013722
&VALUE	28.000000	0.500000	2.000000	1.339012	0.206609	-0.276106	-0.011690	-0.003556	0.001043	0.012326	-0.040441
&VALUE	30.000000	0.500000	2.000000	1.314624	0.232682	-0.228228	-0.011690	-0.003406	0.001043	0.016447	-0.053961
*											
&VALUE	-4.000000	0.100000	3.000000	0.011096	0.019332	0.143126	-0.011985	-0.001710	0.001437	0.027929	-0.091631
&VALUE	-2.000000	0.100000	3.000000	0.175264	0.018562	0.211741	-0.011985	-0.002024	0.001437	0.028024	-0.091943
&VALUE	0.000000	0.100000	3.000000	0.338616	0.020923	0.092016	-0.011985	-0.002336	0.001437	0.028178	-0.092449
&VALUE	2.000000	0.100000	3.000000	0.499817	0.026330	-0.033209	-0.011985	-0.002639	0.001437	0.028193	-0.092498
&VALUE	4.000000	0.100000	3.000000	0.657400	0.034783	-0.159113	-0.011985	-0.002930	0.001437	0.028010	-0.091898
&VALUE	6.000000	0.100000	3.000000	0.808945	0.045872	-0.283066	-0.011985	-0.003204	0.001437	0.027659	-0.090745
&VALUE	8.000000	0.100000	3.000000	0.954576	0.059201	-0.404853	-0.011985	-0.003459	0.001437	0.027218	-0.089298
&VALUE	10.000000	0.100000	3.000000	1.091360	0.074404	-0.519002	-0.011985	-0.003693	0.001437	0.026563	-0.087151
&VALUE	12.000000	0.100000	3.000000	1.218617	0.091176	-0.624230	-0.011985	-0.003903	0.001437	0.025690	-0.084286
&VALUE	14.000000	0.100000	3.000000	1.340197	0.109880	-0.722686	-0.011985	-0.004097	0.001437	0.025357	-0.083192
&VALUE	16.000000	0.100000	3.000000	1.454073	0.130678	-0.809952	-0.011985	-0.004270	0.001437	0.025506	-0.083681
&VALUE	18.000000	0.100000	3.000000	1.558759	0.153563	-0.888106	-0.011985	-0.004419	0.001437	0.025476	-0.083584
&VALUE	20.000000	0.100000	3.000000	1.653999	0.178515	-0.954981	-0.011985	-0.004544	0.001437	0.022269	-0.073062
&VALUE	22.000000	0.100000	3.000000	1.723834	0.201512	-0.245632	-0.011985	-0.004600	0.001437	0.009936	-0.032600
&VALUE	24.000000	0.100000	3.000000	1.706174	0.212344	-0.268356	-0.011985	-0.004417	0.001437	-0.009475	0.031087
&VALUE	26.000000	0.100000	3.000000	1.546909	0.207604	-0.286366	-0.011985	-0.003848	0.001437	-0.018344	0.060185
&VALUE	28.000000	0.100000	3.000000	1.423284	0.220322	-0.290210	-0.011985	-0.003394	0.001437	-0.012153	0.039874
&VALUE	30.000000	0.100000	3.000000	1.310593	0.236168	-0.231856	-0.011985	-0.003015	0.001437	-0.006990	0.022933
*											
&VALUE	-4.000000	0.200000	3.000000	0.011804	0.017169	0.142824	-0.011954	-0.001711	0.001301	0.027977	-0.091790
&VALUE	-2.000000	0.200000	3.000000	0.176843	0.016434	0.210483	-0.011954	-0.002033	0.001301	0.028065	-0.092078
&VALUE	0.000000	0.200000	3.000000	0.340973	0.018592	0.090845	-0.011954	-0.002351	0.001301	0.028204	-0.092533
&VALUE	2.000000	0.200000	3.000000	0.502838	0.023563	-0.034307	-0.011954	-0.002661	0.001301	0.028203	-0.092529
&VALUE	4.000000	0.200000	3.000000	0.660969	0.031328	-0.160177	-0.011954	-0.002958	0.001301	0.028001	-0.091868
&VALUE	6.000000	0.200000	3.000000	0.812907	0.041517	-0.284143	-0.011954	-0.003237	0.001301	0.027631	-0.090654
&VALUE	8.000000	0.200000	3.000000	0.958849	0.053773	-0.405934	-0.011954	-0.003498	0.001301	0.027178	-0.089168
&VALUE	10.000000	0.200000	3.000000	1.095866	0.067761	-0.520062	-0.011954	-0.003736	0.001301	0.026514	-0.086989
&VALUE	12.000000	0.200000	3.000000	1.223281	0.083199	-0.625298	-0.011954	-0.003950	0.001301	0.025625	-0.084074
&VALUE	14.000000	0.200000	3.000000	1.344929	0.100514	-0.723715	-0.011954	-0.004148	0.001301	0.025276	-0.082928
&VALUE	16.000000	0.200000	3.000000	1.458780	0.119911	-0.810769	-0.011954	-0.004325	0.001301	0.025409	-0.083364
&VALUE	18.000000	0.200000	3.000000	1.563335	0.141421	-0.888674	-0.011954	-0.004477	0.001301	0.025334	-0.083118
&VALUE	20.000000	0.200000	3.000000	1.658393	0.165075	-0.955303	-0.011954	-0.004604	0.001301	0.021830	-0.071621
&VALUE	22.000000	0.200000	3.000000	1.726401	0.186961	-0.243840	-0.011954	-0.004657	0.001301	0.009028	-0.029621
&VALUE	24.000000	0.200000	3.000000	1.699822	0.197104	-0.266799	-0.011954	-0.004452	0.001301	-0.009500	0.031169
&VALUE	26.000000	0.200000	3.000000	1.543964	0.195910	-0.284178	-0.011954	-0.003889	0.001301	-0.016435	0.053923
&VALUE	28.000000	0.200000	3.000000	1.432182	0.211132	-0.287118	-0.011954	-0.003463	0.001301	-0.009137	0.029976
&VALUE	30.000000	0.200000	3.000000	1.331799	0.229507	-0.232945	-0.011954	-0.003111	0.001301	-0.003856	0.012650
*											
&VALUE	-4.000000	0.300000	3.000000	0.013692	0.016725	0.145096	-0.011900	-0.001715	0.001209	0.027798	-0.091203
&VALUE	-2.000000	0.300000	3.000000	0.179916	0.016054	0.206347	-0.011900	-0.002049	0.001209	0.027843	-0.091350
&VALUE	0.000000	0.300000	3.000000	0.344810	0.018235	0.086936	-0.011900	-0.002380	0.001209	0.027896	-0.091523
&VALUE	2.000000	0.300000	3.000000	0.506889	0.023163	-0.037735	-0.011900	-0.002700	0.001209	0.027806	-0.091229
&VALUE	4.000000	0.300000	3.000000	0.664663	0.030790	-0.162893	-0.011900	-0.003006	0.001209	0.027507	-0.090248
&VALUE	6.000000	0.300000	3.000000	0.815351	0.040730	-0.285817	-0.011900	-0.003290	0.001209	0.027038	-0.088709
&VALUE	8.000000	0.300000	3.000000	0.959571	0.052615	-0.406167	-0.011900	-0.003554	0.001209	0.026524	-0.087021
&VALUE	10.000000	0.300000	3.000000	1.094464	0.066108	-0.518541	-0.011900	-0.003794	0.001209	0.025812	-0.084688
&VALUE	12.000000	0.300000	3.000000	1.219229	0.080911	-0.621590	-0.011900	-0.004009	0.001209	0.024854	-0.081543
&VALUE	14.000000	0.300000	3.000000	1.337734	0.097464	-0.717379	-0.011900	-0.004205	0.001209	0.024422	-0.080125
&VALUE	16.000000	0.300000	3.000000	1.447975	0.115982	-0.800783	-0.011900	-0.004379	0.001209	0.024439	-0.080180
&VALUE	18.000000	0.300000	3.000000	1.548554	0.136510	-0.875343	-0.011900	-0.004526	0.001209	0.024056	-0.078925
&VALUE	20.000000	0.300000	3.000000	1.637920	0.158864	-0.937192	-0.011900	-0.004644	0.001209	0.018886	-0.061964
&VALUE	22.000000	0.300000	3.000000	1.694170	0.178484	-0.237558	-0.011900	-0.004671	0.001209	0.003804	-0.012480
&VALUE	24.000000	0.300000	3.000000	1.610171	0.180526	-0.259521	-0.011900	-0.004307	0.001209	-0.009332	0.030616
&VALUE	26.000000	0.300000	3.000000	1.494259	0.188501	-0.269800	-0.011900	-0.003854	0.001209	-0.009462	0.031044
&VALUE	28.000000	0.300000	3.000000	1.407180	0.205550	-0.270572	-0.011900	-0.003493	0.001209	0.000184	-0.000605
&VALUE	30.000000	0.300000	3.000000	1.344850	0.228322	-0.210582	-0.011900	-0.003246	0.001209	0.006748	-0.022140
*											
&VALUE	-4.000000	0.400000	3.000000	0.016165	0.016581	0.146643	-0.011815	-0.001717	0.001127	0.027697	-0.090869
&VALUE	-2.000000	0.400000	3.000000	0.184346	0.015978	0.202011	-0.011815	-0.002071	0.001127	0.027696	-0.090866
&VALUE	0.000000	0.400000	3.000000	0.350705	0.018239	0.082701	-0.011815	-0.002418	0.001127	0.027657	-0.090739
&VALUE	2.000000	0.400000	3.000000	0.513620	0.023232	-0.041541	-0.011815	-0.002754	0.001127	0.027472	-0.090133
&VALUE	4.000000	0.400000	3.000000	0.671586	0.030877	-0.165990	-0.011815	-0.003072	0.001127	0.027068	-0.088806
&VALUE	6.000000	0.400000	3.000000	0.821486	0.040763	-0.287927	-0.011815	-0.003366	0.001127	0.026494	-0.086922

eVALUE	8.000000	0.400000	3.000000	0.964449	0.052505	-0.406960	-0.011815	-0.003638	0.001127	0.025915	-0.085026
eVALUE	10.000000	0.400000	3.000000	1.097634	0.065761	-0.517717	-0.011815	-0.003884	0.001127	0.025152	-0.082522
eVALUE	12.000000	0.400000	3.000000	1.220143	0.080206	-0.618861	-0.011815	-0.004102	0.001127	0.024116	-0.079121
eVALUE	14.000000	0.400000	3.000000	1.335863	0.096287	-0.712387	-0.011815	-0.004300	0.001127	0.023596	-0.077417
eVALUE	16.000000	0.400000	3.000000	1.442812	0.114421	-0.792533	-0.011815	-0.004473	0.001127	0.023381	-0.076710
eVALUE	18.000000	0.400000	3.000000	1.539722	0.134059	-0.864375	-0.011815	-0.004619	0.001127	0.021773	-0.071434
eVALUE	20.000000	0.400000	3.000000	1.616720	0.154244	-0.210814	-0.011815	-0.004709	0.001127	0.013959	-0.045797
eVALUE	22.000000	0.400000	3.000000	1.633307	0.167727	-0.233883	-0.011815	-0.004632	0.001127	0.000456	-0.001495
eVALUE	24.000000	0.400000	3.000000	1.537267	0.170438	-0.252778	-0.011815	-0.004232	0.001127	-0.004980	0.016340
eVALUE	26.000000	0.400000	3.000000	1.469236	0.185470	-0.257158	-0.011815	-0.003911	0.001127	-0.000723	0.002372
eVALUE	28.000000	0.400000	3.000000	1.421855	0.205966	-0.256460	-0.011815	-0.003656	0.001127	0.000795	-0.026100
eVALUE	30.000000	0.400000	3.000000	1.383291	0.230868	-0.198825	-0.011815	-0.003473	0.001127	0.013305	-0.043653
*											
eVALUE	-4.000000	0.500000	3.000000	0.019425	0.016416	0.147185	-0.011690	-0.001718	0.001043	0.027633	-0.090660
eVALUE	-2.000000	0.500000	3.000000	0.190483	0.015886	0.197079	-0.011690	-0.002094	0.001043	0.027582	-0.090493
eVALUE	0.000000	0.500000	3.000000	0.359134	0.018255	0.077809	-0.011690	-0.002463	0.001043	0.027443	-0.090037
eVALUE	2.000000	0.500000	3.000000	0.523604	0.023356	-0.045986	-0.011690	-0.002818	0.001043	0.027154	-0.089091
eVALUE	4.000000	0.500000	3.000000	0.682380	0.031080	-0.169652	-0.011690	-0.003153	0.001043	0.026636	-0.087390
eVALUE	6.000000	0.500000	3.000000	0.832002	0.040979	-0.290584	-0.011690	-0.003459	0.001043	0.025950	-0.085138
eVALUE	8.000000	0.500000	3.000000	0.974205	0.052657	-0.408323	-0.011690	-0.003742	0.001043	0.025304	-0.083019
eVALUE	10.000000	0.500000	3.000000	1.106062	0.065751	-0.517464	-0.011690	-0.003996	0.001043	0.024480	-0.080318
eVALUE	12.000000	0.500000	3.000000	1.226677	0.079923	-0.616863	-0.011690	-0.004220	0.001043	0.023360	-0.076642
eVALUE	14.000000	0.500000	3.000000	1.339933	0.095619	-0.708352	-0.011690	-0.004421	0.001043	0.022751	-0.074642
eVALUE	16.000000	0.500000	3.000000	1.443855	0.113057	-0.785448	-0.011690	-0.004596	0.001043	0.022369	-0.073390
eVALUE	18.000000	0.500000	3.000000	1.537249	0.132294	-0.854746	-0.011690	-0.004740	0.001043	0.019699	-0.064629
eVALUE	20.000000	0.500000	3.000000	1.606388	0.151120	-0.204135	-0.011690	-0.004814	0.001043	0.009835	-0.032269
eVALUE	22.000000	0.500000	3.000000	1.576084	0.157765	-0.228324	-0.011690	-0.004608	0.001043	-0.000404	0.001324
eVALUE	24.000000	0.500000	3.000000	1.506569	0.166597	-0.243547	-0.011690	-0.004278	0.001043	-0.001052	0.003451
eVALUE	26.000000	0.500000	3.000000	1.455158	0.182621	-0.245253	-0.011690	-0.004005	0.001043	0.004061	-0.013324
eVALUE	28.000000	0.500000	3.000000	1.436709	0.206564	-0.243424	-0.011690	-0.003831	0.001043	0.012184	-0.039974
eVALUE	30.000000	0.500000	3.000000	1.410618	0.232254	-0.190053	-0.011690	-0.003682	0.001043	0.016365	-0.053691
*											
eVALUE	-4.000000	0.100000	4.000000	0.188957	0.019332	0.143118	-0.011985	-0.002167	0.001437	0.027843	-0.091349
eVALUE	-2.000000	0.100000	4.000000	0.353152	0.018562	0.211646	-0.011985	-0.002482	0.001437	0.027949	-0.091697
eVALUE	0.000000	0.100000	4.000000	0.516526	0.020925	0.091848	-0.011985	-0.002793	0.001437	0.028119	-0.092254
eVALUE	2.000000	0.100000	4.000000	0.677745	0.026333	-0.033435	-0.011985	-0.003097	0.001437	0.028143	-0.092333
eVALUE	4.000000	0.100000	4.000000	0.835343	0.034785	-0.159394	-0.011985	-0.003388	0.001437	0.027966	-0.091754
eVALUE	6.000000	0.100000	4.000000	0.986898	0.045876	-0.283360	-0.011985	-0.003661	0.001437	0.027620	-0.090619
eVALUE	8.000000	0.100000	4.000000	1.132534	0.059205	-0.405190	-0.011985	-0.003916	0.001437	0.027183	-0.089186
eVALUE	10.000000	0.100000	4.000000	1.269325	0.074407	-0.519369	-0.011985	-0.004150	0.001437	0.026530	-0.087042
eVALUE	12.000000	0.100000	4.000000	1.396583	0.091179	-0.624599	-0.011985	-0.004360	0.001437	0.025635	-0.084105
eVALUE	14.000000	0.100000	4.000000	1.518170	0.109883	-0.723082	-0.011985	-0.004554	0.001437	0.025275	-0.082923
eVALUE	16.000000	0.100000	4.000000	1.632050	0.130679	-0.810366	-0.011985	-0.004727	0.001437	0.025410	-0.083366
eVALUE	18.000000	0.100000	4.000000	1.736755	0.153561	-0.888588	-0.011985	-0.004876	0.001437	0.025363	-0.083214
eVALUE	20.000000	0.100000	4.000000	1.831997	0.178508	-0.955468	-0.011985	-0.005001	0.001437	0.022116	-0.072561
eVALUE	22.000000	0.100000	4.000000	1.901835	0.201495	-0.246128	-0.011985	-0.005057	0.001437	0.009792	-0.032126
eVALUE	24.000000	0.100000	4.000000	1.884156	0.212312	-0.268782	-0.011985	-0.004874	0.001437	-0.009552	0.031338
eVALUE	26.000000	0.100000	4.000000	1.724860	0.207555	-0.286674	-0.011985	-0.004306	0.001437	-0.018588	0.060987
eVALUE	28.000000	0.100000	4.000000	1.601240	0.220239	-0.290513	-0.011985	-0.003852	0.001437	-0.012304	0.040369
eVALUE	30.000000	0.100000	4.000000	1.486100	0.235445	-0.223363	-0.011985	-0.003473	0.001437	-0.006767	0.022203
*											
eVALUE	-4.000000	0.200000	4.000000	0.191110	0.017169	0.142816	-0.011954	-0.002178	0.001301	0.027891	-0.091506
eVALUE	-2.000000	0.200000	4.000000	0.356177	0.016435	0.210389	-0.011954	-0.002499	0.001301	0.027989	-0.091829
eVALUE	0.000000	0.200000	4.000000	0.520330	0.018594	0.090676	-0.011954	-0.002817	0.001301	0.028144	-0.092337
eVALUE	2.000000	0.200000	4.000000	0.682212	0.023566	-0.034536	-0.011954	-0.003128	0.001301	0.028152	-0.092363
eVALUE	4.000000	0.200000	4.000000	0.840358	0.031330	-0.160460	-0.011954	-0.003425	0.001301	0.027957	-0.091723
eVALUE	6.000000	0.200000	4.000000	0.992305	0.041520	-0.284460	-0.011954	-0.003703	0.001301	0.027592	-0.090527
eVALUE	8.000000	0.200000	4.000000	1.138253	0.053776	-0.406275	-0.011954	-0.003964	0.001301	0.027144	-0.089055
eVALUE	10.000000	0.200000	4.000000	1.275278	0.067763	-0.520433	-0.011954	-0.004202	0.001301	0.026480	-0.086879
eVALUE	12.000000	0.200000	4.000000	1.402693	0.083201	-0.625672	-0.011954	-0.004417	0.001301	0.025570	-0.083892
eVALUE	14.000000	0.200000	4.000000	1.524349	0.100514	-0.724116	-0.011954	-0.004614	0.001301	0.025194	-0.082657
eVALUE	16.000000	0.200000	4.000000	1.638204	0.119908	-0.811188	-0.011954	-0.004791	0.001301	0.025312	-0.083047
eVALUE	18.000000	0.200000	4.000000	1.742778	0.141416	-0.889161	-0.011954	-0.004943	0.001301	0.025220	-0.082746
eVALUE	20.000000	0.200000	4.000000	1.837838	0.165063	-0.955795	-0.011954	-0.005070	0.001301	0.021677	-0.071119
eVALUE	22.000000	0.200000	4.000000	1.905849	0.186939	-0.244341	-0.011954	-0.005123	0.001301	0.008886	-0.029153
eVALUE	24.000000	0.200000	4.000000	1.879251	0.197067	-0.267227	-0.011954	-0.004918	0.001301	-0.009577	0.031421
eVALUE	26.000000	0.200000	4.000000	1.723362	0.195856	-0.284489	-0.011954	-0.004355	0.001301	-0.016690	0.054759
eVALUE	28.000000	0.200000	4.000000	1.611586	0.211042	-0.287428	-0.011954	-0.003930	0.001301	-0.009307	0.030534
eVALUE	30.000000	0.200000	4.000000	1.509488	0.229007	-0.227117	-0.011954	-0.003577	0.001301	-0.003709	0.012168
*											
eVALUE	-4.000000	0.300000	4.000000	0.196073	0.016725	0.145088	-0.011900	-0.002200	0.001209	0.027711	-0.090917
eVALUE	-2.000000	0.300000	4.000000	0.362325	0.016055	0.206251	-0.011900	-0.002534	0.001209	0.027767	-0.091100
eVALUE	0.000000	0.300000	4.000000	0.527241	0.018237	0.086766	-0.011900	-0.002865	0.001209	0.027836	-0.091326
eVALUE	2.000000	0.300000	4.000000	0.689338	0.023166	-0.037966	-0.011900	-0.003185	0.001209	0.027755	-0.091062

&VALUE	4.000000	0.300000	4.000000	0.847127	0.030792	-0.163179	-0.011900	-0.003490	0.001209	0.027463	-0.090103
&VALUE	6.000000	0.300000	4.000000	0.997824	0.040732	-0.286136	-0.011900	-0.003775	0.001209	0.027000	-0.088583
&VALUE	8.000000	0.300000	4.000000	1.142049	0.052617	-0.406508	-0.011900	-0.004039	0.001209	0.026490	-0.086909
&VALUE	10.000000	0.300000	4.000000	1.276951	0.066110	-0.518912	-0.011900	-0.004279	0.001209	0.025779	-0.084579
&VALUE	12.000000	0.300000	4.000000	1.401715	0.080912	-0.621961	-0.011900	-0.004494	0.001209	0.024799	-0.081363
&VALUE	14.000000	0.300000	4.000000	1.520226	0.097463	-0.717775	-0.011900	-0.004690	0.001209	0.024340	-0.079857
&VALUE	16.000000	0.300000	4.000000	1.630470	0.115978	-0.801193	-0.011900	-0.004864	0.001209	0.024343	-0.079867
&VALUE	18.000000	0.300000	4.000000	1.731069	0.136502	-0.875819	-0.011900	-0.005011	0.001209	0.023945	-0.078560
&VALUE	20.000000	0.300000	4.000000	1.820434	0.158850	-0.937668	-0.011900	-0.005128	0.001209	0.018741	-0.061489
&VALUE	22.000000	0.300000	4.000000	1.876685	0.178459	-0.238029	-0.011900	-0.005156	0.001209	0.003678	-0.012068
&VALUE	24.000000	0.300000	4.000000	1.792663	0.180486	-0.259908	-0.011900	-0.004792	0.001209	-0.009406	0.030859
&VALUE	26.000000	0.300000	4.000000	1.676721	0.188445	-0.270075	-0.011900	-0.004339	0.001209	-0.009738	0.031948
&VALUE	28.000000	0.300000	4.000000	1.589669	0.205461	-0.270918	-0.011900	-0.003977	0.001209	-0.000032	0.000106
&VALUE	30.000000	0.300000	4.000000	1.526818	0.228116	-0.209059	-0.011900	-0.003731	0.001209	0.006783	-0.022253
*											
&VALUE	-4.000000	0.400000	4.000000	0.202829	0.016581	0.146635	-0.011815	-0.002228	0.001127	0.027608	-0.090580
&VALUE	-2.000000	0.400000	4.000000	0.371038	0.015979	0.201915	-0.011815	-0.002581	0.001127	0.027618	-0.090613
&VALUE	0.000000	0.400000	4.000000	0.537420	0.018241	0.082528	-0.011815	-0.002929	0.001127	0.027596	-0.090540
&VALUE	2.000000	0.400000	4.000000	0.700353	0.023235	-0.041775	-0.011815	-0.003265	0.001127	0.027421	-0.089965
&VALUE	4.000000	0.400000	4.000000	0.858335	0.030879	-0.166280	-0.011815	-0.003583	0.001127	0.027023	-0.088661
&VALUE	6.000000	0.400000	4.000000	1.008243	0.040765	-0.288250	-0.011815	-0.003877	0.001127	0.026455	-0.086795
&VALUE	8.000000	0.400000	4.000000	1.151212	0.052508	-0.407303	-0.011815	-0.004149	0.001127	0.025882	-0.084914
&VALUE	10.000000	0.400000	4.000000	1.284404	0.065762	-0.518091	-0.011815	-0.004395	0.001127	0.025119	-0.082413
&VALUE	12.000000	0.400000	4.000000	1.406912	0.080206	-0.619234	-0.011815	-0.004613	0.001127	0.024061	-0.078942
&VALUE	14.000000	0.400000	4.000000	1.522638	0.096286	-0.712783	-0.011815	-0.004811	0.001127	0.023515	-0.077150
&VALUE	16.000000	0.400000	4.000000	1.629590	0.114216	-0.792941	-0.011815	-0.004984	0.001127	0.023286	-0.076400
&VALUE	18.000000	0.400000	4.000000	1.726517	0.134050	-0.864846	-0.011815	-0.005129	0.001127	0.021666	-0.071083
&VALUE	20.000000	0.400000	4.000000	1.803514	0.154228	-0.211278	-0.011815	-0.005219	0.001127	0.013826	-0.045363
&VALUE	22.000000	0.400000	4.000000	1.820097	0.167699	-0.234332	-0.011815	-0.005143	0.001127	0.000342	-0.001121
&VALUE	24.000000	0.400000	4.000000	1.724035	0.170396	-0.253141	-0.011815	-0.004742	0.001127	-0.005066	0.016622
&VALUE	26.000000	0.400000	4.000000	1.655977	0.185412	-0.257417	-0.011815	-0.004422	0.001127	-0.001037	0.003404
&VALUE	28.000000	0.400000	4.000000	1.608643	0.205878	-0.256864	-0.011815	-0.004166	0.001127	0.007690	-0.025229
&VALUE	30.000000	0.400000	4.000000	1.571508	0.231126	-0.204318	-0.011815	-0.003984	0.001127	0.013437	-0.044086
*											
&VALUE	-4.000000	0.500000	4.000000	0.211875	0.016416	0.147176	-0.011690	-0.002260	0.001043	0.027542	-0.090364
&VALUE	-2.000000	0.500000	4.000000	0.382961	0.015887	0.196981	-0.011690	-0.002637	0.001043	0.027503	-0.090234
&VALUE	0.000000	0.500000	4.000000	0.551636	0.018257	0.077633	-0.011690	-0.003006	0.001043	0.027381	-0.089834
&VALUE	2.000000	0.500000	4.000000	0.716125	0.023359	-0.046225	-0.011690	-0.003361	0.001043	0.027102	-0.088920
&VALUE	4.000000	0.500000	4.000000	0.874916	0.031082	-0.169948	-0.011690	-0.003696	0.001043	0.026591	-0.087243
&VALUE	6.000000	0.500000	4.000000	1.024547	0.040982	-0.290912	-0.011690	-0.004002	0.001043	0.025911	-0.085010
&VALUE	8.000000	0.500000	4.000000	1.166755	0.052659	-0.408672	-0.011690	-0.004284	0.001043	0.025270	-0.082907
&VALUE	10.000000	0.500000	4.000000	1.298620	0.065752	-0.517843	-0.011690	-0.004539	0.001043	0.024447	-0.080209
&VALUE	12.000000	0.500000	4.000000	1.419234	0.079923	-0.617240	-0.011690	-0.004763	0.001043	0.023305	-0.076462
&VALUE	14.000000	0.500000	4.000000	1.532495	0.095617	-0.708752	-0.011690	-0.004964	0.001043	0.022669	-0.074374
&VALUE	16.000000	0.500000	4.000000	1.636420	0.113051	-0.785859	-0.011690	-0.005139	0.001043	0.022274	-0.073080
&VALUE	18.000000	0.500000	4.000000	1.729832	0.132284	-0.855220	-0.011690	-0.005283	0.001043	0.019595	-0.064287
&VALUE	20.000000	0.500000	4.000000	1.798967	0.151103	-0.204597	-0.011690	-0.005357	0.001043	0.009713	-0.031867
&VALUE	22.000000	0.500000	4.000000	1.768657	0.157735	-0.228761	-0.011690	-0.005151	0.001043	-0.000515	0.001689
&VALUE	24.000000	0.500000	4.000000	1.699121	0.166554	-0.243903	-0.011690	-0.004821	0.001043	-0.001149	0.003771
&VALUE	26.000000	0.500000	4.000000	1.647684	0.182652	-0.245508	-0.011690	-0.004548	0.001043	0.003719	-0.012202
&VALUE	28.000000	0.500000	4.000000	1.629297	0.206475	-0.243876	-0.011690	-0.004374	0.001043	0.011886	-0.038996
&VALUE	30.000000	0.500000	4.000000	1.605971	0.232830	-0.200364	-0.011690	-0.004225	0.001043	0.016638	-0.054586
*											
&VALUE	-4.000000	0.100000	5.000000	0.430029	0.019332	0.143109	-0.011985	-0.002787	0.001437	0.027741	-0.091015
&VALUE	-2.000000	0.100000	5.000000	0.594256	0.018563	0.211535	-0.011985	-0.003101	0.001437	0.027856	-0.091391
&VALUE	0.000000	0.100000	5.000000	0.757659	0.020927	0.091642	-0.011985	-0.003413	0.001437	0.028040	-0.091996
&VALUE	2.000000	0.100000	5.000000	0.918901	0.026336	-0.033721	-0.011985	-0.003717	0.001437	0.028074	-0.092108
&VALUE	4.000000	0.100000	5.000000	1.076520	0.034788	-0.159754	-0.011985	-0.004008	0.001437	0.027906	-0.091555
&VALUE	6.000000	0.100000	5.000000	1.228088	0.045880	-0.283788	-0.011985	-0.004281	0.001437	0.027566	-0.090443
&VALUE	8.000000	0.100000	5.000000	1.373733	0.059211	-0.405630	-0.011985	-0.004536	0.001437	0.027136	-0.089029
&VALUE	10.000000	0.100000	5.000000	1.510535	0.074411	-0.519852	-0.011985	-0.004770	0.001437	0.026483	-0.086889
&VALUE	12.000000	0.100000	5.000000	1.637794	0.091183	-0.625087	-0.011985	-0.004980	0.001437	0.025559	-0.083857
&VALUE	14.000000	0.100000	5.000000	1.759391	0.109886	-0.723610	-0.011985	-0.005174	0.001437	0.025162	-0.082555
&VALUE	16.000000	0.100000	5.000000	1.873277	0.130679	-0.810919	-0.011985	-0.005347	0.001437	0.025278	-0.082934
&VALUE	18.000000	0.100000	5.000000	1.978009	0.153558	-0.889234	-0.011985	-0.005496	0.001437	0.025208	-0.082705
&VALUE	20.000000	0.100000	5.000000	2.073254	0.178498	-0.956124	-0.011985	-0.005621	0.001437	0.021908	-0.071877
&VALUE	22.000000	0.100000	5.000000	2.143096	0.201472	-0.246796	-0.011985	-0.005677	0.001437	0.009594	-0.031478
&VALUE	24.000000	0.100000	5.000000	2.125393	0.212269	-0.269356	-0.011985	-0.005494	0.001437	-0.009659	0.031690
&VALUE	26.000000	0.100000	5.000000	1.966055	0.207488	-0.287091	-0.011985	-0.004926	0.001437	-0.018774	0.061595
&VALUE	28.000000	0.100000	5.000000	1.842423	0.220141	-0.290866	-0.011985	-0.004471	0.001437	-0.012552	0.041182
&VALUE	30.000000	0.100000	5.000000	1.733193	0.236895	-0.244900	-0.011985	-0.004092	0.001437	-0.007190	0.023591
*											
&VALUE	-4.000000	0.200000	5.000000	0.434141	0.017170	0.142807	-0.011954	-0.002809	0.001301	0.027788	-0.091169
&VALUE	-2.000000	0.200000	5.000000	0.599240	0.016436	0.210277	-0.011954	-0.003131	0.001301	0.027895	-0.091521

eVALUE	0.000000	0.200000	5.000000	0.763422	0.018596	0.090469	-0.011954	-0.003449	0.001301	0.028065	-0.092077
eVALUE	2.000000	0.200000	5.000000	0.925328	0.023569	-0.034824	-0.011954	-0.003759	0.001301	0.028083	-0.092136
eVALUE	4.000000	0.200000	5.000000	1.083495	0.031333	-0.160823	-0.011954	-0.004056	0.001301	0.027896	-0.091523
eVALUE	6.000000	0.200000	5.000000	1.235456	0.041523	-0.284871	-0.011954	-0.004335	0.001301	0.027538	-0.090349
eVALUE	8.000000	0.200000	5.000000	1.381412	0.053780	-0.406719	-0.011954	-0.004596	0.001301	0.027096	-0.088898
eVALUE	10.000000	0.200000	5.000000	1.518449	0.067765	-0.520920	-0.011954	-0.004834	0.001301	0.026434	-0.086725
eVALUE	12.000000	0.200000	5.000000	1.645864	0.083202	-0.626165	-0.011954	-0.005048	0.001301	0.025494	-0.083642
eVALUE	14.000000	0.200000	5.000000	1.767530	0.100514	-0.724649	-0.011954	-0.005246	0.001301	0.025081	-0.082287
eVALUE	16.000000	0.200000	5.000000	1.881392	0.119905	-0.811747	-0.011954	-0.005423	0.001301	0.025180	-0.082612
eVALUE	18.000000	0.200000	5.000000	1.985993	0.141408	-0.889814	-0.011954	-0.005575	0.001301	0.025064	-0.082234
eVALUE	20.000000	0.200000	5.000000	2.081055	0.165048	-0.956458	-0.011954	-0.005702	0.001301	0.021468	-0.070436
eVALUE	22.000000	0.200000	5.000000	2.149072	0.186910	-0.245016	-0.011954	-0.005755	0.001301	0.008691	-0.028513
eVALUE	24.000000	0.200000	5.000000	2.122449	0.197017	-0.267807	-0.011954	-0.005550	0.001301	-0.009684	0.031773
eVALUE	26.000000	0.200000	5.000000	1.966519	0.195784	-0.284912	-0.011954	-0.004987	0.001301	-0.016872	0.055354
eVALUE	28.000000	0.200000	5.000000	1.854729	0.210939	-0.287784	-0.011954	-0.004561	0.001301	-0.009581	0.031435
eVALUE	30.000000	0.200000	5.000000	1.759385	0.230534	-0.251595	-0.011954	-0.004209	0.001301	-0.004109	0.013481
*											
eVALUE	-4.000000	0.300000	5.000000	0.443271	0.016725	0.145079	-0.011900	-0.002857	0.001209	0.027608	-0.090578
eVALUE	-2.000000	0.300000	5.000000	0.609555	0.016056	0.206139	-0.011900	-0.003192	0.001209	0.027672	-0.090790
eVALUE	0.000000	0.300000	5.000000	0.774501	0.018239	0.086556	-0.011900	-0.003522	0.001209	0.027756	-0.091065
eVALUE	2.000000	0.300000	5.000000	0.936622	0.023169	-0.038257	-0.011900	-0.003842	0.001209	0.027686	-0.090835
eVALUE	4.000000	0.300000	5.000000	1.094432	0.030794	-0.163545	-0.011900	-0.004148	0.001209	0.027402	-0.089903
eVALUE	6.000000	0.300000	5.000000	1.245142	0.040736	-0.286549	-0.011900	-0.004432	0.001209	0.026946	-0.088406
eVALUE	8.000000	0.300000	5.000000	1.389376	0.052621	-0.406953	-0.011900	-0.004696	0.001209	0.026442	-0.086754
eVALUE	10.000000	0.300000	5.000000	1.524288	0.066111	-0.519399	-0.011900	-0.004936	0.001209	0.025733	-0.084427
eVALUE	12.000000	0.300000	5.000000	1.649052	0.080913	-0.622452	-0.011900	-0.005151	0.001209	0.024723	-0.081115
eVALUE	14.000000	0.300000	5.000000	1.767573	0.097461	-0.718301	-0.011900	-0.005347	0.001209	0.024228	-0.079490
eVALUE	16.000000	0.300000	5.000000	1.877822	0.115971	-0.801741	-0.011900	-0.005521	0.001209	0.024212	-0.079438
eVALUE	18.000000	0.300000	5.000000	1.978446	0.136491	-0.876456	-0.011900	-0.005668	0.001209	0.023792	-0.078059
eVALUE	20.000000	0.300000	5.000000	2.067812	0.158831	-0.938307	-0.011900	-0.005786	0.001209	0.018544	-0.060840
eVALUE	22.000000	0.300000	5.000000	2.124063	0.178424	-0.238664	-0.011900	-0.005813	0.001209	0.003507	-0.011506
eVALUE	24.000000	0.300000	5.000000	2.040012	0.180431	-0.260431	-0.011900	-0.005450	0.001209	-0.009509	0.031200
eVALUE	26.000000	0.300000	5.000000	1.924031	0.188369	-0.270449	-0.011900	-0.004997	0.001209	-0.009962	0.032685
eVALUE	28.000000	0.300000	5.000000	1.836993	0.205358	-0.271320	-0.011900	-0.004635	0.001209	-0.000372	0.001221
eVALUE	30.000000	0.300000	5.000000	1.781133	0.229658	-0.234399	-0.011900	-0.004388	0.001209	0.006744	-0.022128
*											
eVALUE	-4.000000	0.400000	5.000000	0.455932	0.016581	0.146626	-0.011815	-0.002920	0.001127	0.027503	-0.090236
eVALUE	-2.000000	0.400000	5.000000	0.624074	0.015980	0.201801	-0.011815	-0.003274	0.001127	0.027523	-0.090299
eVALUE	0.000000	0.400000	5.000000	0.790486	0.018243	0.082315	-0.011815	-0.003621	0.001127	0.027516	-0.090276
eVALUE	2.000000	0.400000	5.000000	0.953444	0.023238	-0.042071	-0.011815	-0.003957	0.001127	0.027351	-0.089736
eVALUE	4.000000	0.400000	5.000000	1.111446	0.030882	-0.166652	-0.011815	-0.004275	0.001127	0.026962	-0.088460
eVALUE	6.000000	0.400000	5.000000	1.261368	0.040768	-0.288668	-0.011815	-0.004569	0.001127	0.026401	-0.086619
eVALUE	8.000000	0.400000	5.000000	1.404344	0.052511	-0.407752	-0.011815	-0.004841	0.001127	0.025834	-0.084759
eVALUE	10.000000	0.400000	5.000000	1.537547	0.065763	-0.518581	-0.011815	-0.005087	0.001127	0.025073	-0.082262
eVALUE	12.000000	0.400000	5.000000	1.660055	0.080206	-0.619726	-0.011815	-0.005305	0.001127	0.023986	-0.078695
eVALUE	14.000000	0.400000	5.000000	1.775789	0.096283	-0.713308	-0.011815	-0.005503	0.001127	0.023403	-0.076784
eVALUE	16.000000	0.400000	5.000000	1.882746	0.114208	-0.793485	-0.011815	-0.005676	0.001127	0.023157	-0.075975
eVALUE	18.000000	0.400000	5.000000	1.979698	0.134038	-0.865478	-0.011815	-0.005822	0.001127	0.021518	-0.070599
eVALUE	20.000000	0.400000	5.000000	2.056693	0.154207	-0.211903	-0.011815	-0.005912	0.001127	0.013646	-0.044772
eVALUE	22.000000	0.400000	5.000000	2.073271	0.167661	-0.234935	-0.011815	-0.005835	0.001127	0.000186	-0.000612
eVALUE	24.000000	0.400000	5.000000	1.977179	0.170339	-0.253630	-0.011815	-0.005435	0.001127	-0.005186	0.017015
eVALUE	26.000000	0.400000	5.000000	1.909085	0.185333	-0.257767	-0.011815	-0.005114	0.001127	-0.001271	0.004172
eVALUE	28.000000	0.400000	5.000000	1.861786	0.205779	-0.257316	-0.011815	-0.004859	0.001127	0.007282	-0.023892
eVALUE	30.000000	0.400000	5.000000	1.831308	0.232583	-0.228513	-0.011815	-0.004676	0.001127	0.013504	-0.044305
*											
eVALUE	-4.000000	0.500000	5.000000	0.472721	0.016416	0.147167	-0.011690	-0.002996	0.001043	0.027435	-0.090013
eVALUE	-2.000000	0.500000	5.000000	0.643840	0.015888	0.196864	-0.011690	-0.003373	0.001043	0.027405	-0.089913
eVALUE	0.000000	0.500000	5.000000	0.812546	0.018259	0.077415	-0.011690	-0.003742	0.001043	0.027299	-0.089565
eVALUE	2.000000	0.500000	5.000000	0.977059	0.023363	-0.046527	-0.011690	-0.004097	0.001043	0.027031	-0.088687
eVALUE	4.000000	0.500000	5.000000	1.135872	0.031085	-0.170327	-0.011690	-0.004432	0.001043	0.026529	-0.087040
eVALUE	6.000000	0.500000	5.000000	1.285516	0.040985	-0.291338	-0.011690	-0.004738	0.001043	0.025856	-0.084832
eVALUE	8.000000	0.500000	5.000000	1.427731	0.052662	-0.409128	-0.011690	-0.005020	0.001043	0.025222	-0.082751
eVALUE	10.000000	0.500000	5.000000	1.559607	0.065753	-0.518340	-0.011690	-0.005275	0.001043	0.024401	-0.080057
eVALUE	12.000000	0.500000	5.000000	1.680220	0.079922	-0.617738	-0.011690	-0.005498	0.001043	0.023230	-0.076214
eVALUE	14.000000	0.500000	5.000000	1.793490	0.095613	-0.709282	-0.011690	-0.005700	0.001043	0.022557	-0.074006
eVALUE	16.000000	0.500000	5.000000	1.897419	0.113043	-0.786407	-0.011690	-0.005875	0.001043	0.022145	-0.072654
eVALUE	18.000000	0.500000	5.000000	1.990855	0.132271	-0.855854	-0.011690	-0.006019	0.001043	0.019451	-0.063817
eVALUE	20.000000	0.500000	5.000000	2.059987	0.151080	-0.205217	-0.011690	-0.006093	0.001043	0.009547	-0.031322
eVALUE	22.000000	0.500000	5.000000	2.029669	0.157695	-0.229349	-0.011690	-0.005887	0.001043	-0.000666	0.002185
eVALUE	24.000000	0.500000	5.000000	1.960105	0.166495	-0.244383	-0.011690	-0.005557	0.001043	-0.001286	0.004218
eVALUE	26.000000	0.500000	5.000000	1.908633	0.182481	-0.245853	-0.011690	-0.005284	0.001043	0.003495	-0.011465
eVALUE	28.000000	0.500000	5.000000	1.890290	0.206380	-0.244358	-0.011690	-0.005110	0.001043	0.011432	-0.037508
eVALUE	30.000000	0.500000	5.000000	1.872627	0.234043	-0.221029	-0.011690	-0.004961	0.001043	0.016609	-0.054494

&END

• DCLEAN.inp (dynamic derivatives)

```

&ARG01      C      PROTOCOL      0      DCLEAN2
&ARG02      C      TEST_CONDITION 0      TEST0001.CND
&ARG03      C      REPORT_CODE    0      18-11
&ARG04      X      FLAP_SET       9      REF. BELOW
&ARG05      X      STABILZR       5      0.0
&ARG06      X      ELEVATOR       3      0.0
&ARG07      X      RUDDER         10     0.0
&ARG08      X      AILERON        4      0.0
&ARG09      X      SIDESLIP       11     0.0
&ARG10      X      AOA            1      REF. BELOW
&ARG11      X      MACH           2      REF. BELOW
*
&SNAME      &ARG10  &ARG11  &ARG04  &FUN01  &FUN02  &FUN03  &FUN04  &FUN05  &FUN06  &FUN07  &FUN08  &FUN09
&UNAME      AOA      MACH      FLAP_SET CLQQ    CMQQ    CYPP    CLLPP    CNPP    CYRR    CLLRR    CNRR
&UCODE      1      2          0          0      0      0      0      0      0      0      0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*DYNAMIC DERIVATIVES
*
&VALUE      -4.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 -0.001033 -0.006635 0.000101 0.000000 0.000918 -0.002027
&VALUE      -2.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 -0.000274 -0.006530 -0.000269 0.000000 0.001528 -0.002093
&VALUE      0.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.000483 -0.006409 -0.000640 0.000000 0.002125 -0.002163
&VALUE      2.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.001237 -0.006245 -0.001014 0.000000 0.002705 -0.002235
&VALUE      4.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.001983 -0.006035 -0.001389 0.000000 0.003263 -0.002309
&VALUE      6.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.002721 -0.005788 -0.001764 0.000000 0.003793 -0.002384
&VALUE      8.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.003446 -0.005499 -0.002139 0.000000 0.004292 -0.002458
&VALUE      10.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.004154 -0.005173 -0.002510 0.000000 0.004754 -0.002529
&VALUE      12.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.004842 -0.004819 -0.002875 0.000000 0.005176 -0.002597
&VALUE      14.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.005506 -0.004434 -0.003232 0.000000 0.005554 -0.002660
&VALUE      16.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.006142 -0.004023 -0.003577 0.000000 0.005885 -0.002716
&VALUE      18.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.006746 -0.003589 -0.003907 0.000000 0.006168 -0.002765
&VALUE      20.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.007384 -0.002517 -0.004289 0.000000 0.006398 -0.002804
&VALUE      22.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.008333 0.000786 -0.004846 0.000000 0.006447 -0.002819
&VALUE      24.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.003778 0.006849 -0.004646 0.000000 0.005986 -0.002771
&VALUE      26.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.005659 0.008379 -0.004563 0.000000 0.004784 -0.002652
&VALUE      28.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.005651 0.006061 -0.003993 0.000000 0.004022 -0.002579
&VALUE      30.000000 0.100000 1.000000 0.206564 0.000000 -0.376658 0.005557 0.005646 -0.003717 0.000000 0.003301 -0.002511
*
&VALUE      -4.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 -0.001033 -0.006668 0.000099 0.000000 0.000916 -0.002014
&VALUE      -2.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 -0.000253 -0.006559 -0.000290 0.000000 0.001535 -0.002079
&VALUE      0.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.000524 -0.006433 -0.000679 0.000000 0.002124 -0.002146
&VALUE      2.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.001296 -0.006263 -0.001070 0.000000 0.002731 -0.002214
&VALUE      4.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.002058 -0.006048 -0.001459 0.000000 0.003296 -0.002282
&VALUE      6.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.002808 -0.005796 -0.001845 0.000000 0.003834 -0.002350
&VALUE      8.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.003544 -0.005503 -0.002228 0.000000 0.004339 -0.002416
&VALUE      10.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.004258 -0.005173 -0.002604 0.000000 0.004806 -0.002479
&VALUE      12.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.004948 -0.004815 -0.002971 0.000000 0.005233 -0.002538
&VALUE      14.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.005611 -0.004427 -0.003326 0.000000 0.005615 -0.002592
&VALUE      16.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.006242 -0.004012 -0.003666 0.000000 0.005949 -0.002639
&VALUE      18.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.006839 -0.003575 -0.003987 0.000000 0.006234 -0.002679
&VALUE      20.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.007455 -0.002452 -0.004347 0.000000 0.006466 -0.002711
&VALUE      22.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.008329 0.001093 -0.004838 0.000000 0.006504 -0.002721
&VALUE      24.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.004760 0.006920 -0.004625 0.000000 0.005987 -0.002679
&VALUE      26.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.005853 0.007885 -0.004390 0.000000 0.004814 -0.002587
&VALUE      28.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.005746 0.005498 -0.003910 0.000000 0.004110 -0.002530
&VALUE      30.000000 0.200000 1.000000 0.207199 0.000000 -0.375670 0.005681 0.005210 -0.003679 0.000000 0.003437 -0.002475
*
&VALUE      -4.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 -0.001035 -0.006738 0.000098 0.000000 0.000911 -0.001999
&VALUE      -2.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 -0.000250 -0.006602 -0.000295 0.000000 0.001547 -0.002063
&VALUE      0.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.000531 -0.006448 -0.000688 0.000000 0.002167 -0.002129
&VALUE      2.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.001304 -0.006251 -0.001080 0.000000 0.002766 -0.002196
&VALUE      4.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.002064 -0.006004 -0.001470 0.000000 0.003339 -0.002263
&VALUE      6.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.002810 -0.005723 -0.001855 0.000000 0.003879 -0.002330
&VALUE      8.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.003539 -0.005409 -0.002236 0.000000 0.004384 -0.002393
&VALUE      10.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.004244 -0.005057 -0.002608 0.000000 0.004849 -0.002454
&VALUE      12.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.004923 -0.004677 -0.002969 0.000000 0.005270 -0.002511
&VALUE      14.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.005572 -0.004268 -0.003316 0.000000 0.005644 -0.002562
&VALUE      16.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.006187 -0.003835 -0.003646 0.000000 0.005968 -0.002606
&VALUE      18.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.006768 -0.003342 -0.003960 0.000000 0.006240 -0.002643
&VALUE      20.000000 0.300000 1.000000 0.207878 0.000000 -0.372722 0.007374 -0.001996 -0.004317 0.000000 0.006448 -0.002671

```


&VALUE	22.000000	0.300000	1.000000	0.207878	0.000000	-0.372722	0.008910	0.003029	-0.004949	0.000000	0.006423	-0.002675
&VALUE	24.000000	0.300000	1.000000	0.207878	0.000000	-0.372722	0.004877	0.006871	-0.004428	0.000000	0.005558	-0.002611
&VALUE	26.000000	0.300000	1.000000	0.207878	0.000000	-0.372722	0.005376	0.005906	-0.004083	0.000000	0.004731	-0.002551
&VALUE	28.000000	0.300000	1.000000	0.207878	0.000000	-0.372722	0.004734	0.004114	-0.003712	0.000000	0.004079	-0.002501
&VALUE	30.000000	0.300000	1.000000	0.207878	0.000000	-0.372722	-0.000636	0.002168	-0.002264	0.000000	0.003632	-0.002459
*												
&VALUE	-4.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	-0.001041	-0.006847	0.000096	0.000000	0.000904	-0.001978
&VALUE	-2.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	-0.000250	-0.006680	-0.000300	0.000000	0.001566	-0.002042
&VALUE	0.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.000532	-0.006497	-0.000694	0.000000	0.002208	-0.002107
&VALUE	2.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.001305	-0.006269	-0.001086	0.000000	0.002825	-0.002174
&VALUE	4.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.002063	-0.005987	-0.001474	0.000000	0.003412	-0.002240
&VALUE	6.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.002803	-0.005674	-0.001857	0.000000	0.003962	-0.002306
&VALUE	8.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.003525	-0.005338	-0.002235	0.000000	0.004474	-0.002369
&VALUE	10.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.004221	-0.004962	-0.002602	0.000000	0.004942	-0.002429
&VALUE	12.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.004888	-0.004556	-0.002958	0.000000	0.005363	-0.002484
&VALUE	14.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.005524	-0.004124	-0.003298	0.000000	0.005733	-0.002533
&VALUE	16.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.006123	-0.003671	-0.003620	0.000000	0.006050	-0.002576
&VALUE	18.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.006705	-0.002906	-0.003944	0.000000	0.006311	-0.002611
&VALUE	20.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.007361	-0.002052	-0.004340	0.000000	0.006452	-0.002633
&VALUE	22.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.010070	0.004171	-0.004966	0.000000	0.006192	-0.002619
&VALUE	24.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.001728	0.005438	-0.003912	0.000000	0.005307	-0.002559
&VALUE	26.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.011844	0.003642	-0.004480	0.000000	0.004786	-0.002521
&VALUE	28.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.008328	0.002848	-0.003943	0.000000	0.004293	-0.002481
&VALUE	30.000000	0.400000	1.000000	0.209221	0.000000	-0.369175	0.007244	0.001513	-0.003813	0.000000	0.003941	-0.002444
*												
&VALUE	-4.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	-0.001048	-0.007000	0.000093	0.000000	0.000894	-0.001947
&VALUE	-2.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	-0.000251	-0.006798	-0.000306	0.000000	0.001593	-0.002011
&VALUE	0.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.000536	-0.006580	-0.000702	0.000000	0.002268	-0.002076
&VALUE	2.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.001310	-0.006318	-0.001095	0.000000	0.002914	-0.002141
&VALUE	4.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.002066	-0.005996	-0.001483	0.000000	0.003525	-0.002207
&VALUE	6.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.002801	-0.005650	-0.001864	0.000000	0.004093	-0.002272
&VALUE	8.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.003516	-0.005288	-0.002239	0.000000	0.004619	-0.002334
&VALUE	10.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.004203	-0.004883	-0.002602	0.000000	0.005097	-0.002393
&VALUE	12.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.004859	-0.004449	-0.002951	0.000000	0.005523	-0.002447
&VALUE	14.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.005480	-0.003993	-0.003284	0.000000	0.005894	-0.002495
&VALUE	16.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.006063	-0.003518	-0.003597	0.000000	0.006208	-0.002536
&VALUE	18.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.006637	-0.002929	-0.003920	0.000000	0.006463	-0.002569
&VALUE	20.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.007471	0.000998	-0.004395	0.000000	0.006564	-0.002587
&VALUE	22.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.010042	0.004336	-0.004698	0.000000	0.006002	-0.002554
&VALUE	24.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.010791	0.004058	-0.004485	0.000000	0.005362	-0.002514
&VALUE	26.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.007468	0.002636	-0.003965	0.000000	0.004872	-0.002479
&VALUE	28.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.007060	0.001909	-0.003836	0.000000	0.004550	-0.002449
&VALUE	30.000000	0.500000	1.000000	0.211228	0.000000	-0.365045	0.007079	0.001985	-0.003752	0.000000	0.004216	-0.002413
*												
&VALUE	-4.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	-0.000972	-0.006635	0.000066	0.000000	0.000985	-0.002027
&VALUE	-2.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	-0.000199	-0.006531	-0.000317	0.000000	0.001595	-0.002092
&VALUE	0.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.000558	-0.006411	-0.000688	0.000000	0.002192	-0.002161
&VALUE	2.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.001311	-0.006247	-0.001062	0.000000	0.002772	-0.002232
&VALUE	4.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.002058	-0.006038	-0.001436	0.000000	0.003330	-0.002306
&VALUE	6.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.002794	-0.005792	-0.001811	0.000000	0.003860	-0.002379
&VALUE	8.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.003520	-0.005503	-0.002186	0.000000	0.004359	-0.002452
&VALUE	10.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.004227	-0.005177	-0.002556	0.000000	0.004821	-0.002523
&VALUE	12.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.004914	-0.004825	-0.002921	0.000000	0.005243	-0.002590
&VALUE	14.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.005578	-0.004440	-0.003277	0.000000	0.005621	-0.002653
&VALUE	16.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.006213	-0.004029	-0.003621	0.000000	0.005952	-0.002709
&VALUE	18.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.006817	-0.003596	-0.003951	0.000000	0.006234	-0.002756
&VALUE	20.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.007453	-0.002524	-0.004331	0.000000	0.006465	-0.002795
&VALUE	22.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.008393	0.000779	-0.004883	0.000000	0.006514	-0.002810
&VALUE	24.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.003782	0.006843	-0.004677	0.000000	0.006053	-0.002763
&VALUE	26.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.005720	0.008374	-0.004595	0.000000	0.004851	-0.002645
&VALUE	28.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.005708	0.006056	-0.004027	0.000000	0.004088	-0.002573
&VALUE	30.000000	0.100000	2.000000	0.206564	0.000000	-0.376658	0.005616	0.005642	-0.003750	0.000000	0.003368	-0.002506
*												
&VALUE	-4.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	-0.000971	-0.006668	0.000063	0.000000	0.000982	-0.002014
&VALUE	-2.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	-0.000179	-0.006559	-0.000338	0.000000	0.001602	-0.002078
&VALUE	0.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.000598	-0.006434	-0.000727	0.000000	0.002209	-0.002144
&VALUE	2.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.001370	-0.006265	-0.001117	0.000000	0.002798	-0.002211
&VALUE	4.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.002132	-0.006051	-0.001506	0.000000	0.003363	-0.002279
&VALUE	6.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.002882	-0.005799	-0.001892	0.000000	0.003901	-0.002345
&VALUE	8.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.003616	-0.005507	-0.002275	0.000000	0.004406	-0.002411
&VALUE	10.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.004330	-0.005178	-0.002650	0.000000	0.004873	-0.002473
&VALUE	12.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.005020	-0.004821	-0.003016	0.000000	0.005300	-0.002531
&VALUE	14.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.005682	-0.004432	-0.003370	0.000000	0.005682	-0.002584
&VALUE	16.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.006313	-0.004018	-0.003709	0.000000	0.006016	-0.002631

&VALUE	18.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.006909	-0.003582	-0.004030	0.000000	0.006531	-0.002671
&VALUE	20.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.007523	-0.002459	-0.004389	0.000000	0.006533	-0.002702
&VALUE	22.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.008387	0.001086	-0.004873	0.000000	0.006571	-0.002712
&VALUE	24.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.004793	0.006913	-0.004658	0.000000	0.006054	-0.002670
&VALUE	26.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.005917	0.007879	-0.004422	0.000000	0.004881	-0.002580
&VALUE	28.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.005803	0.005493	-0.003944	0.000000	0.004177	-0.002524
&VALUE	30.000000	0.200000	2.000000	0.207199	0.000000	-0.375670	0.005741	0.005206	-0.003712	0.000000	0.003503	-0.002470
*												
&VALUE	-4.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	-0.000975	-0.006738	0.000062	0.000000	0.000978	-0.001998
&VALUE	-2.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	-0.000176	-0.006602	-0.000343	0.000000	0.001614	-0.002062
&VALUE	0.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.000604	-0.006450	-0.000735	0.000000	0.002234	-0.002127
&VALUE	2.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.001376	-0.006253	-0.001127	0.000000	0.002833	-0.002194
&VALUE	4.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.002137	-0.006007	-0.001516	0.000000	0.003406	-0.002260
&VALUE	6.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.002882	-0.005726	-0.001901	0.000000	0.003946	-0.002325
&VALUE	8.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.003610	-0.005413	-0.002281	0.000000	0.004451	-0.002388
&VALUE	10.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.004315	-0.005062	-0.002653	0.000000	0.004916	-0.002448
&VALUE	12.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.004993	-0.004682	-0.003013	0.000000	0.005337	-0.002504
&VALUE	14.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.005642	-0.004273	-0.003359	0.000000	0.005711	-0.002554
&VALUE	16.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.006256	-0.003841	-0.003689	0.000000	0.006035	-0.002598
&VALUE	18.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.006837	-0.003348	-0.004002	0.000000	0.006307	-0.002635
&VALUE	20.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.007441	-0.002003	-0.004357	0.000000	0.006515	-0.002662
&VALUE	22.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.008943	0.003022	-0.004977	0.000000	0.006490	-0.002666
&VALUE	24.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.004918	0.006865	-0.004460	0.000000	0.005625	-0.002603
&VALUE	26.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.005423	0.005901	-0.004115	0.000000	0.004798	-0.002544
&VALUE	28.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	0.004711	0.004109	-0.003743	0.000000	0.004146	-0.002495
&VALUE	30.000000	0.300000	2.000000	0.207877	0.000000	-0.372722	-0.004519	0.002164	-0.001557	0.000000	0.003699	-0.002454
*												
&VALUE	-4.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	-0.000981	-0.006848	0.000061	0.000000	0.000971	-0.001977
&VALUE	-2.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	-0.000178	-0.006681	-0.000346	0.000000	0.001633	-0.002041
&VALUE	0.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.000604	-0.006498	-0.000739	0.000000	0.002275	-0.002105
&VALUE	2.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.001376	-0.006271	-0.001132	0.000000	0.002892	-0.002171
&VALUE	4.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.002134	-0.005989	-0.001520	0.000000	0.003479	-0.002237
&VALUE	6.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.002873	-0.005677	-0.001902	0.000000	0.004029	-0.002301
&VALUE	8.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.003595	-0.005342	-0.002279	0.000000	0.004541	-0.002364
&VALUE	10.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.004290	-0.004966	-0.002646	0.000000	0.005009	-0.002423
&VALUE	12.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.004957	-0.004561	-0.003001	0.000000	0.005430	-0.002477
&VALUE	14.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.005592	-0.004130	-0.003340	0.000000	0.005800	-0.002526
&VALUE	16.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.006191	-0.003677	-0.003651	0.000000	0.006117	-0.002568
&VALUE	18.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.006772	-0.002912	-0.003984	0.000000	0.006378	-0.002603
&VALUE	20.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.007424	-0.002558	-0.004377	0.000000	0.006519	-0.002624
&VALUE	22.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.010018	0.004164	-0.004979	0.000000	0.006259	-0.002611
&VALUE	24.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.001485	0.005432	-0.003928	0.000000	0.005374	-0.002552
&VALUE	26.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.011220	0.003637	-0.004442	0.000000	0.004854	-0.002515
&VALUE	28.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.008239	0.002844	-0.003963	0.000000	0.004360	-0.002475
&VALUE	30.000000	0.400000	2.000000	0.209220	0.000000	-0.369175	0.007264	0.001509	-0.003839	0.000000	0.004008	-0.002438
*												
&VALUE	-4.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	-0.000990	-0.007000	0.000060	0.000000	0.000961	-0.001947
&VALUE	-2.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	-0.000181	-0.006799	-0.000350	0.000000	0.001660	-0.002010
&VALUE	0.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.000605	-0.006582	-0.000746	0.000000	0.002335	-0.002074
&VALUE	2.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.001379	-0.006320	-0.001139	0.000000	0.002981	-0.002139
&VALUE	4.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.002134	-0.005999	-0.001526	0.000000	0.003592	-0.002204
&VALUE	6.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.002869	-0.005653	-0.001907	0.000000	0.004160	-0.002268
&VALUE	8.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.003583	-0.005292	-0.002281	0.000000	0.004686	-0.002329
&VALUE	10.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.004270	-0.004887	-0.002644	0.000000	0.005164	-0.002387
&VALUE	12.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.004925	-0.004454	-0.002993	0.000000	0.005590	-0.002440
&VALUE	14.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.005546	-0.003998	-0.003325	0.000000	0.005961	-0.002488
&VALUE	16.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.006128	-0.003523	-0.003637	0.000000	0.006275	-0.002528
&VALUE	18.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.006701	-0.002615	-0.003958	0.000000	0.006530	-0.002561
&VALUE	20.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.007526	0.000992	-0.004428	0.000000	0.006631	-0.002579
&VALUE	22.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.009954	0.004331	-0.004710	0.000000	0.006069	-0.002547
&VALUE	24.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.010516	0.004053	-0.004480	0.000000	0.005429	-0.002507
&VALUE	26.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.007489	0.002631	-0.003993	0.000000	0.004939	-0.002473
&VALUE	28.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.007101	0.001904	-0.003867	0.000000	0.004617	-0.002443
&VALUE	30.000000	0.500000	2.000000	0.211228	0.000000	-0.365045	0.007116	0.001981	-0.003784	0.000000	0.004284	-0.002408
*												
&VALUE	-4.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	-0.000530	-0.006640	-0.000203	0.000000	0.001425	-0.002031
&VALUE	-2.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.000277	-0.006541	-0.000618	0.000000	0.002035	-0.002091
&VALUE	0.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.001034	-0.006425	-0.000989	0.000000	0.002633	-0.002156
&VALUE	2.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.001787	-0.006266	-0.001362	0.000000	0.003214	-0.002223
&VALUE	4.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.002530	-0.006043	-0.001734	0.000000	0.003773	-0.002291
&VALUE	6.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.003261	-0.005797	-0.002104	0.000000	0.004299	-0.002361
&VALUE	8.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.003985	-0.005529	-0.002477	0.000000	0.004798	-0.002431
&VALUE	10.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.004690	-0.005207	-0.002844	0.000000	0.005260	-0.002498
&VALUE	12.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.005374	-0.004858	-0.003205	0.000000	0.005682	-0.002562

&VALUE	14.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.006033	-0.004477	-0.003558	0.000000	0.006060	-0.002622
&VALUE	16.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.006665	-0.004070	-0.003898	0.000000	0.006391	-0.002675
&VALUE	18.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.007264	-0.003639	-0.004223	0.000000	0.006674	-0.002722
&VALUE	20.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.007889	-0.002571	-0.004592	0.000000	0.006904	-0.002759
&VALUE	22.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.008759	-0.000728	-0.005106	0.000000	0.006953	-0.002774
&VALUE	24.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.003843	0.006789	-0.004877	0.000000	0.006492	-0.002732
&VALUE	26.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.006158	0.008326	-0.004795	0.000000	0.005290	-0.002625
&VALUE	28.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.006120	0.006015	-0.004240	0.000000	0.004528	-0.002561
&VALUE	30.000000	0.100000	3.000000	0.208795	0.000000	-0.376658	0.006036	0.005606	-0.003960	0.000000	0.003807	-0.002502
*												
&VALUE	-4.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	-0.000522	-0.006673	-0.000212	0.000000	0.001429	-0.002018
&VALUE	-2.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.000301	-0.006569	-0.000641	0.000000	0.002050	-0.002077
&VALUE	0.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.001077	-0.006449	-0.001030	0.000000	0.002657	-0.002139
&VALUE	2.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.001848	-0.006284	-0.001419	0.000000	0.003246	-0.002201
&VALUE	4.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.002607	-0.006055	-0.001805	0.000000	0.003813	-0.002264
&VALUE	6.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.003351	-0.005804	-0.002186	0.000000	0.004347	-0.002327
&VALUE	8.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.004084	-0.005533	-0.002567	0.000000	0.004852	-0.002389
&VALUE	10.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.004795	-0.005207	-0.002939	0.000000	0.005319	-0.002448
&VALUE	12.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.005481	-0.004854	-0.003301	0.000000	0.005746	-0.002503
&VALUE	14.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.006140	-0.004470	-0.003651	0.000000	0.006128	-0.002553
&VALUE	16.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.006766	-0.004059	-0.003986	0.000000	0.006462	-0.002598
&VALUE	18.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.007357	-0.003625	-0.004303	0.000000	0.006747	-0.002635
&VALUE	20.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.007959	-0.002506	-0.004650	0.000000	0.006979	-0.002665
&VALUE	22.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.008745	0.001034	-0.005094	0.000000	0.007017	-0.002676
&VALUE	24.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.005086	0.006859	-0.004872	0.000000	0.006500	-0.002639
&VALUE	26.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.006387	0.007831	-0.004624	0.000000	0.005327	-0.002560
&VALUE	28.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.006233	0.005452	-0.004162	0.000000	0.004623	-0.002512
&VALUE	30.000000	0.200000	3.000000	0.209533	0.000000	-0.375670	0.006181	0.005169	-0.003925	0.000000	0.003950	-0.002464
*												
&VALUE	-4.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	-0.000518	-0.006743	-0.000217	0.000000	0.001439	-0.002002
&VALUE	-2.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.000310	-0.006612	-0.000651	0.000000	0.002076	-0.002061
&VALUE	0.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.001090	-0.006465	-0.001042	0.000000	0.002696	-0.002122
&VALUE	2.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.001862	-0.006273	-0.001433	0.000000	0.003296	-0.002183
&VALUE	4.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.002619	-0.006007	-0.001818	0.000000	0.003870	-0.002245
&VALUE	6.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.003357	-0.005726	-0.002198	0.000000	0.004406	-0.002307
&VALUE	8.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.004084	-0.005438	-0.002576	0.000000	0.004911	-0.002366
&VALUE	10.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.004795	-0.005091	-0.002944	0.000000	0.005376	-0.002423
&VALUE	12.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.005460	-0.004715	-0.003300	0.000000	0.005797	-0.002475
&VALUE	14.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.006104	-0.004310	-0.003642	0.000000	0.006171	-0.002523
&VALUE	16.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.006714	-0.003881	-0.003968	0.000000	0.006495	-0.002565
&VALUE	18.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.007289	-0.003391	-0.004276	0.000000	0.006766	-0.002600
&VALUE	20.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.007877	-0.002050	-0.004617	0.000000	0.006975	-0.002626
&VALUE	22.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.009134	0.002968	-0.005155	0.000000	0.006950	-0.002631
&VALUE	24.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.005275	0.006812	-0.004675	0.000000	0.006085	-0.002577
&VALUE	26.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.005813	0.005854	-0.004334	0.000000	0.005258	-0.002526
&VALUE	28.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.004295	0.004068	-0.003940	0.000000	0.004606	-0.002484
&VALUE	30.000000	0.300000	3.000000	0.210746	0.000000	-0.372722	0.009823	0.002128	-0.004412	0.000000	0.004158	-0.002447
*												
&VALUE	-4.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	-0.000516	-0.006853	-0.000224	0.000000	0.001452	-0.001981
&VALUE	-2.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.000318	-0.006692	-0.000660	0.000000	0.002115	-0.002040
&VALUE	0.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.001100	-0.006514	-0.001053	0.000000	0.002758	-0.002099
&VALUE	2.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.001872	-0.006292	-0.001444	0.000000	0.003376	-0.002160
&VALUE	4.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.002625	-0.005986	-0.001827	0.000000	0.003964	-0.002221
&VALUE	6.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.003356	-0.005673	-0.002203	0.000000	0.004509	-0.002282
&VALUE	8.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.004076	-0.005367	-0.002578	0.000000	0.005020	-0.002341
&VALUE	10.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.004767	-0.004996	-0.002941	0.000000	0.005489	-0.002397
&VALUE	12.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.005430	-0.004594	-0.003291	0.000000	0.005909	-0.002448
&VALUE	14.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.006060	-0.004167	-0.003626	0.000000	0.006279	-0.002495
&VALUE	16.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.006654	-0.003718	-0.003942	0.000000	0.006596	-0.002535
&VALUE	18.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.007227	-0.002956	-0.004257	0.000000	0.006858	-0.002568
&VALUE	20.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.007843	-0.000607	-0.004626	0.000000	0.006999	-0.002589
&VALUE	22.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.009704	0.004109	-0.005079	0.000000	0.006739	-0.002579
&VALUE	24.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	-0.002279	0.005381	-0.003916	0.000000	0.005854	-0.002529
&VALUE	26.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.009190	0.003591	-0.004422	0.000000	0.005333	-0.002497
&VALUE	28.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.007919	0.002802	-0.004126	0.000000	0.004840	-0.002463
&VALUE	30.000000	0.400000	3.000000	0.212688	0.000000	-0.369175	0.007426	0.001471	-0.004024	0.000000	0.004488	-0.002430
*												
&VALUE	-4.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	-0.000513	-0.007005	-0.000232	0.000000	0.001470	-0.001951
&VALUE	-2.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.000329	-0.006810	-0.000673	0.000000	0.002171	-0.002008
&VALUE	0.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.001115	-0.006598	-0.001067	0.000000	0.002847	-0.002067
&VALUE	2.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.001887	-0.006342	-0.001459	0.000000	0.003494	-0.002127
&VALUE	4.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.002638	-0.005991	-0.001840	0.000000	0.004107	-0.002188
&VALUE	6.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.003362	-0.005644	-0.002213	0.000000	0.004668	-0.002248
&VALUE	8.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.004075	-0.005317	-0.002586	0.000000	0.005194	-0.002306

&VALUE	10.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.004757	-0.004917	-0.002944	0.000000	0.005572	-0.002360
&VALUE	12.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.005408	-0.004488	-0.003288	0.000000	0.006098	-0.002411
&VALUE	14.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.006024	-0.004036	-0.003615	0.000000	0.006469	-0.002456
&VALUE	16.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.006601	-0.003565	-0.003922	0.000000	0.006783	-0.002494
&VALUE	18.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.007163	-0.002661	-0.004234	0.000000	0.007038	-0.002526
&VALUE	20.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.007907	0.000938	-0.004660	0.000000	0.007139	-0.002543
&VALUE	22.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.009438	0.004275	-0.004810	0.000000	0.006577	-0.002517
&VALUE	24.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.009273	0.004002	-0.004533	0.000000	0.005937	-0.002484
&VALUE	26.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.007641	0.002585	-0.004197	0.000000	0.005447	-0.002456
&VALUE	28.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.007381	0.001861	-0.004090	0.000000	0.005125	-0.002430
&VALUE	30.000000	0.500000	3.000000	0.215383	0.000000	-0.365045	0.007376	0.001940	-0.004014	0.000000	0.004791	-0.002399
*												
&VALUE	-4.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.000382	-0.006676	-0.000776	0.000000	0.002285	-0.002074
&VALUE	-2.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.001205	-0.006586	-0.001206	0.000000	0.002896	-0.002125
&VALUE	0.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.001960	-0.006479	-0.001575	0.000000	0.003494	-0.002181
&VALUE	2.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.002711	-0.006328	-0.001945	0.000000	0.004074	-0.002239
&VALUE	4.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.003451	-0.006113	-0.002313	0.000000	0.004633	-0.002300
&VALUE	6.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.004178	-0.005876	-0.002678	0.000000	0.005160	-0.002362
&VALUE	8.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.004898	-0.005615	-0.003046	0.000000	0.005659	-0.002424
&VALUE	10.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.005596	-0.005301	-0.003407	0.000000	0.006120	-0.002485
&VALUE	12.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.006274	-0.004959	-0.003761	0.000000	0.006542	-0.002543
&VALUE	14.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.006927	-0.004584	-0.004106	0.000000	0.006920	-0.002597
&VALUE	16.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.007550	-0.004182	-0.004439	0.000000	0.007252	-0.002646
&VALUE	18.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.008141	-0.003756	-0.004755	0.000000	0.007534	-0.002689
&VALUE	20.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.008743	-0.002692	-0.005104	0.000000	0.007765	-0.002724
&VALUE	22.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.009487	0.000605	-0.005548	0.000000	0.007814	-0.002739
&VALUE	24.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.003481	0.006671	-0.005256	0.000000	0.007352	-0.002707
&VALUE	26.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.007084	0.008223	-0.005189	0.000000	0.006151	-0.002623
&VALUE	28.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.006991	0.005922	-0.004663	0.000000	0.005388	-0.002574
&VALUE	30.000000	0.100000	4.000000	0.208795	0.000000	-0.376658	0.006925	0.005521	-0.004371	0.000000	0.004668	-0.002529
*												
&VALUE	-4.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.000398	-0.006708	-0.000791	0.000000	0.002303	-0.002061
&VALUE	-2.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.001235	-0.006614	-0.001233	0.000000	0.002924	-0.002112
&VALUE	0.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.002010	-0.006502	-0.001620	0.000000	0.003531	-0.002164
&VALUE	2.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.002778	-0.006347	-0.002006	0.000000	0.004120	-0.002218
&VALUE	4.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.003534	-0.006125	-0.002387	0.000000	0.004687	-0.002273
&VALUE	6.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.004271	-0.005823	-0.002763	0.000000	0.005221	-0.002328
&VALUE	8.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.005001	-0.005520	-0.003138	0.000000	0.005726	-0.002382
&VALUE	10.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.005705	-0.005302	-0.003504	0.000000	0.006193	-0.002434
&VALUE	12.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.006385	-0.004955	-0.003859	0.000000	0.006620	-0.002483
&VALUE	14.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.007036	-0.004577	-0.004201	0.000000	0.007002	-0.002529
&VALUE	16.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.007654	-0.004171	-0.004528	0.000000	0.007336	-0.002569
&VALUE	18.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.008236	-0.003743	-0.004836	0.000000	0.007621	-0.002603
&VALUE	20.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.008815	-0.002628	-0.005162	0.000000	0.007853	-0.002630
&VALUE	22.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.009460	0.000911	-0.005532	0.000000	0.007891	-0.002641
&VALUE	24.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.005574	0.006741	-0.005295	0.000000	0.007374	-0.002616
&VALUE	26.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.007395	0.007728	-0.005021	0.000000	0.006201	-0.002559
&VALUE	28.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.007178	0.005357	-0.004592	0.000000	0.005497	-0.002525
&VALUE	30.000000	0.200000	4.000000	0.209533	0.000000	-0.375670	0.007146	0.005083	-0.004341	0.000000	0.004824	-0.002491
*												
&VALUE	-4.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.000416	-0.006780	-0.000805	0.000000	0.002339	-0.002047
&VALUE	-2.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.001258	-0.006658	-0.001251	0.000000	0.002976	-0.002097
&VALUE	0.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.002036	-0.006520	-0.001640	0.000000	0.003597	-0.002148
&VALUE	2.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.002805	-0.006337	-0.002027	0.000000	0.004197	-0.002201
&VALUE	4.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.003557	-0.006080	-0.002407	0.000000	0.004770	-0.002254
&VALUE	6.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.004289	-0.005807	-0.002780	0.000000	0.005306	-0.002308
&VALUE	8.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.005011	-0.005527	-0.003153	0.000000	0.005811	-0.002360
&VALUE	10.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.005705	-0.005187	-0.003513	0.000000	0.006276	-0.002410
&VALUE	12.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.006372	-0.004818	-0.003862	0.000000	0.006697	-0.002457
&VALUE	14.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.007008	-0.004419	-0.004196	0.000000	0.007071	-0.002500
&VALUE	16.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.007610	-0.003996	-0.004513	0.000000	0.007395	-0.002537
&VALUE	18.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.008174	-0.003511	-0.004811	0.000000	0.007667	-0.002569
&VALUE	20.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.008732	-0.002173	-0.005127	0.000000	0.007876	-0.002593
&VALUE	22.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.009598	0.002845	-0.005529	0.000000	0.007850	-0.002600
&VALUE	24.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.006001	0.006698	-0.005107	0.000000	0.006986	-0.002563
&VALUE	26.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.006646	0.005751	-0.004769	0.000000	0.006158	-0.002529
&VALUE	28.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.010734	0.003973	-0.004576	0.000000	0.005506	-0.002499
&VALUE	30.000000	0.300000	4.000000	0.210746	0.000000	-0.372722	0.008053	0.002037	-0.004384	0.000000	0.005059	-0.002473
*												
&VALUE	-4.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.000437	-0.006891	-0.000823	0.000000	0.002392	-0.002029
&VALUE	-2.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.001286	-0.006739	-0.001272	0.000000	0.003054	-0.002077
&VALUE	0.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.002065	-0.006571	-0.001661	0.000000	0.003697	-0.002127
&VALUE	2.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.002832	-0.006358	-0.002047	0.000000	0.004316	-0.002179
&VALUE	4.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.003580	-0.006061	-0.002424	0.000000	0.004904	-0.002232

&VALUE	6.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.004305	-0.005757	-0.002794	0.000000	0.005448	-0.002285
&VALUE	8.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.005018	-0.005459	-0.003163	0.000000	0.005960	-0.002336
&VALUE	10.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.005703	-0.005095	-0.003518	0.000000	0.006428	-0.002385
&VALUE	12.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.006357	-0.004700	-0.003859	0.000000	0.006849	-0.002431
&VALUE	14.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.006978	-0.004279	-0.004185	0.000000	0.007219	-0.002472
&VALUE	16.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.007562	-0.003835	-0.004493	0.000000	0.007536	-0.002509
&VALUE	18.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.008119	-0.003078	-0.004793	0.000000	0.007798	-0.002539
&VALUE	20.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.008668	-0.002732	-0.005114	0.000000	0.007938	-0.002559
&VALUE	22.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.009211	0.003987	-0.005372	0.000000	0.007678	-0.002555
&VALUE	24.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.014171	0.005269	-0.005216	0.000000	0.006794	-0.002523
&VALUE	26.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.008626	0.003486	-0.004735	0.000000	0.006273	-0.002502
&VALUE	28.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.008141	0.002702	-0.004532	0.000000	0.005779	-0.002478
&VALUE	30.000000	0.400000	4.000000	0.212688	0.000000	-0.369175	0.007974	0.001375	-0.004437	0.000000	0.005427	-0.002454
*												
&VALUE	-4.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.000466	-0.007046	-0.000847	0.000000	0.002465	-0.002001
&VALUE	-2.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.001323	-0.006861	-0.001300	0.000000	0.003166	-0.002048
&VALUE	0.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.002104	-0.006659	-0.001691	0.000000	0.003842	-0.002097
&VALUE	2.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.002872	-0.006412	-0.002076	0.000000	0.004490	-0.002148
&VALUE	4.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.003616	-0.006070	-0.002451	0.000000	0.005102	-0.002199
&VALUE	6.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.004332	-0.005732	-0.002816	0.000000	0.005663	-0.002251
&VALUE	8.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.005039	-0.005413	-0.003181	0.000000	0.006189	-0.002302
&VALUE	10.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.005713	-0.005020	-0.003531	0.000000	0.006667	-0.002350
&VALUE	12.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.006354	-0.004599	-0.003866	0.000000	0.007093	-0.002394
&VALUE	14.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.006960	-0.004153	-0.004183	0.000000	0.007465	-0.002434
&VALUE	16.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.007527	-0.003687	-0.004481	0.000000	0.007779	-0.002469
&VALUE	18.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.008068	-0.002787	-0.004774	0.000000	0.008033	-0.002498
&VALUE	20.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.008668	0.000809	-0.005122	0.000000	0.008134	-0.002516
&VALUE	22.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.009221	0.004152	-0.005120	0.000000	0.007572	-0.002502
&VALUE	24.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.008798	0.003887	-0.004849	0.000000	0.006932	-0.002482
&VALUE	26.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.008145	0.002476	-0.004625	0.000000	0.006442	-0.002464
&VALUE	28.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.008033	0.001755	-0.004542	0.000000	0.006121	-0.002446
&VALUE	30.000000	0.500000	4.000000	0.215383	0.000000	-0.365045	0.008014	0.001837	-0.004477	0.000000	0.005787	-0.002423
*												
&VALUE	-4.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.001631	-0.006785	-0.001567	0.000000	0.003451	-0.002230
&VALUE	-2.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.002460	-0.006707	-0.002002	0.000000	0.004062	-0.002270
&VALUE	0.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.003213	-0.006612	-0.002368	0.000000	0.004660	-0.002313
&VALUE	2.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.003961	-0.006473	-0.002734	0.000000	0.005241	-0.002364
&VALUE	4.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.004697	-0.006270	-0.003096	0.000000	0.005799	-0.002409
&VALUE	6.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.005419	-0.006043	-0.003455	0.000000	0.006326	-0.002461
&VALUE	8.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.006132	-0.005793	-0.003816	0.000000	0.006825	-0.002513
&VALUE	10.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.006824	-0.005488	-0.004168	0.000000	0.007287	-0.002565
&VALUE	12.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.007493	-0.005155	-0.004513	0.000000	0.007709	-0.002615
&VALUE	14.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.008136	-0.004789	-0.004848	0.000000	0.008087	-0.002662
&VALUE	16.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.008749	-0.004394	-0.005170	0.000000	0.008418	-0.002705
&VALUE	18.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.009328	-0.003975	-0.005475	0.000000	0.008700	-0.002743
&VALUE	20.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.009901	-0.002917	-0.005798	0.000000	0.008931	-0.002774
&VALUE	22.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.010493	0.000378	-0.006156	0.000000	0.008980	-0.002790
&VALUE	24.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	-0.008847	0.006450	-0.005207	0.000000	0.008519	-0.002771
&VALUE	26.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.008516	0.008023	-0.005713	0.000000	0.007317	-0.002718
&VALUE	28.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.008443	0.005734	-0.005228	0.000000	0.006554	-0.002689
&VALUE	30.000000	0.100000	5.000000	0.208795	0.000000	-0.376658	0.008403	0.005345	-0.004909	0.000000	0.005834	-0.002663
*												
&VALUE	-4.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.001657	-0.006817	-0.001587	0.000000	0.003488	-0.002220
&VALUE	-2.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.002499	-0.006734	-0.002034	0.000000	0.004108	-0.002258
&VALUE	0.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.003271	-0.006635	-0.002418	0.000000	0.004716	-0.002298
&VALUE	2.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.004036	-0.006491	-0.002799	0.000000	0.005305	-0.002340
&VALUE	4.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.004786	-0.006282	-0.003174	0.000000	0.005871	-0.002384
&VALUE	6.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.005519	-0.006050	-0.003543	0.000000	0.006405	-0.002428
&VALUE	8.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.006241	-0.005797	-0.003911	0.000000	0.006911	-0.002472
&VALUE	10.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.006937	-0.005489	-0.004268	0.000000	0.007378	-0.002515
&VALUE	12.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.007608	-0.005152	-0.004613	0.000000	0.007804	-0.002556
&VALUE	14.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.008249	-0.004782	-0.004945	0.000000	0.008186	-0.002594
&VALUE	16.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.008856	-0.004384	-0.005261	0.000000	0.008521	-0.002628
&VALUE	18.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.009426	-0.003962	-0.005557	0.000000	0.008805	-0.002658
&VALUE	20.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.009974	-0.002853	-0.005856	0.000000	0.009038	-0.002681
&VALUE	22.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.010455	0.000683	-0.006135	0.000000	0.009076	-0.002693
&VALUE	24.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.004140	0.006521	-0.005791	0.000000	0.008559	-0.002682
&VALUE	26.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.009047	0.007529	-0.005541	0.000000	0.007385	-0.002656
&VALUE	28.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.009402	0.005169	-0.005157	0.000000	0.006682	-0.002641
&VALUE	30.000000	0.200000	5.000000	0.209533	0.000000	-0.375670	0.009189	0.004905	-0.004849	0.000000	0.006008	-0.002625
*												
&VALUE	-4.000000	0.300000	5.000000	0.210746	0.000000	-0.372722	0.001694	-0.006891	-0.001614	0.000000	0.003560	-0.002210
&VALUE	-2.000000	0.300000	5.000000	0.210746	0.000000	-0.372722	0.002540	-0.006782	-0.002063	0.000000	0.004197	-0.002247
&VALUE	0.000000	0.300000	5.000000	0.210746	0.000000	-0.372722	0.003315	-0.006656	-0.002448	0.000000	0.004818	-0.002286

```

&VALUE 2.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.004079 -0.006485 -0.002830 0.000000 0.005417 -0.002327
&VALUE 4.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.004825 -0.006240 -0.003202 0.000000 0.005991 -0.002369
&VALUE 6.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.005551 -0.005979 -0.003568 0.000000 0.006527 -0.002412
&VALUE 8.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.006265 -0.005709 -0.003932 0.000000 0.007032 -0.002454
&VALUE 10.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.006950 -0.005379 -0.004283 0.000000 0.007497 -0.002495
&VALUE 12.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.007608 -0.005019 -0.004621 0.000000 0.007918 -0.002534
&VALUE 14.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.008233 -0.004628 -0.004944 0.000000 0.008292 -0.002570
&VALUE 16.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.008822 -0.004212 -0.005249 0.000000 0.008616 -0.002602
&VALUE 18.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.009373 -0.003734 -0.005535 0.000000 0.008887 -0.002629
&VALUE 20.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.009893 -0.002401 -0.005818 0.000000 0.009096 -0.002650
&VALUE 22.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.010361 0.002615 -0.006072 0.000000 0.009071 -0.002660
&VALUE 24.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.006832 0.006483 -0.005700 0.000000 0.008206 -0.002646
&VALUE 26.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.009010 0.005550 -0.005367 0.000000 0.007379 -0.002633
&VALUE 28.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.008681 0.003782 -0.005085 0.000000 0.006727 -0.002622
&VALUE 30.000000 0.300000 5.000000 0.210746 0.000000 -0.372722 0.008633 0.001853 -0.004912 0.000000 0.006280 -0.002609
*
&VALUE -4.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.001741 -0.007007 -0.001648 0.000000 0.003665 -0.002198
&VALUE -2.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.002594 -0.006869 -0.002100 0.000000 0.004328 -0.002233
&VALUE 0.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.003369 -0.006713 -0.002484 0.000000 0.004971 -0.002270
&VALUE 2.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.004131 -0.006513 -0.002864 0.000000 0.005589 -0.002310
&VALUE 4.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.004871 -0.006228 -0.003233 0.000000 0.006178 -0.002351
&VALUE 6.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.005588 -0.005935 -0.003593 0.000000 0.006722 -0.002393
&VALUE 8.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.006293 -0.005648 -0.003953 0.000000 0.007234 -0.002435
&VALUE 10.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.006968 -0.005293 -0.004297 0.000000 0.007702 -0.002475
&VALUE 12.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.007611 -0.004908 -0.004628 0.000000 0.008122 -0.002513
&VALUE 14.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.008221 -0.004495 -0.004942 0.000000 0.008493 -0.002548
&VALUE 16.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.008792 -0.004059 -0.005237 0.000000 0.008809 -0.002578
&VALUE 18.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.009328 -0.003308 -0.005517 0.000000 0.009071 -0.002604
&VALUE 20.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.009794 -0.000966 -0.005780 0.000000 0.009212 -0.002623
&VALUE 22.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.010035 0.003756 -0.005869 0.000000 0.008952 -0.002629
&VALUE 24.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.009617 0.005054 -0.005512 0.000000 0.008067 -0.002620
&VALUE 26.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.009111 0.003278 -0.005295 0.000000 0.007546 -0.002614
&VALUE 28.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.008925 0.002502 -0.005133 0.000000 0.007053 -0.002605
&VALUE 30.000000 0.400000 5.000000 0.212688 0.000000 -0.369175 0.008906 0.001180 -0.005040 0.000000 0.006701 -0.002591
*
&VALUE -4.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.001804 -0.007168 -0.001693 0.000000 0.003814 -0.002179
&VALUE -2.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.002665 -0.006997 -0.002150 0.000000 0.004515 -0.002212
&VALUE 0.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.003442 -0.006809 -0.002534 0.000000 0.005191 -0.002247
&VALUE 2.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.004203 -0.006575 -0.002912 0.000000 0.005838 -0.002285
&VALUE 4.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.004938 -0.006246 -0.003276 0.000000 0.006451 -0.002325
&VALUE 6.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.005645 -0.005919 -0.003631 0.000000 0.007012 -0.002366
&VALUE 8.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.006343 -0.005611 -0.003987 0.000000 0.007538 -0.002406
&VALUE 10.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.007005 -0.005229 -0.004324 0.000000 0.008016 -0.002445
&VALUE 12.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.007635 -0.004817 -0.004647 0.000000 0.008442 -0.002482
&VALUE 14.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.008228 -0.004379 -0.004952 0.000000 0.008813 -0.002516
&VALUE 16.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.008780 -0.003920 -0.005236 0.000000 0.009127 -0.002546
&VALUE 18.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.009296 -0.003027 -0.005506 0.000000 0.009382 -0.002571
&VALUE 20.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.009725 0.000567 -0.005756 0.000000 0.009483 -0.002589
&VALUE 22.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.009605 0.003919 -0.005641 0.000000 0.008921 -0.002591
&VALUE 24.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.009212 0.003663 -0.005399 0.000000 0.008281 -0.002590
&VALUE 26.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.009031 0.002260 -0.005237 0.000000 0.007791 -0.002586
&VALUE 28.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.009029 0.001544 -0.005176 0.000000 0.007469 -0.002579
&VALUE 30.000000 0.500000 5.000000 0.215383 0.000000 -0.365045 0.009008 0.001631 -0.005120 0.000000 0.007135 -0.002567
*
&END

```

- DDICE.inp (upper rudder)

```

&ARG01 C PROTOCOL 0 DDICE
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 0.0
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 REF. BELOW
&ARG12 X RUDDER 10 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG12 &FUN01 &FUN02 &FUN03 &FUN04 &FUN05 &FUN06
&UNAME AOA MACH RUDDER CLRU CDRU CMRU CYRU CRRU CNRU

```



```

&VALUE 2.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.001896 -0.005644
&VALUE 4.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.001698 -0.005707
&VALUE 6.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.001497 -0.005762
&VALUE 8.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.001295 -0.005811
&VALUE 10.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.001092 -0.005853
&VALUE 12.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.000887 -0.005887
&VALUE 14.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.000681 -0.005915
&VALUE 16.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.000474 -0.005935
&VALUE 18.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.000267 -0.005948
&VALUE 20.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 0.000059 -0.005953
&VALUE 22.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 -0.000149 -0.005952
&VALUE 24.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 -0.000357 -0.005943
&VALUE 26.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 -0.000564 -0.005927
&VALUE 28.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 -0.000770 -0.005904
&VALUE 30.000000 0.400000 29.500000 0.000000 0.000000 0.000000 0.057103 -0.000976 -0.005873
*
&VALUE -4.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.002454 -0.005368
&VALUE -2.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.002265 -0.005450
&VALUE 0.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.002073 -0.005526
&VALUE 2.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.001879 -0.005595
&VALUE 4.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.001683 -0.005657
&VALUE 6.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.001484 -0.005712
&VALUE 8.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.001284 -0.005761
&VALUE 10.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.001082 -0.005802
&VALUE 12.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.000879 -0.005836
&VALUE 14.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.000675 -0.005863
&VALUE 16.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.000470 -0.005883
&VALUE 18.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.000264 -0.005896
&VALUE 20.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 0.000058 -0.005902
&VALUE 22.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 -0.000148 -0.005900
&VALUE 24.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 -0.000354 -0.005891
&VALUE 26.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 -0.000559 -0.005876
&VALUE 28.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 -0.000764 -0.005852
&VALUE 30.000000 0.500000 29.500000 0.000000 0.000000 0.000000 0.056608 -0.000967 -0.005822
*
&END

```

- DLACE.inp (aileron)

```

&ARG01 C PROTOCOL 0 DLACE1
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 0.0
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 REF. BELOW
&ARG12 X AILERON 4 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG12 &FUN01 &FUN02 &FUN03 &FUN04 &FUN05 &FUN06
&UNAME AOA MACH AILERON CLA CDA CMA CYA CLLA CNA
&UCODE 1 2 4 0 0 0 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*
*LATERAL CONTROL EFFECTORS
*
&VALUE -4.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000003
&VALUE -2.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000107
&VALUE 0.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000209
&VALUE 2.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000309
&VALUE 4.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000406
&VALUE 6.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000532
&VALUE 8.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000626
&VALUE 10.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000714
&VALUE 12.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000796
&VALUE 14.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000871
&VALUE 16.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000939
&VALUE 18.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.000999
&VALUE 20.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.001050
&VALUE 22.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.001072
&VALUE 24.000000 0.100000 -15.000000 0.000000 0.000000 0.000000 0.000000 -0.008511 0.001010

```



```

&VALUE      2.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000309
&VALUE      4.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000402
&VALUE      6.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000523
&VALUE      8.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000611
&VALUE     10.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000692
&VALUE     12.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000765
&VALUE     14.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000831
&VALUE     16.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000889
&VALUE     18.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000938
&VALUE     20.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000965
&VALUE     22.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000894
&VALUE     24.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000812
&VALUE     26.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000752
&VALUE     28.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000716
&VALUE     30.000000  0.500000  15.000000  0.000000  0.000000  0.000000  0.000000  0.000000  0.008131  -0.000679
*
&END

```

- DLACE.inp (spoiler)

```

&ARG01      C      PROTOCOL      0      DLACE2
&ARG02      C      TEST_CONDITION  0      TEST0001.CND
&ARG03      C      REPORT_CODE     0      00-01
&ARG04      X      FLAP_SET        9      0.0
&ARG05      X      STABILZR        5      0.0
&ARG06      X      ELEVATOR        3      0.0
&ARG07      X      RUDDER          10     0.0
&ARG08      X      AILERON         4      0.0
&ARG09      X      SIDESLIP        11     0.0
&ARG10      X      AOA              1      REF. BELOW
&ARG11      X      MACH             2      REF. BELOW
&ARG12      X      SPOILER         7      REF. BELOW
*
&SNAME      &ARG10  &ARG11  &ARG12  &FUN01  &FUN02  &FUN03  &FUN04  &FUN05  &FUN06
&UNAME      AOA      MACH      SPOILER  CLS     CDS     CMS     CYS     CLLS    CNS
&UCODE      1      2      7      0      0      0      0      0      0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*
*LATERAL CONTROL EFFECTORS
*
&VALUE     -4.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     -2.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE      0.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE      2.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE      4.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE      6.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE      8.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     10.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     12.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     14.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     16.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     18.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     20.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     22.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     24.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     26.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     28.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
&VALUE     30.000000  0.100000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009255  -0.003648
*
&VALUE     -4.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     -2.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE      0.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE      2.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE      4.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE      6.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE      8.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     10.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     12.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     14.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     16.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     18.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     20.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     22.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648
&VALUE     24.000000  0.200000 -40.000000  0.000000  0.000000  0.000000  0.000000  0.000000 -0.009386  -0.003648

```



```

&VALUE 20.000000 0.500000 40.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.010204 0.003648
&VALUE 22.000000 0.500000 40.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.010204 0.003648
&VALUE 24.000000 0.500000 40.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.010204 0.003648
&VALUE 26.000000 0.500000 40.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.010204 0.003648
&VALUE 28.000000 0.500000 40.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.010204 0.003648
&VALUE 30.000000 0.500000 40.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.010204 0.003648
*
&END

```

- DLOCE_00.inp (elevator = 0 deg)

```

&ARG01 C PROTOCOL 0 DLOCE-XX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 0.2
&ARG12 X STABILZR 5 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG12 &ARG13 &ARG06 &FUN01 &FUN02 &FUN03 &FUN04 &FUN05 &FUN06
&UNAME AOA MACH FLAP_SET STABILZR ELEVATOR CLHTE CDHTE CMHTE CY CLL CN
&UCODE 1 2 9 5 3 0 0 0 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*CONTROL DERIVATIVE INCREMENTS
*LONGITUDINAL CONTROL EFFECTORS
&VALUE -4.000000 0.100000 1.000000 -1.200000 0.000000 0.017485 -0.000730 -0.056802 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 1.000000 -1.200000 0.000000 0.018020 -0.000253 -0.058657 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 1.000000 -1.200000 0.000000 0.018353 0.000251 -0.059905 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 1.000000 -1.200000 0.000000 0.018440 0.000768 -0.060391 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 1.000000 -1.200000 0.000000 0.017893 0.001245 -0.058839 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 1.000000 -1.200000 0.000000 0.017281 0.001674 -0.057111 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 1.000000 -1.200000 0.000000 0.016612 0.002058 -0.055221 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 1.000000 -1.200000 0.000000 0.015552 0.002386 -0.052019 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 1.000000 -1.200000 0.000000 0.014238 0.002636 -0.047958 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 1.000000 -1.200000 0.000000 0.012880 0.002816 -0.043713 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 1.000000 -1.200000 0.000000 0.011452 0.002930 -0.039191 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 1.000000 -1.200000 0.000000 0.010026 0.002966 -0.034628 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 1.000000 -1.200000 0.000000 0.008553 0.002932 -0.029844 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 1.000000 -1.200000 0.000000 0.007040 0.002794 -0.024846 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 1.000000 -1.200000 0.000000 0.005134 0.002454 -0.018370 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 1.000000 -1.200000 0.000000 0.002806 0.001900 -0.010271 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 1.000000 -1.200000 0.000000 0.000190 0.001318 -0.001081 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 1.000000 -1.200000 0.000000 -0.007731 -0.001075 0.027605 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 2.000000 -1.200000 0.000000 0.017485 -0.000730 -0.056802 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 2.000000 -1.200000 0.000000 0.018020 -0.000253 -0.058657 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 2.000000 -1.200000 0.000000 0.018353 0.000251 -0.059905 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 2.000000 -1.200000 0.000000 0.018440 0.000768 -0.060391 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 2.000000 -1.200000 0.000000 0.017892 0.001245 -0.058838 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 2.000000 -1.200000 0.000000 0.017280 0.001674 -0.057111 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 2.000000 -1.200000 0.000000 0.016612 0.002058 -0.055220 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 2.000000 -1.200000 0.000000 0.015551 0.002386 -0.052018 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 2.000000 -1.200000 0.000000 0.014238 0.002635 -0.047956 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 2.000000 -1.200000 0.000000 0.012879 0.002816 -0.043711 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 2.000000 -1.200000 0.000000 0.011451 0.002929 -0.039188 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 2.000000 -1.200000 0.000000 0.010025 0.002966 -0.034625 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 2.000000 -1.200000 0.000000 0.008552 0.002932 -0.029840 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 2.000000 -1.200000 0.000000 0.007039 0.002793 -0.024841 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 2.000000 -1.200000 0.000000 0.005132 0.002453 -0.018364 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 2.000000 -1.200000 0.000000 0.002805 0.001900 -0.010264 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 2.000000 -1.200000 0.000000 0.000327 0.001356 -0.001571 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 2.000000 -1.200000 0.000000 -0.007683 -0.001064 0.027434 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 3.000000 -1.200000 0.000000 0.017485 -0.000730 -0.056802 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 3.000000 -1.200000 0.000000 0.018020 -0.000253 -0.058658 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 3.000000 -1.200000 0.000000 0.018353 0.000251 -0.059904 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 3.000000 -1.200000 0.000000 0.018439 0.000768 -0.060388 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 3.000000 -1.200000 0.000000 0.017891 0.001245 -0.058835 0.000000 0.000000 0.000000

```


eVALUE	28.000000	0.100000	3.000000	4.000000	0.000000	-0.010181	-0.006507	0.037760	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	4.000000	0.000000	-0.001708	-0.004232	0.007598	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	4.000000	0.000000	-0.053729	0.003848	0.176799	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	4.000000	0.000000	-0.055946	0.002516	0.184373	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	4.000000	0.000000	-0.057971	0.001048	0.191429	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	4.000000	0.000000	-0.059710	-0.000543	0.197676	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	4.000000	0.000000	-0.060522	-0.002246	0.200960	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	4.000000	0.000000	-0.060062	-0.003889	0.200188	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	4.000000	0.000000	-0.058760	-0.005431	0.196734	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	4.000000	0.000000	-0.055770	-0.006811	0.187671	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	4.000000	0.000000	-0.052010	-0.007956	0.176049	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	4.000000	0.000000	-0.048124	-0.008905	0.163973	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	4.000000	0.000000	-0.044023	-0.009659	0.151100	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	4.000000	0.000000	-0.039676	-0.010139	0.137297	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	4.000000	0.000000	-0.035122	-0.010362	0.122649	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	4.000000	0.000000	-0.030399	-0.010244	0.107231	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	4.000000	0.000000	-0.024420	-0.009471	0.087124	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	4.000000	0.000000	-0.016925	-0.007932	0.061257	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	4.000000	0.000000	-0.010139	-0.006465	0.037596	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	4.000000	0.000000	0.005194	-0.002498	-0.017128	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	4.000000	0.000000	-0.053729	0.003848	0.176800	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	4.000000	0.000000	-0.055949	0.002517	0.184384	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	4.000000	0.000000	-0.057975	0.001050	0.191446	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	4.000000	0.000000	-0.059712	-0.000541	0.197683	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	4.000000	0.000000	-0.060524	-0.002243	0.200969	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	4.000000	0.000000	-0.060054	-0.003886	0.200163	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	4.000000	0.000000	-0.058743	-0.005426	0.196680	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	4.000000	0.000000	-0.055751	-0.006806	0.187610	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	4.000000	0.000000	-0.051987	-0.007950	0.175972	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	4.000000	0.000000	-0.048093	-0.008896	0.163869	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	4.000000	0.000000	-0.043982	-0.009646	0.150959	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	4.000000	0.000000	-0.039627	-0.010125	0.137127	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	4.000000	0.000000	-0.035060	-0.010342	0.122429	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	4.000000	0.000000	-0.030318	-0.010216	0.106945	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	4.000000	0.000000	-0.024325	-0.009438	0.086787	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	4.000000	0.000000	-0.016823	-0.007898	0.060891	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	4.000000	0.000000	-0.010063	-0.006424	0.037316	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	4.000000	0.000000	0.005300	-0.002597	-0.017459	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	6.000000	0.000000	-0.077721	0.006333	0.256845	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	6.000000	0.000000	-0.081334	0.004508	0.269160	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	6.000000	0.000000	-0.084633	0.002465	0.280597	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	6.000000	0.000000	-0.087533	0.000218	0.290887	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	6.000000	0.000000	-0.089374	-0.002240	0.297805	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	6.000000	0.000000	-0.089830	-0.004706	0.300353	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	6.000000	0.000000	-0.089128	-0.007103	0.299242	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	6.000000	0.000000	-0.085725	-0.009340	0.289162	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	6.000000	0.000000	-0.080498	-0.011222	0.273006	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	6.000000	0.000000	-0.074994	-0.012825	0.255901	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	6.000000	0.000000	-0.069162	-0.014152	0.237622	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	6.000000	0.000000	-0.062983	-0.015097	0.218064	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	6.000000	0.000000	-0.056424	-0.015653	0.197033	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	6.000000	0.000000	-0.049549	-0.015701	0.174680	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	6.000000	0.000000	-0.040786	-0.014781	0.145316	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	6.000000	0.000000	-0.029756	-0.012713	0.107370	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	6.000000	0.000000	-0.018258	-0.010343	0.067277	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	6.000000	0.000000	-0.010259	-0.008363	0.039092	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	6.000000	0.000000	-0.077721	0.006333	0.256845	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	6.000000	0.000000	-0.081334	0.004509	0.269161	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	6.000000	0.000000	-0.084633	0.002466	0.280599	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	6.000000	0.000000	-0.087533	0.000218	0.290888	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	6.000000	0.000000	-0.089375	-0.002240	0.297806	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	6.000000	0.000000	-0.089829	-0.004705	0.300352	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	6.000000	0.000000	-0.089127	-0.007103	0.299238	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	6.000000	0.000000	-0.085724	-0.009339	0.289158	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	6.000000	0.000000	-0.080496	-0.011222	0.272999	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	6.000000	0.000000	-0.074991	-0.012824	0.255891	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	6.000000	0.000000	-0.069158	-0.014151	0.237609	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	6.000000	0.000000	-0.062979	-0.015096	0.218050	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	6.000000	0.000000	-0.056418	-0.015651	0.197015	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	6.000000	0.000000	-0.049542	-0.015698	0.174655	0.000000	0.000000	0.000000

eVALUE	24.000000	0.100000	2.000000	6.000000	0.000000	-0.040778	-0.014778	0.145287	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	6.000000	0.000000	-0.029747	-0.012710	0.107339	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	6.000000	0.000000	-0.018510	-0.010406	0.068176	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	6.000000	0.000000	-0.009627	-0.008200	0.036826	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	6.000000	0.000000	-0.077721	0.006333	0.256846	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	6.000000	0.000000	-0.081335	0.004509	0.269166	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	6.000000	0.000000	-0.084635	0.002466	0.280603	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	6.000000	0.000000	-0.087533	0.000219	0.290889	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	6.000000	0.000000	-0.089375	-0.002239	0.297808	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	6.000000	0.000000	-0.089827	-0.004704	0.300347	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	6.000000	0.000000	-0.089119	-0.007100	0.299211	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	6.000000	0.000000	-0.085715	-0.009337	0.289129	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	6.000000	0.000000	-0.080482	-0.011218	0.272953	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	6.000000	0.000000	-0.074972	-0.012819	0.255828	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	6.000000	0.000000	-0.069134	-0.014143	0.237526	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	6.000000	0.000000	-0.062949	-0.015087	0.217944	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	6.000000	0.000000	-0.056382	-0.015639	0.196887	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	6.000000	0.000000	-0.049498	-0.015683	0.174498	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	6.000000	0.000000	-0.040719	-0.014758	0.145077	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	6.000000	0.000000	-0.029692	-0.012692	0.107139	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	6.000000	0.000000	-0.019175	-0.010562	0.070550	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	6.000000	0.000000	-0.004762	-0.006967	0.019392	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	6.000000	0.000000	-0.077721	0.006333	0.256847	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	6.000000	0.000000	-0.081340	0.004511	0.269182	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	6.000000	0.000000	-0.084641	0.002468	0.280625	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	6.000000	0.000000	-0.087537	0.000221	0.290904	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	6.000000	0.000000	-0.089380	-0.002236	0.297827	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	6.000000	0.000000	-0.089824	-0.004701	0.300338	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	6.000000	0.000000	-0.089104	-0.007095	0.299166	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	6.000000	0.000000	-0.085699	-0.009332	0.289078	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	6.000000	0.000000	-0.080457	-0.011211	0.272869	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	6.000000	0.000000	-0.074939	-0.012809	0.255715	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	6.000000	0.000000	-0.069089	-0.014129	0.237374	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	6.000000	0.000000	-0.062896	-0.015071	0.217761	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	6.000000	0.000000	-0.056313	-0.015618	0.196649	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	6.000000	0.000000	-0.049408	-0.015653	0.174181	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	6.000000	0.000000	-0.040615	-0.014722	0.144707	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	6.000000	0.000000	-0.029578	-0.012654	0.106734	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	6.000000	0.000000	-0.019092	-0.010508	0.070239	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	6.000000	0.000000	0.003396	-0.004992	-0.009799	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	6.000000	0.000000	-0.077722	0.006333	0.256849	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	6.000000	0.000000	-0.081345	0.004512	0.269201	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	6.000000	0.000000	-0.084648	0.002471	0.280653	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	6.000000	0.000000	-0.087542	0.000224	0.290924	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	6.000000	0.000000	-0.089386	-0.002233	0.297852	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	6.000000	0.000000	-0.089820	-0.004697	0.300327	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	6.000000	0.000000	-0.089086	-0.007089	0.299109	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	6.000000	0.000000	-0.085679	-0.009326	0.289012	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	6.000000	0.000000	-0.080424	-0.011203	0.272759	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	6.000000	0.000000	-0.074894	-0.012796	0.255565	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	6.000000	0.000000	-0.069030	-0.014111	0.237172	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	6.000000	0.000000	-0.062825	-0.015051	0.217516	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	6.000000	0.000000	-0.056222	-0.015589	0.196328	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	6.000000	0.000000	-0.049288	-0.015613	0.173757	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	6.000000	0.000000	-0.040475	-0.014675	0.144208	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	6.000000	0.000000	-0.029426	-0.012604	0.106186	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	6.000000	0.000000	-0.018960	-0.010449	0.069760	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	6.000000	0.000000	0.000205	-0.005921	0.001685	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	8.000000	0.000000	-0.099401	0.008987	0.329760	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	8.000000	0.000000	-0.104615	0.006806	0.347529	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	8.000000	0.000000	-0.109396	0.004312	0.364049	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	8.000000	0.000000	-0.113654	0.001523	0.379041	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	8.000000	0.000000	-0.116685	-0.001589	0.390103	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	8.000000	0.000000	-0.118210	-0.004788	0.396446	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	8.000000	0.000000	-0.118488	-0.007981	0.398890	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	8.000000	0.000000	-0.115663	-0.011085	0.391075	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	8.000000	0.000000	-0.109961	-0.013814	0.373664	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	8.000000	0.000000	-0.103399	-0.016184	0.353369	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	8.000000	0.000000	-0.096036	-0.018186	0.330301	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	8.000000	0.000000	-0.088202	-0.019716	0.305544	0.000000	0.000000	0.000000

eVALUE	16.000000	0.100000	5.000000	8.000000	0.000000	-0.095868	-0.018135	0.329727	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	8.000000	0.000000	-0.087999	-0.019558	0.304843	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	8.000000	0.000000	-0.079575	-0.020655	0.277886	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	8.000000	0.000000	-0.070658	-0.020982	0.248957	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	8.000000	0.000000	-0.059215	-0.020052	0.210705	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	8.000000	0.000000	-0.044779	-0.017625	0.161173	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	8.000000	0.000000	-0.030751	-0.014949	0.112468	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	8.000000	0.000000	-0.007912	-0.009827	0.031610	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	10.000000	0.000000	-0.118648	0.011668	0.394956	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	10.000000	0.000000	-0.125558	0.009257	0.418534	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	10.000000	0.000000	-0.131975	0.006441	0.440677	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	10.000000	0.000000	-0.137793	0.003237	0.461056	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	10.000000	0.000000	-0.142224	-0.000414	0.476966	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	10.000000	0.000000	-0.144991	-0.004243	0.487653	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	10.000000	0.000000	-0.146408	-0.008141	0.494151	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	10.000000	0.000000	-0.144411	-0.012030	0.489386	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	10.000000	0.000000	-0.139205	-0.015617	0.473951	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	10.000000	0.000000	-0.132589	-0.018838	0.453818	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	10.000000	0.000000	-0.124532	-0.021648	0.428775	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	10.000000	0.000000	-0.115267	-0.023874	0.399533	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	10.000000	0.000000	-0.105294	-0.025472	0.367716	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	10.000000	0.000000	-0.094716	-0.026279	0.333542	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	10.000000	0.000000	-0.081027	-0.025568	0.287961	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	10.000000	0.000000	-0.063496	-0.022980	0.227996	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	10.000000	0.000000	-0.045105	-0.019748	0.164222	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	10.000000	0.000000	-0.024245	-0.015341	0.090796	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	10.000000	0.000000	-0.118649	0.011668	0.394956	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	10.000000	0.000000	-0.125559	0.009258	0.418538	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	10.000000	0.000000	-0.131976	0.006442	0.440681	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	10.000000	0.000000	-0.137794	0.003237	0.461059	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	10.000000	0.000000	-0.142225	-0.000413	0.476970	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	10.000000	0.000000	-0.144991	-0.004243	0.487655	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	10.000000	0.000000	-0.146408	-0.008141	0.494149	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	10.000000	0.000000	-0.144410	-0.012029	0.489384	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	10.000000	0.000000	-0.139203	-0.015616	0.473945	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	10.000000	0.000000	-0.132585	-0.018837	0.453806	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	10.000000	0.000000	-0.124527	-0.021646	0.428756	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	10.000000	0.000000	-0.115261	-0.023872	0.399511	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	10.000000	0.000000	-0.105286	-0.025469	0.367688	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	10.000000	0.000000	-0.094705	-0.026276	0.333503	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	10.000000	0.000000	-0.081014	-0.025564	0.287914	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	10.000000	0.000000	-0.063482	-0.022976	0.227944	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	10.000000	0.000000	-0.045350	-0.019809	0.165098	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	10.000000	0.000000	-0.023332	-0.015122	0.087531	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	10.000000	0.000000	-0.118649	0.011668	0.394958	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	10.000000	0.000000	-0.125562	0.009259	0.418548	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	10.000000	0.000000	-0.131979	0.006443	0.440692	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	10.000000	0.000000	-0.137795	0.003238	0.461066	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	10.000000	0.000000	-0.142228	-0.000411	0.476980	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	10.000000	0.000000	-0.144993	-0.004240	0.487663	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	10.000000	0.000000	-0.146405	-0.008137	0.494143	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	10.000000	0.000000	-0.144406	-0.012025	0.489374	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	10.000000	0.000000	-0.139190	-0.015611	0.473904	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	10.000000	0.000000	-0.132560	-0.018829	0.453721	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	10.000000	0.000000	-0.124490	-0.021635	0.428629	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	10.000000	0.000000	-0.115214	-0.023859	0.399349	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	10.000000	0.000000	-0.105230	-0.025452	0.367490	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	10.000000	0.000000	-0.094635	-0.026253	0.333255	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	10.000000	0.000000	-0.080919	-0.025532	0.287576	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	10.000000	0.000000	-0.063391	-0.022947	0.227617	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	10.000000	0.000000	-0.045974	-0.019952	0.167322	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	10.000000	0.000000	-0.017765	-0.013778	0.067616	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	10.000000	0.000000	-0.118650	0.011669	0.394960	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	10.000000	0.000000	-0.125571	0.009262	0.418581	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	10.000000	0.000000	-0.131991	0.006447	0.440738	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	10.000000	0.000000	-0.137807	0.003243	0.461109	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	10.000000	0.000000	-0.142242	-0.000406	0.477033	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	10.000000	0.000000	-0.144999	-0.004235	0.487686	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	10.000000	0.000000	-0.146399	-0.008130	0.494128	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	10.000000	0.000000	-0.144399	-0.012018	0.489354	0.000000	0.000000	0.000000

&VALUE	12.000000	0.100000	4.000000	10.000000	0.000000	-0.139167	-0.015602	0.473828	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	4.000000	10.000000	0.000000	-0.132515	-0.018815	0.453570	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	10.000000	0.000000	-0.124421	-0.021615	0.428396	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	10.000000	0.000000	-0.115133	-0.023836	0.399068	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	10.000000	0.000000	-0.105124	-0.025420	0.367121	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	10.000000	0.000000	-0.094493	-0.026208	0.332757	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	10.000000	0.000000	-0.080751	-0.025477	0.286979	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	10.000000	0.000000	-0.063205	-0.022887	0.226953	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	10.000000	0.000000	-0.045810	-0.019874	0.166724	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	10.000000	0.000000	-0.013542	-0.012724	0.052487	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	10.000000	0.000000	-0.118651	0.011669	0.394964	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	10.000000	0.000000	-0.125581	0.009265	0.418619	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	10.000000	0.000000	-0.132007	0.006452	0.440796	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	10.000000	0.000000	-0.137822	0.003248	0.461164	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	10.000000	0.000000	-0.142260	-0.000399	0.477102	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	10.000000	0.000000	-0.145006	-0.004228	0.487718	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	10.000000	0.000000	-0.146392	-0.008121	0.494109	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	10.000000	0.000000	-0.144391	-0.012009	0.489330	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	10.000000	0.000000	-0.139137	-0.015590	0.473731	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	10.000000	0.000000	-0.132455	-0.018797	0.453370	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	10.000000	0.000000	-0.124331	-0.021588	0.428088	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	10.000000	0.000000	-0.115025	-0.023806	0.398695	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	10.000000	0.000000	-0.104982	-0.025377	0.366626	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	10.000000	0.000000	-0.094304	-0.026147	0.332091	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	10.000000	0.000000	-0.080526	-0.025403	0.286176	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	10.000000	0.000000	-0.062955	-0.022807	0.226058	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	10.000000	0.000000	-0.045571	-0.019783	0.165857	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	10.000000	0.000000	-0.019288	-0.014197	0.073079	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	12.000000	0.000000	-0.135292	0.014233	0.451679	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	12.000000	0.000000	-0.144026	0.011721	0.481541	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	12.000000	0.000000	-0.152187	0.008709	0.509705	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	12.000000	0.000000	-0.159674	0.005212	0.535860	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	12.000000	0.000000	-0.165708	0.001152	0.557310	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	12.000000	0.000000	-0.169924	-0.003193	0.573030	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	1.000000	12.000000	0.000000	-0.172673	-0.007691	0.584206	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	1.000000	12.000000	0.000000	-0.171747	-0.012267	0.583276	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	1.000000	12.000000	0.000000	-0.167323	-0.016632	0.570731	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	1.000000	12.000000	0.000000	-0.161348	-0.020686	0.553068	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	1.000000	12.000000	0.000000	-0.153587	-0.024361	0.529375	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	1.000000	12.000000	0.000000	-0.143890	-0.027433	0.499033	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	1.000000	12.000000	0.000000	-0.132599	-0.029724	0.463092	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	1.000000	12.000000	0.000000	-0.120462	-0.031101	0.423981	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	1.000000	12.000000	0.000000	-0.104706	-0.030740	0.371661	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	1.000000	12.000000	0.000000	-0.084390	-0.028192	0.302359	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	1.000000	12.000000	0.000000	-0.062846	-0.024793	0.227856	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	1.000000	12.000000	0.000000	-0.035693	-0.019444	0.132409	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	2.000000	12.000000	0.000000	-0.135292	0.014233	0.451680	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	2.000000	12.000000	0.000000	-0.144027	0.011721	0.481546	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	2.000000	12.000000	0.000000	-0.152189	0.008709	0.509711	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	2.000000	12.000000	0.000000	-0.159676	0.005213	0.535865	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	2.000000	12.000000	0.000000	-0.165710	0.001153	0.557316	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	2.000000	12.000000	0.000000	-0.169924	-0.003193	0.573033	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	2.000000	12.000000	0.000000	-0.172673	-0.007690	0.584206	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	2.000000	12.000000	0.000000	-0.171747	-0.012267	0.583276	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	2.000000	12.000000	0.000000	-0.167322	-0.016631	0.570726	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	2.000000	12.000000	0.000000	-0.161345	-0.020685	0.553057	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	2.000000	12.000000	0.000000	-0.153581	-0.024359	0.529356	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	2.000000	12.000000	0.000000	-0.143883	-0.027431	0.499010	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	2.000000	12.000000	0.000000	-0.132590	-0.029721	0.463059	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	2.000000	12.000000	0.000000	-0.120449	-0.031097	0.423935	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	2.000000	12.000000	0.000000	-0.104690	-0.030735	0.371607	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	2.000000	12.000000	0.000000	-0.084373	-0.028187	0.302298	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	2.000000	12.000000	0.000000	-0.063088	-0.024853	0.228722	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	2.000000	12.000000	0.000000	-0.034914	-0.019254	0.129619	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	3.000000	12.000000	0.000000	-0.135293	0.014234	0.451682	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	3.000000	12.000000	0.000000	-0.144031	0.011723	0.481560	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	3.000000	12.000000	0.000000	-0.152193	0.008711	0.509726	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	3.000000	12.000000	0.000000	-0.159678	0.005215	0.535876	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	3.000000	12.000000	0.000000	-0.165714	0.001155	0.557332	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	3.000000	12.000000	0.000000	-0.169929	-0.003190	0.573051	0.000000	0.000000	0.000000

&VALUE	8.000000	0.100000	4.000000	6.000000	-5.000000	-0.118526	-0.005921	0.419487	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	4.000000	6.000000	-5.000000	-0.115121	-0.008157	0.409399	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	4.000000	6.000000	-5.000000	-0.109878	-0.010037	0.393190	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	4.000000	6.000000	-5.000000	-0.104360	-0.011634	0.376036	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	6.000000	-5.000000	-0.098511	-0.012954	0.357695	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	6.000000	-5.000000	-0.092317	-0.013897	0.338081	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	6.000000	-5.000000	-0.085735	-0.014443	0.316969	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	6.000000	-5.000000	-0.078830	-0.014478	0.294502	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	6.000000	-5.000000	-0.070037	-0.013548	0.265028	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	6.000000	-5.000000	-0.059000	-0.011480	0.227055	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	6.000000	-5.000000	-0.048513	-0.009333	0.190560	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	6.000000	-5.000000	-0.026026	-0.003817	0.110522	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	6.000000	-5.000000	-0.107143	0.007508	0.377170	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	6.000000	-5.000000	-0.110767	0.005687	0.389522	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	6.000000	-5.000000	-0.114070	0.003645	0.400974	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	6.000000	-5.000000	-0.116964	0.001399	0.411245	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	6.000000	-5.000000	-0.118808	-0.001058	0.418173	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	6.000000	-5.000000	-0.119241	-0.003522	0.420648	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	6.000000	-5.000000	-0.118508	-0.005915	0.419430	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	6.000000	-5.000000	-0.115101	-0.008151	0.409333	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	6.000000	-5.000000	-0.109845	-0.010028	0.393080	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	6.000000	-5.000000	-0.104316	-0.011622	0.375886	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	6.000000	-5.000000	-0.098451	-0.012936	0.357493	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	6.000000	-5.000000	-0.092246	-0.013876	0.337837	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	6.000000	-5.000000	-0.085643	-0.014414	0.316649	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	6.000000	-5.000000	-0.078709	-0.014438	0.294078	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	6.000000	-5.000000	-0.069897	-0.013500	0.264529	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	6.000000	-5.000000	-0.058847	-0.011429	0.226507	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	6.000000	-5.000000	-0.048382	-0.009274	0.190080	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	6.000000	-5.000000	-0.029217	-0.004746	0.122006	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	8.000000	-5.000000	-0.125698	0.010159	0.450081	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	8.000000	-5.000000	-0.130912	0.007978	0.467850	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	8.000000	-5.000000	-0.135693	0.005484	0.484370	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	8.000000	-5.000000	-0.139951	0.002695	0.499362	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	8.000000	-5.000000	-0.142982	-0.000417	0.510424	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	8.000000	-5.000000	-0.144508	-0.003616	0.516767	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	1.000000	8.000000	-5.000000	-0.144785	-0.006809	0.519211	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	1.000000	8.000000	-5.000000	-0.141960	-0.009913	0.511396	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	1.000000	8.000000	-5.000000	-0.136258	-0.012642	0.493984	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	1.000000	8.000000	-5.000000	-0.129697	-0.015012	0.473690	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	1.000000	8.000000	-5.000000	-0.122333	-0.017015	0.450622	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	1.000000	8.000000	-5.000000	-0.114499	-0.018545	0.425865	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	1.000000	8.000000	-5.000000	-0.106132	-0.019563	0.399113	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	1.000000	8.000000	-5.000000	-0.097296	-0.019922	0.370480	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	1.000000	8.000000	-5.000000	-0.085923	-0.019018	0.332487	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	1.000000	8.000000	-5.000000	-0.071513	-0.016595	0.283059	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	1.000000	8.000000	-5.000000	-0.056466	-0.013708	0.230737	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	1.000000	8.000000	-5.000000	-0.042543	-0.010539	0.181692	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	2.000000	8.000000	-5.000000	-0.125698	0.010159	0.450082	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	2.000000	8.000000	-5.000000	-0.130913	0.007978	0.467852	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	2.000000	8.000000	-5.000000	-0.135694	0.005484	0.484373	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	2.000000	8.000000	-5.000000	-0.139952	0.002695	0.499365	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	2.000000	8.000000	-5.000000	-0.142983	-0.000417	0.510426	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	2.000000	8.000000	-5.000000	-0.144508	-0.003616	0.516767	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	2.000000	8.000000	-5.000000	-0.144784	-0.006809	0.519208	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	2.000000	8.000000	-5.000000	-0.141959	-0.009912	0.511393	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	2.000000	8.000000	-5.000000	-0.136256	-0.012642	0.493977	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	2.000000	8.000000	-5.000000	-0.129693	-0.015011	0.473678	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	2.000000	8.000000	-5.000000	-0.122329	-0.017013	0.450607	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	2.000000	8.000000	-5.000000	-0.114493	-0.018543	0.425846	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	2.000000	8.000000	-5.000000	-0.106125	-0.019561	0.399089	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	2.000000	8.000000	-5.000000	-0.097287	-0.019919	0.370447	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	2.000000	8.000000	-5.000000	-0.085912	-0.019015	0.332448	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	2.000000	8.000000	-5.000000	-0.071501	-0.016591	0.283018	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	2.000000	8.000000	-5.000000	-0.056714	-0.013770	0.231625	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	2.000000	8.000000	-5.000000	-0.041684	-0.010327	0.178618	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	3.000000	8.000000	-5.000000	-0.125699	0.010159	0.450083	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	3.000000	8.000000	-5.000000	-0.130915	0.007979	0.467860	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	3.000000	8.000000	-5.000000	-0.135696	0.005485	0.484381	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	3.000000	8.000000	-5.000000	-0.139953	0.002696	0.499368	0.000000	0.000000	0.000000

eVALUE	4.000000	0.100000	3.000000	8.000000	-5.000000	-0.142984	-0.000416	0.510431	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	8.000000	-5.000000	-0.144507	-0.003614	0.516768	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	8.000000	-5.000000	-0.144778	-0.006805	0.519190	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	8.000000	-5.000000	-0.141953	-0.009909	0.511373	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	8.000000	-5.000000	-0.136241	-0.012637	0.493927	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	8.000000	-5.000000	-0.129669	-0.015004	0.473598	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	8.000000	-5.000000	-0.122297	-0.017004	0.450500	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	8.000000	-5.000000	-0.114454	-0.018532	0.425711	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	8.000000	-5.000000	-0.106078	-0.019546	0.398925	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	8.000000	-5.000000	-0.097229	-0.019900	0.370242	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	8.000000	-5.000000	-0.085834	-0.018988	0.332171	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	8.000000	-5.000000	-0.071428	-0.016568	0.282754	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	8.000000	-5.000000	-0.057359	-0.013920	0.233923	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	8.000000	-5.000000	-0.035837	-0.008899	0.157692	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	8.000000	-5.000000	-0.125699	0.010159	0.450085	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	8.000000	-5.000000	-0.130921	0.007981	0.467884	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	8.000000	-5.000000	-0.135705	0.005488	0.484414	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	8.000000	-5.000000	-0.139960	0.002699	0.499395	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	8.000000	-5.000000	-0.142993	-0.000412	0.510466	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	8.000000	-5.000000	-0.144508	-0.003609	0.516773	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	8.000000	-5.000000	-0.144767	-0.006800	0.519158	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	8.000000	-5.000000	-0.141941	-0.009903	0.511335	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	8.000000	-5.000000	-0.136214	-0.012629	0.493838	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	8.000000	-5.000000	-0.129627	-0.014992	0.473454	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	8.000000	-5.000000	-0.122240	-0.016986	0.450306	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	8.000000	-5.000000	-0.114386	-0.018512	0.425476	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	8.000000	-5.000000	-0.105990	-0.019519	0.398618	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	8.000000	-5.000000	-0.097112	-0.019862	0.369830	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	8.000000	-5.000000	-0.085697	-0.018942	0.331683	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	8.000000	-5.000000	-0.071278	-0.016519	0.282217	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	8.000000	-5.000000	-0.057235	-0.013853	0.233466	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	8.000000	-5.000000	-0.028824	-0.007241	0.132615	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	8.000000	-5.000000	-0.125700	0.010159	0.450087	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	8.000000	-5.000000	-0.130929	0.007983	0.467912	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	8.000000	-5.000000	-0.135716	0.005492	0.484455	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	8.000000	-5.000000	-0.139969	0.002703	0.499431	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	8.000000	-5.000000	-0.143005	-0.000407	0.510510	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	8.000000	-5.000000	-0.144509	-0.003604	0.516782	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	8.000000	-5.000000	-0.144754	-0.006793	0.519118	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	8.000000	-5.000000	-0.141926	-0.009896	0.511287	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	8.000000	-5.000000	-0.136178	-0.012619	0.493721	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	8.000000	-5.000000	-0.129570	-0.014976	0.473264	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	8.000000	-5.000000	-0.122165	-0.016963	0.450048	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	8.000000	-5.000000	-0.114296	-0.018487	0.425164	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	8.000000	-5.000000	-0.105872	-0.019483	0.398207	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	8.000000	-5.000000	-0.096956	-0.019810	0.369278	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	8.000000	-5.000000	-0.085512	-0.018880	0.331026	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	8.000000	-5.000000	-0.071076	-0.016453	0.281494	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	8.000000	-5.000000	-0.057048	-0.013778	0.232789	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	8.000000	-5.000000	-0.034209	-0.008656	0.151930	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	10.000000	-5.000000	-0.141759	0.012837	0.515276	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	10.000000	-5.000000	-0.148669	0.010426	0.538855	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	10.000000	-5.000000	-0.155085	0.007610	0.560998	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	10.000000	-5.000000	-0.160903	0.004406	0.581377	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	10.000000	-5.000000	-0.165334	0.000755	0.597287	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	10.000000	-5.000000	-0.168101	-0.003075	0.607974	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	10.000000	-5.000000	-0.169518	-0.006972	0.614472	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	10.000000	-5.000000	-0.167521	-0.010861	0.609707	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	10.000000	-5.000000	-0.162315	-0.014448	0.594272	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	10.000000	-5.000000	-0.155699	-0.017669	0.574139	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	10.000000	-5.000000	-0.147643	-0.020479	0.549095	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	10.000000	-5.000000	-0.138378	-0.022705	0.519854	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	10.000000	-5.000000	-0.128405	-0.024303	0.488037	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	10.000000	-5.000000	-0.117826	-0.025110	0.453863	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	10.000000	-5.000000	-0.104138	-0.024399	0.408282	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	10.000000	-5.000000	-0.086607	-0.021811	0.348316	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	10.000000	-5.000000	-0.068215	-0.018579	0.284543	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	10.000000	-5.000000	-0.047355	-0.014172	0.211117	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	10.000000	-5.000000	-0.141759	0.012837	0.515277	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	10.000000	-5.000000	-0.148670	0.010426	0.538859	0.000000	0.000000	0.000000


```

&VALUE 30.00000 0.10000 4.00000 12.00000 -5.00000 -0.047636 -0.016285 0.225002 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 5.000000 12.000000 -5.000000 -0.154972 0.015401 0.572010 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 5.000000 12.000000 -5.000000 -0.163733 0.012897 0.601972 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 5.000000 12.000000 -5.000000 -0.171907 0.009888 0.630184 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 5.000000 12.000000 -5.000000 -0.179393 0.006394 0.656336 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 5.000000 12.000000 -5.000000 -0.185438 0.002337 0.677825 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 5.000000 12.000000 -5.000000 -0.189633 -0.002007 0.693478 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 5.000000 12.000000 -5.000000 -0.192351 -0.006500 0.704548 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 5.000000 12.000000 -5.000000 -0.191422 -0.011075 0.703605 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 5.000000 12.000000 -5.000000 -0.186949 -0.015434 0.690887 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 5.000000 12.000000 -5.000000 -0.180906 -0.019476 0.672990 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 5.000000 12.000000 -5.000000 -0.173054 -0.023129 0.648980 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 5.000000 12.000000 -5.000000 -0.163314 -0.026193 0.618478 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 5.000000 12.000000 -5.000000 -0.151916 -0.028451 0.582157 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 5.000000 12.000000 -5.000000 -0.139662 -0.029784 0.542619 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 5.000000 12.000000 -5.000000 -0.123799 -0.029385 0.489903 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 5.000000 12.000000 -5.000000 -0.103429 -0.026826 0.420397 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 5.000000 12.000000 -5.000000 -0.082875 -0.023630 0.349403 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 5.000000 12.000000 -5.000000 -0.053371 -0.017748 0.245549 0.000000 0.000000 0.000000
*

```

&END

• DLOCE_N10 (elevator = -10 deg)

```

&ARG01 C PROTOCOL 0 DLOCE-XX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 0.2
&ARG12 X STABILZR 5 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG12 &ARG13 &ARG06 &FUN01 &FUN02 &FUN03 &FUN04 &FUN05 &FUN06
&UNAME AOA MACH FLAP_SET STABILZR ELEVATOR CLHTE CDHTE CMHTE CY CLL CN
&UCODE 1 2 9 3 3 0 0 0 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*CONTROL DERIVATIVE INCREMENTS
*LONGITUDINAL CONTROL EFFECTORS
&VALUE -4.000000 0.100000 1.000000 -1.200000 -10.000000 -0.058477 0.001693 0.183313 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 1.000000 -1.200000 -10.000000 -0.057942 0.002170 0.181458 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 1.000000 -1.200000 -10.000000 -0.057609 0.002674 0.180210 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 1.000000 -1.200000 -10.000000 -0.057522 0.003191 0.179724 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 1.000000 -1.200000 -10.000000 -0.058069 0.003669 0.181276 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 1.000000 -1.200000 -10.000000 -0.058681 0.004098 0.183004 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 1.000000 -1.200000 -10.000000 -0.059349 0.004482 0.184894 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 1.000000 -1.200000 -10.000000 -0.060410 0.004809 0.188096 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 1.000000 -1.200000 -10.000000 -0.061723 0.005059 0.192157 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 1.000000 -1.200000 -10.000000 -0.063082 0.005239 0.196402 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 1.000000 -1.200000 -10.000000 -0.064510 0.005353 0.200924 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 1.000000 -1.200000 -10.000000 -0.065936 0.005389 0.205487 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 1.000000 -1.200000 -10.000000 -0.067408 0.005355 0.210271 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 1.000000 -1.200000 -10.000000 -0.068922 0.005217 0.215269 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 1.000000 -1.200000 -10.000000 -0.070828 0.004877 0.221745 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 1.000000 -1.200000 -10.000000 -0.073155 0.004324 0.229844 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 1.000000 -1.200000 -10.000000 -0.075772 0.003741 0.239034 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 1.000000 -1.200000 -10.000000 -0.083693 0.001349 0.267720 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 2.000000 -1.200000 -10.000000 -0.058477 0.001693 0.183313 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 2.000000 -1.200000 -10.000000 -0.057942 0.002170 0.181458 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 2.000000 -1.200000 -10.000000 -0.057609 0.002674 0.180210 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 2.000000 -1.200000 -10.000000 -0.057522 0.003191 0.179724 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 2.000000 -1.200000 -10.000000 -0.058069 0.003669 0.181277 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 2.000000 -1.200000 -10.000000 -0.058681 0.004097 0.183004 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 2.000000 -1.200000 -10.000000 -0.059350 0.004481 0.184895 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 2.000000 -1.200000 -10.000000 -0.060410 0.004809 0.188097 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 2.000000 -1.200000 -10.000000 -0.061724 0.005059 0.192159 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 2.000000 -1.200000 -10.000000 -0.063083 0.005239 0.196404 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 2.000000 -1.200000 -10.000000 -0.064510 0.005353 0.200927 0.000000 0.000000 0.000000

```


&VALUE	2.000000	0.100000	3.000000	4.000000	-10.000000	-0.124052	0.001850	0.437786	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	3.000000	4.000000	-10.000000	-0.124864	0.000147	0.441068	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	3.000000	4.000000	-10.000000	-0.124411	-0.001497	0.440324	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	3.000000	4.000000	-10.000000	-0.123115	-0.003040	0.436890	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	3.000000	4.000000	-10.000000	-0.120127	-0.004420	0.427833	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	3.000000	4.000000	-10.000000	-0.116370	-0.005566	0.416223	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	3.000000	4.000000	-10.000000	-0.112490	-0.006517	0.404167	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	3.000000	4.000000	-10.000000	-0.108397	-0.007274	0.391322	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	3.000000	4.000000	-10.000000	-0.104055	-0.007756	0.377540	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	3.000000	4.000000	-10.000000	-0.099512	-0.007983	0.362928	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	3.000000	4.000000	-10.000000	-0.094802	-0.007870	0.347559	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	3.000000	4.000000	-10.000000	-0.088833	-0.007101	0.327488	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	3.000000	4.000000	-10.000000	-0.081343	-0.005563	0.301643	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	3.000000	4.000000	-10.000000	-0.074524	-0.004113	0.277875	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	3.000000	4.000000	-10.000000	-0.066051	-0.001838	0.247714	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	4.000000	4.000000	-10.000000	-0.118071	0.006242	0.416914	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	4.000000	4.000000	-10.000000	-0.120289	0.004910	0.424488	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	4.000000	4.000000	-10.000000	-0.122313	0.003443	0.431544	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	4.000000	4.000000	-10.000000	-0.124053	0.001852	0.437791	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	4.000000	4.000000	-10.000000	-0.124865	0.000149	0.441075	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	4.000000	4.000000	-10.000000	-0.124405	-0.001495	0.440303	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	4.000000	4.000000	-10.000000	-0.123103	-0.003036	0.436849	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	4.000000	4.000000	-10.000000	-0.120112	-0.004416	0.427786	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	4.000000	4.000000	-10.000000	-0.116352	-0.005561	0.416164	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	4.000000	4.000000	-10.000000	-0.112466	-0.006510	0.404088	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	4.000000	-10.000000	-0.108365	-0.007264	0.391215	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	4.000000	-10.000000	-0.104018	-0.007745	0.377412	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	4.000000	-10.000000	-0.099465	-0.007968	0.362764	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	4.000000	-10.000000	-0.094742	-0.007849	0.347346	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	4.000000	-10.000000	-0.088763	-0.007076	0.327239	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	4.000000	-10.000000	-0.081268	-0.005538	0.301372	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	4.000000	-10.000000	-0.074482	-0.004071	0.277711	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	4.000000	-10.000000	-0.059149	-0.000103	0.222987	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	4.000000	-10.000000	-0.118071	0.006242	0.416915	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	4.000000	-10.000000	-0.120292	0.004911	0.424492	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	4.000000	-10.000000	-0.122318	0.003444	0.431561	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	4.000000	-10.000000	-0.124055	0.001854	0.437799	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	4.000000	-10.000000	-0.124867	0.000151	0.441084	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	4.000000	-10.000000	-0.124396	-0.001492	0.440278	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	4.000000	-10.000000	-0.123086	-0.003032	0.436795	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	4.000000	-10.000000	-0.120094	-0.004412	0.427725	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	4.000000	-10.000000	-0.116329	-0.005555	0.416087	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	4.000000	-10.000000	-0.112436	-0.006501	0.403984	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	4.000000	-10.000000	-0.108324	-0.007251	0.391075	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	4.000000	-10.000000	-0.103969	-0.007730	0.377242	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	4.000000	-10.000000	-0.099402	-0.007947	0.362544	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	4.000000	-10.000000	-0.094661	-0.007821	0.347060	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	4.000000	-10.000000	-0.088668	-0.007043	0.326902	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	4.000000	-10.000000	-0.081165	-0.005504	0.301006	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	4.000000	-10.000000	-0.074405	-0.004030	0.277431	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	4.000000	-10.000000	-0.059043	-0.000203	0.222656	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	6.000000	-10.000000	-0.136505	0.008715	0.496960	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	6.000000	-10.000000	-0.140118	0.006891	0.509275	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	6.000000	-10.000000	-0.143417	0.004848	0.520712	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	6.000000	-10.000000	-0.146317	0.002600	0.531002	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	6.000000	-10.000000	-0.148159	0.000142	0.537920	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	6.000000	-10.000000	-0.148614	-0.002323	0.540468	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	1.000000	6.000000	-10.000000	-0.147913	-0.004721	0.539357	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	1.000000	6.000000	-10.000000	-0.144510	-0.006957	0.529277	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	1.000000	6.000000	-10.000000	-0.139282	-0.008840	0.513121	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	1.000000	6.000000	-10.000000	-0.133778	-0.010443	0.496016	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	1.000000	6.000000	-10.000000	-0.127946	-0.011769	0.477737	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	1.000000	6.000000	-10.000000	-0.121768	-0.012715	0.458179	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	1.000000	6.000000	-10.000000	-0.115208	-0.013270	0.437149	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	1.000000	6.000000	-10.000000	-0.108334	-0.013318	0.414795	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	1.000000	6.000000	-10.000000	-0.099571	-0.012399	0.385431	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	1.000000	6.000000	-10.000000	-0.088541	-0.010330	0.347485	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	1.000000	6.000000	-10.000000	-0.077042	-0.007961	0.307392	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	1.000000	6.000000	-10.000000	-0.069044	-0.005981	0.279207	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	2.000000	6.000000	-10.000000	-0.136505	0.008715	0.496960	0.000000	0.000000	0.000000

eVALUE	28.000000	0.100000	4.000000	8.000000	-10.000000	-0.083479	-0.012654	0.353260	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	8.000000	-10.000000	-0.055068	-0.006043	0.252410	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	8.000000	-10.000000	-0.151945	0.011357	0.569881	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	8.000000	-10.000000	-0.157174	0.009182	0.587706	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	8.000000	-10.000000	-0.161961	0.006690	0.604249	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	8.000000	-10.000000	-0.166214	0.003901	0.619226	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	8.000000	-10.000000	-0.169249	0.000791	0.630304	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	8.000000	-10.000000	-0.170754	-0.002405	0.636576	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	8.000000	-10.000000	-0.170999	-0.005594	0.638912	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	8.000000	-10.000000	-0.168170	-0.008697	0.631081	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	8.000000	-10.000000	-0.162423	-0.011421	0.613515	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	8.000000	-10.000000	-0.155815	-0.013778	0.593058	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	8.000000	-10.000000	-0.148409	-0.015765	0.569842	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	8.000000	-10.000000	-0.140541	-0.017288	0.544958	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	8.000000	-10.000000	-0.132117	-0.018285	0.518001	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	8.000000	-10.000000	-0.123200	-0.018612	0.489072	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	8.000000	-10.000000	-0.111757	-0.017682	0.450820	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	8.000000	-10.000000	-0.097321	-0.015255	0.401288	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	8.000000	-10.000000	-0.083293	-0.012579	0.352583	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	8.000000	-10.000000	-0.060454	-0.007457	0.271725	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	10.000000	-10.000000	-0.164823	0.014027	0.635071	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	10.000000	-10.000000	-0.171733	0.011616	0.658650	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	10.000000	-10.000000	-0.178149	0.008800	0.680792	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	10.000000	-10.000000	-0.183967	0.005596	0.701171	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	10.000000	-10.000000	-0.188399	0.001945	0.717081	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	10.000000	-10.000000	-0.191166	-0.001884	0.727768	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	10.000000	-10.000000	-0.192583	-0.005782	0.734266	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	10.000000	-10.000000	-0.190585	-0.009671	0.729501	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	10.000000	-10.000000	-0.185379	-0.013257	0.714067	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	10.000000	-10.000000	-0.178763	-0.016479	0.693933	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	10.000000	-10.000000	-0.170707	-0.019289	0.668890	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	10.000000	-10.000000	-0.161442	-0.021515	0.639648	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	10.000000	-10.000000	-0.151469	-0.023113	0.607831	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	10.000000	-10.000000	-0.140891	-0.023920	0.573657	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	10.000000	-10.000000	-0.127202	-0.023209	0.528076	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	10.000000	-10.000000	-0.109671	-0.020621	0.468111	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	10.000000	-10.000000	-0.091279	-0.017389	0.404337	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	10.000000	-10.000000	-0.070420	-0.012982	0.330912	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	10.000000	-10.000000	-0.164823	0.014027	0.635071	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	10.000000	-10.000000	-0.171734	0.011617	0.658653	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	10.000000	-10.000000	-0.178150	0.008801	0.680796	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	10.000000	-10.000000	-0.183968	0.005596	0.701174	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	10.000000	-10.000000	-0.188400	0.001946	0.717085	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	10.000000	-10.000000	-0.191166	-0.001884	0.727770	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	10.000000	-10.000000	-0.192582	-0.005782	0.734264	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	10.000000	-10.000000	-0.190585	-0.009670	0.729499	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	10.000000	-10.000000	-0.185377	-0.013257	0.714060	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	10.000000	-10.000000	-0.178760	-0.016478	0.693921	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	10.000000	-10.000000	-0.170702	-0.019287	0.668871	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	10.000000	-10.000000	-0.161436	-0.021513	0.639626	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	10.000000	-10.000000	-0.151461	-0.023110	0.607803	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	10.000000	-10.000000	-0.140879	-0.023917	0.573618	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	10.000000	-10.000000	-0.127189	-0.023205	0.528029	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	10.000000	-10.000000	-0.109657	-0.020617	0.468059	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	10.000000	-10.000000	-0.091524	-0.017450	0.405214	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	10.000000	-10.000000	-0.069507	-0.012763	0.327646	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	10.000000	-10.000000	-0.164824	0.014027	0.635073	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	10.000000	-10.000000	-0.171737	0.011618	0.658663	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	10.000000	-10.000000	-0.178153	0.008802	0.680807	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	10.000000	-10.000000	-0.183970	0.005597	0.701181	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	10.000000	-10.000000	-0.188402	0.001948	0.717095	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	10.000000	-10.000000	-0.191168	-0.001881	0.727778	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	10.000000	-10.000000	-0.192579	-0.005778	0.734258	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	10.000000	-10.000000	-0.190581	-0.009666	0.729489	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	10.000000	-10.000000	-0.185365	-0.013252	0.714019	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	10.000000	-10.000000	-0.178735	-0.016470	0.693836	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	10.000000	-10.000000	-0.170664	-0.019276	0.668744	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	10.000000	-10.000000	-0.161389	-0.021499	0.639464	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	10.000000	-10.000000	-0.151404	-0.023093	0.607605	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	10.000000	-10.000000	-0.140809	-0.023894	0.573370	0.000000	0.000000	0.000000

eVALUE	24.000000	0.100000	3.000000	10.000000	-10.000000	-0.127094	-0.023173	0.527691	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	10.000000	-10.000000	-0.109565	-0.020588	0.467732	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	10.000000	-10.000000	-0.092148	-0.017593	0.407438	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	10.000000	-10.000000	-0.063940	-0.011419	0.307731	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	10.000000	-10.000000	-0.164824	0.014028	0.635076	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	10.000000	-10.000000	-0.171746	0.011621	0.658696	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	10.000000	-10.000000	-0.178166	0.008806	0.680853	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	10.000000	-10.000000	-0.183981	0.005602	0.701224	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	10.000000	-10.000000	-0.188416	0.001953	0.717148	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	10.000000	-10.000000	-0.191173	-0.001876	0.727801	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	10.000000	-10.000000	-0.192573	-0.005771	0.734243	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	10.000000	-10.000000	-0.190574	-0.009659	0.729469	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	10.000000	-10.000000	-0.185342	-0.013243	0.713943	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	10.000000	-10.000000	-0.178689	-0.016456	0.693685	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	10.000000	-10.000000	-0.170596	-0.019256	0.668511	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	10.000000	-10.000000	-0.161308	-0.021477	0.639183	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	10.000000	-10.000000	-0.151299	-0.023061	0.607236	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	10.000000	-10.000000	-0.140668	-0.023849	0.572872	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	10.000000	-10.000000	-0.126926	-0.023118	0.527094	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	10.000000	-10.000000	-0.109380	-0.020528	0.467068	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	10.000000	-10.000000	-0.091985	-0.017515	0.406839	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	10.000000	-10.000000	-0.059716	-0.010365	0.292602	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	10.000000	-10.000000	-0.164825	0.014028	0.635079	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	10.000000	-10.000000	-0.171756	0.011624	0.658734	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	10.000000	-10.000000	-0.178182	0.008811	0.680911	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	10.000000	-10.000000	-0.183996	0.005607	0.701279	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	10.000000	-10.000000	-0.188435	0.001960	0.717217	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	10.000000	-10.000000	-0.191181	-0.001869	0.727833	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	10.000000	-10.000000	-0.192566	-0.005762	0.734225	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	10.000000	-10.000000	-0.190565	-0.009650	0.729445	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	10.000000	-10.000000	-0.185312	-0.013231	0.713846	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	10.000000	-10.000000	-0.178630	-0.016438	0.693485	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	10.000000	-10.000000	-0.170506	-0.019229	0.668203	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	10.000000	-10.000000	-0.161200	-0.021447	0.638810	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	10.000000	-10.000000	-0.151157	-0.023018	0.606741	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	10.000000	-10.000000	-0.140479	-0.023788	0.572206	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	10.000000	-10.000000	-0.126700	-0.023044	0.526291	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	10.000000	-10.000000	-0.109130	-0.020448	0.466173	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	10.000000	-10.000000	-0.091746	-0.017424	0.405972	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	10.000000	-10.000000	-0.065463	-0.011838	0.313194	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	12.000000	-10.000000	-0.174607	0.016582	0.691794	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	12.000000	-10.000000	-0.183341	0.014070	0.721656	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	12.000000	-10.000000	-0.191502	0.011057	0.749821	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	12.000000	-10.000000	-0.198989	0.007561	0.775975	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	12.000000	-10.000000	-0.205023	0.003501	0.797425	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	12.000000	-10.000000	-0.209238	-0.000845	0.813145	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	12.000000	-10.000000	-0.211988	-0.005342	0.824321	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	12.000000	-10.000000	-0.211062	-0.009919	0.823391	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	12.000000	-10.000000	-0.206638	-0.014283	0.810846	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	12.000000	-10.000000	-0.200663	-0.018337	0.793183	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	12.000000	-10.000000	-0.192902	-0.022012	0.769490	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	12.000000	-10.000000	-0.183205	-0.025085	0.739148	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	12.000000	-10.000000	-0.171914	-0.027375	0.703207	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	12.000000	-10.000000	-0.159777	-0.028752	0.664096	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	12.000000	-10.000000	-0.144021	-0.028391	0.611776	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	12.000000	-10.000000	-0.123705	-0.025843	0.542474	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	12.000000	-10.000000	-0.102161	-0.022444	0.467971	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	12.000000	-10.000000	-0.075008	-0.017096	0.372524	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	12.000000	-10.000000	-0.174607	0.016582	0.691795	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	12.000000	-10.000000	-0.183342	0.014070	0.721661	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	12.000000	-10.000000	-0.191503	0.011058	0.749826	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	12.000000	-10.000000	-0.198991	0.007562	0.775980	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	12.000000	-10.000000	-0.205025	0.003501	0.797431	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	12.000000	-10.000000	-0.209239	-0.000844	0.813148	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	12.000000	-10.000000	-0.211988	-0.005341	0.824321	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	12.000000	-10.000000	-0.211062	-0.009918	0.823391	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	12.000000	-10.000000	-0.206637	-0.014282	0.810841	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	12.000000	-10.000000	-0.200660	-0.018336	0.793172	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	12.000000	-10.000000	-0.192896	-0.022010	0.769471	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	12.000000	-10.000000	-0.183198	-0.025083	0.739125	0.000000	0.000000	0.000000

```

&VALUE 20.000000 0.100000 2.000000 12.000000 -10.000000 -0.171904 -0.027372 0.703174 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 2.000000 12.000000 -10.000000 -0.159764 -0.028748 0.664050 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 2.000000 12.000000 -10.000000 -0.144005 -0.028386 0.611722 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 2.000000 12.000000 -10.000000 -0.123688 -0.025838 0.542413 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 2.000000 12.000000 -10.000000 -0.102403 -0.022504 0.468837 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 2.000000 12.000000 -10.000000 -0.074229 -0.016906 0.369734 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 3.000000 12.000000 -10.000000 -0.174608 0.016582 0.691797 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 3.000000 12.000000 -10.000000 -0.183346 0.014072 0.721675 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 3.000000 12.000000 -10.000000 -0.191508 0.011059 0.749841 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 3.000000 12.000000 -10.000000 -0.198993 0.007563 0.775991 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 3.000000 12.000000 -10.000000 -0.205029 0.003504 0.797447 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 3.000000 12.000000 -10.000000 -0.209244 -0.000841 0.813166 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 3.000000 12.000000 -10.000000 -0.211989 -0.005336 0.824329 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 3.000000 12.000000 -10.000000 -0.211062 -0.009913 0.823393 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 3.000000 12.000000 -10.000000 -0.206627 -0.014276 0.810811 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 3.000000 12.000000 -10.000000 -0.200637 -0.018328 0.793097 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 3.000000 12.000000 -10.000000 -0.192857 -0.021998 0.769339 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 3.000000 12.000000 -10.000000 -0.183149 -0.025068 0.738956 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 3.000000 12.000000 -10.000000 -0.171839 -0.027353 0.702947 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 3.000000 12.000000 -10.000000 -0.159683 -0.028722 0.663762 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 3.000000 12.000000 -10.000000 -0.143895 -0.028350 0.611328 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 3.000000 12.000000 -10.000000 -0.123580 -0.025805 0.542027 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 3.000000 12.000000 -10.000000 -0.103007 -0.022642 0.470988 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 3.000000 12.000000 -10.000000 -0.069950 -0.015837 0.354410 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 4.000000 12.000000 -10.000000 -0.174609 0.016583 0.691800 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 4.000000 12.000000 -10.000000 -0.183358 0.014075 0.721717 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 4.000000 12.000000 -10.000000 -0.191524 0.011065 0.749902 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 4.000000 12.000000 -10.000000 -0.199010 0.007569 0.776052 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 4.000000 12.000000 -10.000000 -0.205049 0.003511 0.797522 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 4.000000 12.000000 -10.000000 -0.209255 -0.000834 0.813212 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 4.000000 12.000000 -10.000000 -0.211988 -0.005328 0.824333 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 4.000000 12.000000 -10.000000 -0.211061 -0.009904 0.823395 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 4.000000 12.000000 -10.000000 -0.206610 -0.014266 0.810754 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 4.000000 12.000000 -10.000000 -0.200597 -0.018313 0.792962 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 4.000000 12.000000 -10.000000 -0.192786 -0.021976 0.769096 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 4.000000 12.000000 -10.000000 -0.183064 -0.025043 0.738662 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 4.000000 12.000000 -10.000000 -0.171717 -0.027317 0.702520 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 4.000000 12.000000 -10.000000 -0.159519 -0.028671 0.663185 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 4.000000 12.000000 -10.000000 -0.143699 -0.028287 0.610632 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 4.000000 12.000000 -10.000000 -0.123361 -0.025736 0.541244 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 4.000000 12.000000 -10.000000 -0.102805 -0.022553 0.470251 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 4.000000 12.000000 -10.000000 -0.067274 -0.015103 0.344796 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 5.000000 12.000000 -10.000000 -0.174610 0.016583 0.691804 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 5.000000 12.000000 -10.000000 -0.183371 0.014080 0.721766 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 5.000000 12.000000 -10.000000 -0.191545 0.011071 0.749978 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 5.000000 12.000000 -10.000000 -0.199031 0.007576 0.776130 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 5.000000 12.000000 -10.000000 -0.205076 0.003520 0.797619 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 5.000000 12.000000 -10.000000 -0.209271 -0.000824 0.813272 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 5.000000 12.000000 -10.000000 -0.211989 -0.005318 0.824342 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 5.000000 12.000000 -10.000000 -0.211060 -0.009893 0.823399 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 5.000000 12.000000 -10.000000 -0.206587 -0.014252 0.810681 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 5.000000 12.000000 -10.000000 -0.200544 -0.018293 0.792784 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 5.000000 12.000000 -10.000000 -0.192692 -0.021946 0.768775 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 5.000000 12.000000 -10.000000 -0.182951 -0.025010 0.738272 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 5.000000 12.000000 -10.000000 -0.171554 -0.027269 0.701951 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 5.000000 12.000000 -10.000000 -0.159300 -0.028601 0.662413 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 5.000000 12.000000 -10.000000 -0.143436 -0.028202 0.609697 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 5.000000 12.000000 -10.000000 -0.123067 -0.025644 0.540191 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 5.000000 12.000000 -10.000000 -0.102513 -0.022448 0.469197 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 5.000000 12.000000 -10.000000 -0.073009 -0.016566 0.365343 0.000000 0.000000 0.000000
*
&END

```

- DLOCE_N15.inp (elevator = -15 deg)

```

&ARG01 C PROTOCOL 0 DLOCE-XX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0

```

```

&ARG06      X      ELEVATOR      3      0.0
&ARG07      X      RUDDER       10     0.0
&ARG08      X      AILERON      4      0.0
&ARG09      X      SIDESLIP     11     0.0
&ARG10      X      AOA         1      REF. BELOW
&ARG11      X      MACH        2      0.2
&ARG12      X      STABILZR     5      REF. BELOW

```

```

*
&SNAME      &ARG10      &ARG11      &ARG12      &ARG13      &ARG06      &FUN01      &FUN02      &FUN03      &FUN04      &FUN05      &FUN06
&UNAME      AOA         MACH        FLAP_SET    STABILZR     ELEVATOR     CLHTE       CDHTE       CMHTE       CY          CLL         CN
&UCODE      1          2          9          5          3          0          0          0          0          0          0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX

```

```

*CONTROL DERIVATIVE INCREMENTS
*LONGITUDINAL CONTROL EFFECTORS

```

```

&VALUE      -4.000000  0.100000  1.000000  -1.200000  -15.000000  -0.093074  0.004362  0.291478  0.000000  0.000000  0.000000
&VALUE      -2.000000  0.100000  1.000000  -1.200000  -15.000000  -0.092540  0.004839  0.289623  0.000000  0.000000  0.000000
&VALUE      0.000000  0.100000  1.000000  -1.200000  -15.000000  -0.092206  0.005343  0.288375  0.000000  0.000000  0.000000
&VALUE      2.000000  0.100000  1.000000  -1.200000  -15.000000  -0.092119  0.005860  0.287889  0.000000  0.000000  0.000000
&VALUE      4.000000  0.100000  1.000000  -1.200000  -15.000000  -0.092667  0.006338  0.289441  0.000000  0.000000  0.000000
&VALUE      6.000000  0.100000  1.000000  -1.200000  -15.000000  -0.093279  0.006767  0.291169  0.000000  0.000000  0.000000
&VALUE      8.000000  0.100000  1.000000  -1.200000  -15.000000  -0.093947  0.007151  0.293059  0.000000  0.000000  0.000000
&VALUE      10.000000  0.100000  1.000000  -1.200000  -15.000000  -0.095008  0.007479  0.296261  0.000000  0.000000  0.000000
&VALUE      12.000000  0.100000  1.000000  -1.200000  -15.000000  -0.096321  0.007728  0.300322  0.000000  0.000000  0.000000
&VALUE      14.000000  0.100000  1.000000  -1.200000  -15.000000  -0.097679  0.007908  0.304567  0.000000  0.000000  0.000000
&VALUE      16.000000  0.100000  1.000000  -1.200000  -15.000000  -0.099107  0.008022  0.309089  0.000000  0.000000  0.000000
&VALUE      18.000000  0.100000  1.000000  -1.200000  -15.000000  -0.100533  0.008059  0.313652  0.000000  0.000000  0.000000
&VALUE      20.000000  0.100000  1.000000  -1.200000  -15.000000  -0.102006  0.008024  0.318436  0.000000  0.000000  0.000000
&VALUE      22.000000  0.100000  1.000000  -1.200000  -15.000000  -0.103519  0.007886  0.323434  0.000000  0.000000  0.000000
&VALUE      24.000000  0.100000  1.000000  -1.200000  -15.000000  -0.105425  0.007546  0.329910  0.000000  0.000000  0.000000
&VALUE      26.000000  0.100000  1.000000  -1.200000  -15.000000  -0.107753  0.006993  0.338009  0.000000  0.000000  0.000000
&VALUE      28.000000  0.100000  1.000000  -1.200000  -15.000000  -0.110369  0.006410  0.347199  0.000000  0.000000  0.000000
&VALUE      30.000000  0.100000  1.000000  -1.200000  -15.000000  -0.118290  0.004018  0.375885  0.000000  0.000000  0.000000

```

```

*
&VALUE      -4.000000  0.100000  2.000000  -1.200000  -15.000000  -0.093074  0.004362  0.291478  0.000000  0.000000  0.000000
&VALUE      -2.000000  0.100000  2.000000  -1.200000  -15.000000  -0.092540  0.004839  0.289623  0.000000  0.000000  0.000000
&VALUE      0.000000  0.100000  2.000000  -1.200000  -15.000000  -0.092207  0.005343  0.288375  0.000000  0.000000  0.000000
&VALUE      2.000000  0.100000  2.000000  -1.200000  -15.000000  -0.092119  0.005860  0.287889  0.000000  0.000000  0.000000
&VALUE      4.000000  0.100000  2.000000  -1.200000  -15.000000  -0.092667  0.006338  0.289441  0.000000  0.000000  0.000000
&VALUE      6.000000  0.100000  2.000000  -1.200000  -15.000000  -0.093279  0.006767  0.291169  0.000000  0.000000  0.000000
&VALUE      8.000000  0.100000  2.000000  -1.200000  -15.000000  -0.093947  0.007151  0.293060  0.000000  0.000000  0.000000
&VALUE      10.000000  0.100000  2.000000  -1.200000  -15.000000  -0.095008  0.007479  0.296262  0.000000  0.000000  0.000000
&VALUE      12.000000  0.100000  2.000000  -1.200000  -15.000000  -0.096321  0.007728  0.300324  0.000000  0.000000  0.000000
&VALUE      14.000000  0.100000  2.000000  -1.200000  -15.000000  -0.097680  0.007908  0.304569  0.000000  0.000000  0.000000
&VALUE      16.000000  0.100000  2.000000  -1.200000  -15.000000  -0.099108  0.008022  0.309092  0.000000  0.000000  0.000000
&VALUE      18.000000  0.100000  2.000000  -1.200000  -15.000000  -0.100534  0.008058  0.313655  0.000000  0.000000  0.000000
&VALUE      20.000000  0.100000  2.000000  -1.200000  -15.000000  -0.102007  0.008024  0.318440  0.000000  0.000000  0.000000
&VALUE      22.000000  0.100000  2.000000  -1.200000  -15.000000  -0.103521  0.007886  0.323439  0.000000  0.000000  0.000000
&VALUE      24.000000  0.100000  2.000000  -1.200000  -15.000000  -0.105427  0.007545  0.329916  0.000000  0.000000  0.000000
&VALUE      26.000000  0.100000  2.000000  -1.200000  -15.000000  -0.107755  0.006992  0.338016  0.000000  0.000000  0.000000
&VALUE      28.000000  0.100000  2.000000  -1.200000  -15.000000  -0.110232  0.006448  0.346709  0.000000  0.000000  0.000000
&VALUE      30.000000  0.100000  2.000000  -1.200000  -15.000000  -0.118243  0.004028  0.375715  0.000000  0.000000  0.000000

```

```

*
&VALUE      -4.000000  0.100000  3.000000  -1.200000  -15.000000  -0.093074  0.004362  0.291478  0.000000  0.000000  0.000000
&VALUE      -2.000000  0.100000  3.000000  -1.200000  -15.000000  -0.092540  0.004839  0.289622  0.000000  0.000000  0.000000
&VALUE      0.000000  0.100000  3.000000  -1.200000  -15.000000  -0.092207  0.005343  0.288376  0.000000  0.000000  0.000000
&VALUE      2.000000  0.100000  3.000000  -1.200000  -15.000000  -0.092120  0.005860  0.287892  0.000000  0.000000  0.000000
&VALUE      4.000000  0.100000  3.000000  -1.200000  -15.000000  -0.092668  0.006338  0.289445  0.000000  0.000000  0.000000
&VALUE      6.000000  0.100000  3.000000  -1.200000  -15.000000  -0.093281  0.006766  0.291175  0.000000  0.000000  0.000000
&VALUE      8.000000  0.100000  3.000000  -1.200000  -15.000000  -0.093950  0.007150  0.293069  0.000000  0.000000  0.000000
&VALUE      10.000000  0.100000  3.000000  -1.200000  -15.000000  -0.095011  0.007478  0.296271  0.000000  0.000000  0.000000
&VALUE      12.000000  0.100000  3.000000  -1.200000  -15.000000  -0.096325  0.007727  0.300335  0.000000  0.000000  0.000000
&VALUE      14.000000  0.100000  3.000000  -1.200000  -15.000000  -0.097684  0.007907  0.304584  0.000000  0.000000  0.000000
&VALUE      16.000000  0.100000  3.000000  -1.200000  -15.000000  -0.099113  0.008020  0.309111  0.000000  0.000000  0.000000
&VALUE      18.000000  0.100000  3.000000  -1.200000  -15.000000  -0.100541  0.008056  0.313679  0.000000  0.000000  0.000000
&VALUE      20.000000  0.100000  3.000000  -1.200000  -15.000000  -0.102015  0.008021  0.318468  0.000000  0.000000  0.000000
&VALUE      22.000000  0.100000  3.000000  -1.200000  -15.000000  -0.103530  0.007882  0.323472  0.000000  0.000000  0.000000
&VALUE      24.000000  0.100000  3.000000  -1.200000  -15.000000  -0.105439  0.007541  0.329960  0.000000  0.000000  0.000000
&VALUE      26.000000  0.100000  3.000000  -1.200000  -15.000000  -0.107765  0.006989  0.338054  0.000000  0.000000  0.000000
&VALUE      28.000000  0.100000  3.000000  -1.200000  -15.000000  -0.109145  0.006743  0.342816  0.000000  0.000000  0.000000
&VALUE      30.000000  0.100000  3.000000  -1.200000  -15.000000  -0.118304  0.003994  0.375940  0.000000  0.000000  0.000000

```

```

*
&VALUE      -4.000000  0.100000  4.000000  -1.200000  -15.000000  -0.093074  0.004362  0.291478  0.000000  0.000000  0.000000
&VALUE      -2.000000  0.100000  4.000000  -1.200000  -15.000000  -0.092539  0.004839  0.289620  0.000000  0.000000  0.000000
&VALUE      0.000000  0.100000  4.000000  -1.200000  -15.000000  -0.092207  0.005343  0.288375  0.000000  0.000000  0.000000

```


eVALUE	24.000000	0.100000	4.000000	4.000000	-15.000000	-0.118068	-0.004439	0.435404	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	4.000000	-15.000000	-0.110573	-0.002901	0.409537	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	4.000000	-15.000000	-0.103787	-0.001434	0.385876	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	4.000000	-15.000000	-0.088454	0.002534	0.331152	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	4.000000	-15.000000	-0.147377	0.008879	0.525080	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	4.000000	-15.000000	-0.149598	0.007548	0.532664	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	4.000000	-15.000000	-0.151623	0.006081	0.539726	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	4.000000	-15.000000	-0.153360	0.004491	0.545964	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	4.000000	-15.000000	-0.154173	0.002788	0.549249	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	4.000000	-15.000000	-0.153702	0.001145	0.548443	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	4.000000	-15.000000	-0.152392	-0.000395	0.544960	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	4.000000	-15.000000	-0.149400	-0.001775	0.535890	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	4.000000	-15.000000	-0.145635	-0.002918	0.524252	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	4.000000	-15.000000	-0.141741	-0.003864	0.512149	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	4.000000	-15.000000	-0.137630	-0.004614	0.499240	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	4.000000	-15.000000	-0.133275	-0.005093	0.485407	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	4.000000	-15.000000	-0.128708	-0.005310	0.470709	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	4.000000	-15.000000	-0.123966	-0.005184	0.455225	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	4.000000	-15.000000	-0.117974	-0.004406	0.435067	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	4.000000	-15.000000	-0.110471	-0.002867	0.409171	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	4.000000	-15.000000	-0.103711	-0.001392	0.385596	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	4.000000	-15.000000	-0.088348	0.002434	0.330821	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	6.000000	-15.000000	-0.163279	0.011338	0.605125	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	6.000000	-15.000000	-0.166892	0.009514	0.617440	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	6.000000	-15.000000	-0.170191	0.007471	0.628877	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	6.000000	-15.000000	-0.173091	0.005224	0.639167	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	6.000000	-15.000000	-0.174933	0.002766	0.646085	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	6.000000	-15.000000	-0.175388	0.000300	0.648633	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	6.000000	-15.000000	-0.174687	-0.002097	0.647522	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	6.000000	-15.000000	-0.171283	-0.004334	0.637442	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	6.000000	-15.000000	-0.166056	-0.006216	0.621286	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	6.000000	-15.000000	-0.160552	-0.007819	0.604181	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	6.000000	-15.000000	-0.154720	-0.009146	0.585902	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	6.000000	-15.000000	-0.148542	-0.010091	0.566344	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	6.000000	-15.000000	-0.141982	-0.010647	0.545314	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	6.000000	-15.000000	-0.135108	-0.010695	0.522960	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	6.000000	-15.000000	-0.126345	-0.009775	0.493596	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	6.000000	-15.000000	-0.115314	-0.007707	0.455650	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	6.000000	-15.000000	-0.103816	-0.005337	0.415557	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	6.000000	-15.000000	-0.095818	-0.003357	0.387372	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	6.000000	-15.000000	-0.163279	0.011338	0.605125	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	6.000000	-15.000000	-0.166892	0.009515	0.617441	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	6.000000	-15.000000	-0.170192	0.007472	0.628879	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	6.000000	-15.000000	-0.173091	0.005224	0.639168	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	6.000000	-15.000000	-0.174933	0.002766	0.646086	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	6.000000	-15.000000	-0.175388	0.000301	0.648632	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	6.000000	-15.000000	-0.174685	-0.002097	0.647518	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	6.000000	-15.000000	-0.171282	-0.004333	0.637438	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	6.000000	-15.000000	-0.166054	-0.006216	0.621279	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	6.000000	-15.000000	-0.160549	-0.007818	0.604172	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	6.000000	-15.000000	-0.154716	-0.009145	0.585890	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	6.000000	-15.000000	-0.148538	-0.010090	0.566330	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	6.000000	-15.000000	-0.141977	-0.010645	0.545295	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	6.000000	-15.000000	-0.135101	-0.010692	0.522935	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	6.000000	-15.000000	-0.126337	-0.009772	0.493567	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	6.000000	-15.000000	-0.115306	-0.007704	0.455619	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	6.000000	-15.000000	-0.104068	-0.005400	0.416456	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	6.000000	-15.000000	-0.095186	-0.003194	0.385107	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	6.000000	-15.000000	-0.163279	0.011339	0.605126	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	6.000000	-15.000000	-0.166894	0.009515	0.617446	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	6.000000	-15.000000	-0.170193	0.007472	0.628883	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	6.000000	-15.000000	-0.173091	0.005225	0.639169	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	6.000000	-15.000000	-0.174933	0.002767	0.646088	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	6.000000	-15.000000	-0.175386	0.000302	0.648627	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	6.000000	-15.000000	-0.174677	-0.002094	0.647491	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	6.000000	-15.000000	-0.171273	-0.004331	0.637409	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	6.000000	-15.000000	-0.166040	-0.006212	0.621233	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	6.000000	-15.000000	-0.160530	-0.007813	0.604108	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	6.000000	-15.000000	-0.154692	-0.009137	0.585806	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	6.000000	-15.000000	-0.148507	-0.010081	0.566224	0.000000	0.000000	0.000000

eVALUE	20.000000	0.100000	3.000000	6.000000	-15.000000	-0.141940	-0.010634	0.545167	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	6.000000	-15.000000	-0.135056	-0.010677	0.522778	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	6.000000	-15.000000	-0.126277	-0.009752	0.493357	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	6.000000	-15.000000	-0.115250	-0.007686	0.455419	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	6.000000	-15.000000	-0.104733	-0.005556	0.418830	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	6.000000	-15.000000	-0.090320	-0.001961	0.367672	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	6.000000	-15.000000	-0.163280	0.011339	0.605127	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	6.000000	-15.000000	-0.166898	0.009517	0.617462	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	6.000000	-15.000000	-0.170199	0.007474	0.628905	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	6.000000	-15.000000	-0.173095	0.005227	0.639184	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	6.000000	-15.000000	-0.174938	0.002770	0.646107	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	6.000000	-15.000000	-0.175382	0.000305	0.648618	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	6.000000	-15.000000	-0.174663	-0.002089	0.647446	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	6.000000	-15.000000	-0.171258	-0.004326	0.637358	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	6.000000	-15.000000	-0.166015	-0.006206	0.621149	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	6.000000	-15.000000	-0.160497	-0.007803	0.603995	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	6.000000	-15.000000	-0.154647	-0.009123	0.585654	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	6.000000	-15.000000	-0.148454	-0.010065	0.566041	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	6.000000	-15.000000	-0.141872	-0.010612	0.544929	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	6.000000	-15.000000	-0.134966	-0.010647	0.522461	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	6.000000	-15.000000	-0.126174	-0.009717	0.492987	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	6.000000	-15.000000	-0.115137	-0.007648	0.455014	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	6.000000	-15.000000	-0.104650	-0.005502	0.418519	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	6.000000	-15.000000	-0.082162	0.000014	0.338481	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	6.000000	-15.000000	-0.163280	0.011339	0.605129	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	6.000000	-15.000000	-0.166903	0.009518	0.617481	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	6.000000	-15.000000	-0.170206	0.007477	0.628933	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	6.000000	-15.000000	-0.173100	0.005230	0.639204	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	6.000000	-15.000000	-0.174945	0.002773	0.646132	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	6.000000	-15.000000	-0.175378	0.000309	0.648607	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	6.000000	-15.000000	-0.174645	-0.002083	0.647389	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	6.000000	-15.000000	-0.171237	-0.004320	0.637292	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	6.000000	-15.000000	-0.165982	-0.006197	0.621039	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	6.000000	-15.000000	-0.160453	-0.007790	0.603845	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	6.000000	-15.000000	-0.154588	-0.009105	0.585452	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	6.000000	-15.000000	-0.148383	-0.010045	0.565796	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	6.000000	-15.000000	-0.141780	-0.010583	0.544608	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	6.000000	-15.000000	-0.134846	-0.010607	0.522037	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	6.000000	-15.000000	-0.126034	-0.009669	0.492488	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	6.000000	-15.000000	-0.114984	-0.007598	0.454466	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	6.000000	-15.000000	-0.104519	-0.005443	0.418040	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	6.000000	-15.000000	-0.085354	-0.000915	0.349965	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	8.000000	-15.000000	-0.175874	0.013967	0.678041	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	8.000000	-15.000000	-0.181087	0.011786	0.695809	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	8.000000	-15.000000	-0.185868	0.009292	0.712329	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	8.000000	-15.000000	-0.190127	0.006503	0.727322	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	8.000000	-15.000000	-0.193157	0.003391	0.738383	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	8.000000	-15.000000	-0.194683	0.000192	0.744726	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	8.000000	-15.000000	-0.194960	-0.003001	0.747170	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	8.000000	-15.000000	-0.192136	-0.006105	0.739355	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	8.000000	-15.000000	-0.186433	-0.008834	0.721944	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	8.000000	-15.000000	-0.179872	-0.011204	0.701649	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	8.000000	-15.000000	-0.172508	-0.013206	0.678582	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	8.000000	-15.000000	-0.164674	-0.014736	0.653824	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	8.000000	-15.000000	-0.156307	-0.015755	0.627072	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	8.000000	-15.000000	-0.147471	-0.016114	0.598439	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	8.000000	-15.000000	-0.136098	-0.015210	0.560446	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	8.000000	-15.000000	-0.121688	-0.012787	0.511019	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	8.000000	-15.000000	-0.106641	-0.009900	0.458696	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	8.000000	-15.000000	-0.092718	-0.006731	0.409652	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	8.000000	-15.000000	-0.175874	0.013967	0.678041	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	8.000000	-15.000000	-0.181088	0.011786	0.695812	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	8.000000	-15.000000	-0.185869	0.009293	0.712332	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	8.000000	-15.000000	-0.190127	0.006503	0.727324	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	8.000000	-15.000000	-0.193158	0.003391	0.738385	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	8.000000	-15.000000	-0.194683	0.000193	0.744726	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	8.000000	-15.000000	-0.194959	-0.003001	0.747167	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	8.000000	-15.000000	-0.192135	-0.006104	0.739352	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	8.000000	-15.000000	-0.186431	-0.008834	0.721936	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	8.000000	-15.000000	-0.179868	-0.011203	0.701638	0.000000	0.000000	0.000000

eVALUE	16.000000	0.100000	2.000000	8.000000	-15.000000	-0.172504	-0.013205	0.678566	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	8.000000	-15.000000	-0.164669	-0.014735	0.653806	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	8.000000	-15.000000	-0.156300	-0.015753	0.627048	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	8.000000	-15.000000	-0.147462	-0.016111	0.598406	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	8.000000	-15.000000	-0.136087	-0.015206	0.560408	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	8.000000	-15.000000	-0.121677	-0.012783	0.510977	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	8.000000	-15.000000	-0.106890	-0.009962	0.459584	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	8.000000	-15.000000	-0.091859	-0.006519	0.406578	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	8.000000	-15.000000	-0.175874	0.013967	0.678042	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	8.000000	-15.000000	-0.181090	0.011787	0.695819	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	8.000000	-15.000000	-0.185871	0.009294	0.712340	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	8.000000	-15.000000	-0.190128	0.006504	0.727327	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	8.000000	-15.000000	-0.193159	0.003392	0.738390	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	8.000000	-15.000000	-0.194682	0.000195	0.744727	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	8.000000	-15.000000	-0.194953	-0.002997	0.747149	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	8.000000	-15.000000	-0.192128	-0.006101	0.739332	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	8.000000	-15.000000	-0.186416	-0.008829	0.721886	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	8.000000	-15.000000	-0.179845	-0.011196	0.701558	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	8.000000	-15.000000	-0.172473	-0.013195	0.678460	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	8.000000	-15.000000	-0.164630	-0.014723	0.653670	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	8.000000	-15.000000	-0.156253	-0.015738	0.626884	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	8.000000	-15.000000	-0.147404	-0.016092	0.598201	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	8.000000	-15.000000	-0.136009	-0.015180	0.560130	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	8.000000	-15.000000	-0.121603	-0.012760	0.510713	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	8.000000	-15.000000	-0.107534	-0.010111	0.461882	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	8.000000	-15.000000	-0.086012	-0.005091	0.385651	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	8.000000	-15.000000	-0.175875	0.013967	0.678044	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	8.000000	-15.000000	-0.181097	0.011789	0.695843	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	8.000000	-15.000000	-0.185880	0.009296	0.712373	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	8.000000	-15.000000	-0.190135	0.006507	0.727354	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	8.000000	-15.000000	-0.193168	0.003396	0.738425	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	8.000000	-15.000000	-0.194683	0.000199	0.744732	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	8.000000	-15.000000	-0.194943	-0.002992	0.747117	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	8.000000	-15.000000	-0.192116	-0.006095	0.739294	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	8.000000	-15.000000	-0.186389	-0.008821	0.721797	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	8.000000	-15.000000	-0.179802	-0.011184	0.701413	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	8.000000	-15.000000	-0.172416	-0.013178	0.678265	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	8.000000	-15.000000	-0.164562	-0.014704	0.653435	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	8.000000	-15.000000	-0.156165	-0.015711	0.626577	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	8.000000	-15.000000	-0.147287	-0.016053	0.597789	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	8.000000	-15.000000	-0.135872	-0.015134	0.559642	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	8.000000	-15.000000	-0.121453	-0.012711	0.510177	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	8.000000	-15.000000	-0.107410	-0.010044	0.461425	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	8.000000	-15.000000	-0.078999	-0.003433	0.360575	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	8.000000	-15.000000	-0.175875	0.013967	0.678047	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	8.000000	-15.000000	-0.181104	0.011792	0.695871	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	8.000000	-15.000000	-0.185891	0.009300	0.712415	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	8.000000	-15.000000	-0.190145	0.006511	0.727391	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	8.000000	-15.000000	-0.193180	0.003401	0.738469	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	8.000000	-15.000000	-0.194684	0.000204	0.744741	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	8.000000	-15.000000	-0.194929	-0.002985	0.747077	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	8.000000	-15.000000	-0.192101	-0.006088	0.739246	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	8.000000	-15.000000	-0.186354	-0.008811	0.721680	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	8.000000	-15.000000	-0.179746	-0.011168	0.701223	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	8.000000	-15.000000	-0.172340	-0.013155	0.678007	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	8.000000	-15.000000	-0.164471	-0.014678	0.653123	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	8.000000	-15.000000	-0.156048	-0.015675	0.626166	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	8.000000	-15.000000	-0.147131	-0.016002	0.597237	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	8.000000	-15.000000	-0.135688	-0.015072	0.558985	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	8.000000	-15.000000	-0.121251	-0.012645	0.509453	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	8.000000	-15.000000	-0.107224	-0.009969	0.460748	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	8.000000	-15.000000	-0.084385	-0.004847	0.379890	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	10.000000	-15.000000	-0.185854	0.016625	0.743236	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	10.000000	-15.000000	-0.192764	0.014214	0.766814	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	10.000000	-15.000000	-0.199180	0.011398	0.788957	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	10.000000	-15.000000	-0.204998	0.008193	0.809336	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	10.000000	-15.000000	-0.209429	0.004543	0.825246	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	10.000000	-15.000000	-0.212196	0.000713	0.835933	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	10.000000	-15.000000	-0.213613	-0.003185	0.842431	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	10.000000	-15.000000	-0.211616	-0.007073	0.837666	0.000000	0.000000	0.000000


```

&VALUE      4.000000  0.100000  4.000000  12.000000 -15.000000 -0.222956  0.006097  0.905687  0.000000  0.000000  0.000000
&VALUE      6.000000  0.100000  4.000000  12.000000 -15.000000 -0.227162  0.001752  0.921377  0.000000  0.000000  0.000000
&VALUE      8.000000  0.100000  4.000000  12.000000 -15.000000 -0.229895 -0.002742  0.932498  0.000000  0.000000  0.000000
&VALUE     10.000000  0.100000  4.000000  12.000000 -15.000000 -0.228967 -0.007319  0.931560  0.000000  0.000000  0.000000
&VALUE     12.000000  0.100000  4.000000  12.000000 -15.000000 -0.224516 -0.011680  0.918919  0.000000  0.000000  0.000000
&VALUE     14.000000  0.100000  4.000000  12.000000 -15.000000 -0.218503 -0.015727  0.901127  0.000000  0.000000  0.000000
&VALUE     16.000000  0.100000  4.000000  12.000000 -15.000000 -0.210692 -0.019390  0.877261  0.000000  0.000000  0.000000
&VALUE     18.000000  0.100000  4.000000  12.000000 -15.000000 -0.200971 -0.022458  0.846828  0.000000  0.000000  0.000000
&VALUE     20.000000  0.100000  4.000000  12.000000 -15.000000 -0.189624 -0.024731  0.810685  0.000000  0.000000  0.000000
&VALUE     22.000000  0.100000  4.000000  12.000000 -15.000000 -0.177425 -0.026085  0.771350  0.000000  0.000000  0.000000
&VALUE     24.000000  0.100000  4.000000  12.000000 -15.000000 -0.161606 -0.025701  0.718797  0.000000  0.000000  0.000000
&VALUE     26.000000  0.100000  4.000000  12.000000 -15.000000 -0.141268 -0.023150  0.649409  0.000000  0.000000  0.000000
&VALUE     28.000000  0.100000  4.000000  12.000000 -15.000000 -0.120711 -0.019967  0.578416  0.000000  0.000000  0.000000
&VALUE     30.000000  0.100000  4.000000  12.000000 -15.000000 -0.085180 -0.012517  0.452961  0.000000  0.000000  0.000000
*
&VALUE     -4.000000  0.100000  5.000000  12.000000 -15.000000 -0.192516  0.019169  0.799969  0.000000  0.000000  0.000000
&VALUE     -2.000000  0.100000  5.000000  12.000000 -15.000000 -0.201277  0.016665  0.829931  0.000000  0.000000  0.000000
&VALUE      0.000000  0.100000  5.000000  12.000000 -15.000000 -0.209452  0.013657  0.858143  0.000000  0.000000  0.000000
&VALUE      2.000000  0.100000  5.000000  12.000000 -15.000000 -0.216938  0.010162  0.884295  0.000000  0.000000  0.000000
&VALUE      4.000000  0.100000  5.000000  12.000000 -15.000000 -0.222982  0.006106  0.905784  0.000000  0.000000  0.000000
&VALUE      6.000000  0.100000  5.000000  12.000000 -15.000000 -0.227177  0.001761  0.921437  0.000000  0.000000  0.000000
&VALUE      8.000000  0.100000  5.000000  12.000000 -15.000000 -0.229895 -0.002732  0.932507  0.000000  0.000000  0.000000
&VALUE     10.000000  0.100000  5.000000  12.000000 -15.000000 -0.228966 -0.007307  0.931564  0.000000  0.000000  0.000000
&VALUE     12.000000  0.100000  5.000000  12.000000 -15.000000 -0.224493 -0.011666  0.918846  0.000000  0.000000  0.000000
&VALUE     14.000000  0.100000  5.000000  12.000000 -15.000000 -0.218450 -0.015707  0.900949  0.000000  0.000000  0.000000
&VALUE     16.000000  0.100000  5.000000  12.000000 -15.000000 -0.210598 -0.019361  0.876940  0.000000  0.000000  0.000000
&VALUE     18.000000  0.100000  5.000000  12.000000 -15.000000 -0.200858 -0.022425  0.846437  0.000000  0.000000  0.000000
&VALUE     20.000000  0.100000  5.000000  12.000000 -15.000000 -0.189461 -0.024683  0.810116  0.000000  0.000000  0.000000
&VALUE     22.000000  0.100000  5.000000  12.000000 -15.000000 -0.177206 -0.026016  0.770578  0.000000  0.000000  0.000000
&VALUE     24.000000  0.100000  5.000000  12.000000 -15.000000 -0.161343 -0.025617  0.717862  0.000000  0.000000  0.000000
&VALUE     26.000000  0.100000  5.000000  12.000000 -15.000000 -0.140973 -0.023058  0.648356  0.000000  0.000000  0.000000
&VALUE     28.000000  0.100000  5.000000  12.000000 -15.000000 -0.120420 -0.019862  0.577362  0.000000  0.000000  0.000000
&VALUE     30.000000  0.100000  5.000000  12.000000 -15.000000 -0.090915 -0.013980  0.473508  0.000000  0.000000  0.000000
*
&END

```

- DLOCE_P05.inp (elevator = +5 deg)

```

&ARG01      C      PROTOCOL      0      DLOCE-XX
&ARG02      C      TEST_CONDITION  0      TEST0001.CND
&ARG03      C      REPORT_CODE    0      00-01
&ARG04      X      FLAP_SET       9      REF. BELOW
&ARG05      X      STABILZR      5      0.0
&ARG06      X      ELEVATOR      3      0.0
&ARG07      X      RUDDER        10     0.0
&ARG08      X      AILERON       4      0.0
&ARG09      X      SIDESLIP      11     0.0
&ARG10      X      AOA           1      REF. BELOW
&ARG11      X      MACH          2      0.2
&ARG12      X      STABILZR      5      REF. BELOW
*
&SNAME      &ARG10      &ARG11      &ARG12      &ARG13      &ARG06      &FUN01      &FUN02      &FUN03      &FUN04      &FUN05      &FUN06
&UNAME      AOA          MACH          FLAP_SET   STABILZR   ELEVATOR   CLHTE     CDHTE     CMHTE     CY          CLL        CN
&UCODE      1          2          9          5          3          0          0          0          0          0          0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*CONTROL DERIVATIVE INCREMENTS
*LONGITUDINAL CONTROL EFFECTORS
&VALUE     -4.000000  0.100000  1.000000 -1.200000  5.000000  0.055352  0.000455 -0.176642  0.000000  0.000000  0.000000
&VALUE     -2.000000  0.100000  1.000000 -1.200000  5.000000  0.055887  0.000932 -0.178498  0.000000  0.000000  0.000000
&VALUE      0.000000  0.100000  1.000000 -1.200000  5.000000  0.056220  0.001436 -0.179745  0.000000  0.000000  0.000000
&VALUE      2.000000  0.100000  1.000000 -1.200000  5.000000  0.056307  0.001953 -0.180232  0.000000  0.000000  0.000000
&VALUE      4.000000  0.100000  1.000000 -1.200000  5.000000  0.055760  0.002430 -0.178679  0.000000  0.000000  0.000000
&VALUE      6.000000  0.100000  1.000000 -1.200000  5.000000  0.055148  0.002859 -0.176952  0.000000  0.000000  0.000000
&VALUE      8.000000  0.100000  1.000000 -1.200000  5.000000  0.054479  0.003243 -0.175061  0.000000  0.000000  0.000000
&VALUE     10.000000  0.100000  1.000000 -1.200000  5.000000  0.053419  0.003571 -0.171860  0.000000  0.000000  0.000000
&VALUE     12.000000  0.100000  1.000000 -1.200000  5.000000  0.052105  0.003821 -0.167798  0.000000  0.000000  0.000000
&VALUE     14.000000  0.100000  1.000000 -1.200000  5.000000  0.050747  0.004001 -0.163553  0.000000  0.000000  0.000000
&VALUE     16.000000  0.100000  1.000000 -1.200000  5.000000  0.049319  0.004115 -0.159032  0.000000  0.000000  0.000000
&VALUE     18.000000  0.100000  1.000000 -1.200000  5.000000  0.047893  0.004151 -0.154469  0.000000  0.000000  0.000000
&VALUE     20.000000  0.100000  1.000000 -1.200000  5.000000  0.046420  0.004117 -0.149685  0.000000  0.000000  0.000000
&VALUE     22.000000  0.100000  1.000000 -1.200000  5.000000  0.044907  0.003979 -0.144687  0.000000  0.000000  0.000000
&VALUE     24.000000  0.100000  1.000000 -1.200000  5.000000  0.043001  0.003638 -0.138210  0.000000  0.000000  0.000000
&VALUE     26.000000  0.100000  1.000000 -1.200000  5.000000  0.040673  0.003085 -0.130111  0.000000  0.000000  0.000000

```


eVALUE	16.000000	0.100000	3.000000	2.000000	5.000000	0.057425	0.006039	-0.182972	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	2.000000	5.000000	0.054989	0.006071	-0.175158	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	2.000000	5.000000	0.052481	0.005988	-0.166984	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	2.000000	5.000000	0.049911	0.005731	-0.158473	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	2.000000	5.000000	0.046678	0.005137	-0.147463	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	2.000000	5.000000	0.043303	0.004369	-0.135760	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	2.000000	5.000000	0.035080	0.002154	-0.106449	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	2.000000	5.000000	0.024422	-0.000991	-0.067859	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	2.000000	5.000000	0.068344	0.000100	-0.215057	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	2.000000	5.000000	0.069202	0.000912	-0.218045	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	2.000000	5.000000	0.069563	0.001755	-0.219511	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	2.000000	5.000000	0.069414	0.002606	-0.219375	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	2.000000	5.000000	0.068467	0.003384	-0.216698	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	2.000000	5.000000	0.067413	0.004078	-0.213729	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	2.000000	5.000000	0.066267	0.004694	-0.210485	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	2.000000	5.000000	0.064449	0.005217	-0.204996	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	2.000000	5.000000	0.062170	0.005601	-0.197929	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	2.000000	5.000000	0.059835	0.005871	-0.190616	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	2.000000	5.000000	0.057408	0.006034	-0.182916	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	2.000000	5.000000	0.054969	0.006065	-0.175089	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	2.000000	5.000000	0.052456	0.005979	-0.166898	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	2.000000	5.000000	0.049879	0.005720	-0.158362	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	2.000000	5.000000	0.046642	0.005125	-0.147334	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	2.000000	5.000000	0.043278	0.004360	-0.135673	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	2.000000	5.000000	0.035757	0.002335	-0.108872	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	2.000000	5.000000	0.021999	-0.001679	-0.059156	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	2.000000	5.000000	0.068344	0.000100	-0.215057	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	2.000000	5.000000	0.069203	0.000911	-0.218049	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	2.000000	5.000000	0.069562	0.001755	-0.219509	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	2.000000	5.000000	0.069409	0.002605	-0.219361	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	2.000000	5.000000	0.068461	0.003382	-0.216679	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	2.000000	5.000000	0.067406	0.004076	-0.213704	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	2.000000	5.000000	0.066257	0.004692	-0.210454	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	2.000000	5.000000	0.064439	0.005214	-0.204961	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	2.000000	5.000000	0.062156	0.005597	-0.197884	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	2.000000	5.000000	0.059817	0.005865	-0.190556	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	2.000000	5.000000	0.057386	0.006026	-0.182840	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	2.000000	5.000000	0.054943	0.006056	-0.174997	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	2.000000	5.000000	0.052423	0.005968	-0.166781	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	2.000000	5.000000	0.049836	0.005705	-0.158211	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	2.000000	5.000000	0.046593	0.005108	-0.147161	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	2.000000	5.000000	0.043246	0.004349	-0.135556	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	2.000000	5.000000	0.035577	0.002261	-0.108213	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	2.000000	5.000000	0.017707	-0.002786	-0.043763	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	4.000000	5.000000	-0.021653	0.005025	0.056957	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	4.000000	5.000000	-0.023868	0.003692	0.064519	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	4.000000	5.000000	-0.025891	0.002225	0.071572	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	4.000000	5.000000	-0.027634	0.000633	0.077831	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	4.000000	5.000000	-0.028446	-0.001070	0.081113	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	4.000000	5.000000	-0.027997	-0.002715	0.080380	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	4.000000	5.000000	-0.026707	-0.004259	0.076963	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	4.000000	5.000000	-0.023718	-0.005639	0.067907	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	4.000000	5.000000	-0.019964	-0.006786	0.056305	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	4.000000	5.000000	-0.016087	-0.007738	0.044262	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	4.000000	5.000000	-0.011999	-0.008497	0.031432	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	4.000000	5.000000	-0.007662	-0.008980	0.017668	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	4.000000	5.000000	-0.003123	-0.009209	0.003073	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	4.000000	5.000000	0.001581	-0.009099	-0.012274	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	4.000000	5.000000	0.007540	-0.008333	-0.032305	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	4.000000	5.000000	0.015031	-0.006794	-0.058158	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	4.000000	5.000000	0.022836	-0.005102	-0.085442	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	4.000000	5.000000	0.027012	-0.003950	-0.100202	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	4.000000	5.000000	-0.021653	0.005025	0.056957	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	4.000000	5.000000	-0.023868	0.003692	0.064520	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	4.000000	5.000000	-0.025892	0.002225	0.071573	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	4.000000	5.000000	-0.027634	0.000633	0.077831	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	4.000000	5.000000	-0.028446	-0.001070	0.081113	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	4.000000	5.000000	-0.027997	-0.002715	0.080378	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	4.000000	5.000000	-0.026706	-0.004258	0.076959	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	4.000000	5.000000	-0.023717	-0.005638	0.067903	0.000000	0.000000	0.000000

&VALUE	12.000000	0.100000	2.000000	4.000000	5.000000	-0.019962	-0.006785	0.056300	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	2.000000	4.000000	5.000000	-0.016085	-0.007738	0.044255	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	2.000000	4.000000	5.000000	-0.011996	-0.008496	0.031424	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	2.000000	4.000000	5.000000	-0.007659	-0.008979	0.017658	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	2.000000	4.000000	5.000000	-0.003120	-0.009207	0.003060	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	2.000000	4.000000	5.000000	0.001585	-0.009097	-0.012291	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	2.000000	4.000000	5.000000	0.007545	-0.008331	-0.032325	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	2.000000	4.000000	5.000000	0.015037	-0.006792	-0.058179	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	2.000000	4.000000	5.000000	0.022581	-0.005166	-0.084531	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	2.000000	4.000000	5.000000	0.027340	-0.003859	-0.101383	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	3.000000	4.000000	5.000000	-0.021653	0.005025	0.056958	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	3.000000	4.000000	5.000000	-0.023869	0.003693	0.064523	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	3.000000	4.000000	5.000000	-0.025892	0.002225	0.071576	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	3.000000	4.000000	5.000000	-0.027634	0.000634	0.077830	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	3.000000	4.000000	5.000000	-0.028446	-0.001069	0.081112	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	3.000000	4.000000	5.000000	-0.027993	-0.002713	0.080368	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	3.000000	4.000000	5.000000	-0.026698	-0.004256	0.076934	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	3.000000	4.000000	5.000000	-0.023709	-0.005636	0.067877	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	3.000000	4.000000	5.000000	-0.019952	-0.006783	0.056267	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	3.000000	4.000000	5.000000	-0.016072	-0.007734	0.044211	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	3.000000	4.000000	5.000000	-0.011979	-0.008491	0.031366	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	3.000000	4.000000	5.000000	-0.007638	-0.008973	0.017584	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	3.000000	4.000000	5.000000	-0.003095	-0.009199	0.002972	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	3.000000	4.000000	5.000000	0.001615	-0.009087	-0.012397	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	3.000000	4.000000	5.000000	0.007585	-0.008317	-0.032467	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	3.000000	4.000000	5.000000	0.015074	-0.006780	-0.058312	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	3.000000	4.000000	5.000000	0.021894	-0.005329	-0.082081	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	3.000000	4.000000	5.000000	0.030367	-0.003054	-0.112242	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	4.000000	4.000000	5.000000	-0.021654	0.005025	0.056958	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	4.000000	4.000000	5.000000	-0.023871	0.003693	0.064532	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	4.000000	4.000000	5.000000	-0.025896	0.002226	0.071589	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	4.000000	4.000000	5.000000	-0.027635	0.000635	0.077836	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	4.000000	4.000000	5.000000	-0.028447	-0.001068	0.081119	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	4.000000	4.000000	5.000000	-0.027987	-0.002711	0.080348	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	4.000000	4.000000	5.000000	-0.026685	-0.004253	0.076893	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	4.000000	4.000000	5.000000	-0.023695	-0.005633	0.067830	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	4.000000	4.000000	5.000000	-0.019935	-0.006778	0.056209	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	4.000000	4.000000	5.000000	-0.016049	-0.007727	0.044132	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	4.000000	5.000000	-0.011948	-0.008481	0.031260	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	4.000000	5.000000	-0.007601	-0.008962	0.017456	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	4.000000	5.000000	-0.003048	-0.009184	0.002808	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	4.000000	5.000000	0.001676	-0.009066	-0.012609	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	4.000000	5.000000	0.007655	-0.008293	-0.032717	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	4.000000	5.000000	0.015150	-0.006754	-0.058583	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	4.000000	5.000000	0.021936	-0.005287	-0.082244	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	4.000000	5.000000	0.037269	-0.001320	-0.136969	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	4.000000	5.000000	-0.021654	0.005025	0.056959	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	4.000000	5.000000	-0.023874	0.003694	0.064543	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	4.000000	5.000000	-0.025900	0.002228	0.071605	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	4.000000	5.000000	-0.027637	0.000637	0.077843	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	4.000000	5.000000	-0.028450	-0.001066	0.081128	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	4.000000	5.000000	-0.027979	-0.002708	0.080322	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	4.000000	5.000000	-0.026669	-0.004248	0.076840	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	4.000000	5.000000	-0.023676	-0.005628	0.067770	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	4.000000	5.000000	-0.019912	-0.006772	0.056132	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	4.000000	5.000000	-0.016018	-0.007718	0.044028	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	4.000000	5.000000	-0.011907	-0.008468	0.031119	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	4.000000	5.000000	-0.007552	-0.008947	0.017286	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	4.000000	5.000000	-0.002985	-0.009164	0.002589	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	4.000000	5.000000	0.001757	-0.009038	-0.012896	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	4.000000	5.000000	0.007749	-0.008260	-0.033053	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	4.000000	5.000000	0.015252	-0.006720	-0.058950	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	4.000000	5.000000	0.022012	-0.005246	-0.082525	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	4.000000	5.000000	0.037375	-0.001420	-0.137299	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	6.000000	5.000000	-0.048416	0.007507	0.137004	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	6.000000	5.000000	-0.052030	0.005683	0.149319	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	6.000000	5.000000	-0.055329	0.003640	0.160756	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	6.000000	5.000000	-0.058228	0.001393	0.171046	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	6.000000	5.000000	-0.060070	-0.001065	0.177964	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	6.000000	5.000000	-0.060526	-0.003531	0.180513	0.000000	0.000000	0.000000

eVALUE	4.000000	0.100000	5.000000	6.000000	5.000000	-0.060082	-0.001058	0.178011	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	6.000000	5.000000	-0.060516	-0.003522	0.180487	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	6.000000	5.000000	-0.059782	-0.005915	0.179269	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	6.000000	5.000000	-0.056375	-0.008151	0.169171	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	6.000000	5.000000	-0.051120	-0.010028	0.152919	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	6.000000	5.000000	-0.045590	-0.011622	0.135725	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	6.000000	5.000000	-0.039726	-0.012936	0.117331	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	6.000000	5.000000	-0.033521	-0.013876	0.097676	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	6.000000	5.000000	-0.026918	-0.014414	0.076487	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	6.000000	5.000000	-0.019984	-0.014438	0.053916	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	6.000000	5.000000	-0.011171	-0.013500	0.024368	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	6.000000	5.000000	-0.000122	-0.011429	-0.013654	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	6.000000	5.000000	0.010344	-0.009274	-0.050081	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	6.000000	5.000000	0.029509	-0.004746	-0.118156	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	8.000000	5.000000	-0.073209	0.010159	0.209920	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	8.000000	5.000000	-0.078423	0.007978	0.227689	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	8.000000	5.000000	-0.083204	0.005484	0.244209	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	8.000000	5.000000	-0.087462	0.002695	0.259201	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	8.000000	5.000000	-0.090493	-0.000417	0.270262	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	8.000000	5.000000	-0.092018	-0.003616	0.276605	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	8.000000	5.000000	-0.092296	-0.006809	0.279049	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	8.000000	5.000000	-0.089471	-0.009913	0.271235	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	8.000000	5.000000	-0.083769	-0.012642	0.253823	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	8.000000	5.000000	-0.077207	-0.015012	0.233529	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	8.000000	5.000000	-0.069844	-0.017015	0.210461	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	8.000000	5.000000	-0.062010	-0.018545	0.185704	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	8.000000	5.000000	-0.053642	-0.019563	0.158952	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	8.000000	5.000000	-0.044807	-0.019922	0.130318	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	8.000000	5.000000	-0.033433	-0.019018	0.092325	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	8.000000	5.000000	-0.019024	-0.016595	0.042898	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	8.000000	5.000000	-0.003977	-0.013708	-0.009424	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	8.000000	5.000000	0.009947	-0.010539	-0.058469	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	8.000000	5.000000	-0.073209	0.010159	0.209920	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	8.000000	5.000000	-0.078423	0.007978	0.227691	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	8.000000	5.000000	-0.083204	0.005484	0.244212	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	8.000000	5.000000	-0.087463	0.002695	0.259203	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	8.000000	5.000000	-0.090493	-0.000417	0.270265	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	8.000000	5.000000	-0.092018	-0.003616	0.276606	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	8.000000	5.000000	-0.092295	-0.006809	0.279046	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	8.000000	5.000000	-0.089470	-0.009912	0.271232	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	8.000000	5.000000	-0.083766	-0.012642	0.253816	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	8.000000	5.000000	-0.077204	-0.015011	0.233517	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	8.000000	5.000000	-0.069839	-0.017013	0.210446	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	8.000000	5.000000	-0.062004	-0.018543	0.185685	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	8.000000	5.000000	-0.053636	-0.019561	0.158928	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	8.000000	5.000000	-0.044798	-0.019919	0.130285	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	8.000000	5.000000	-0.033423	-0.019015	0.092287	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	8.000000	5.000000	-0.019012	-0.016591	0.042856	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	8.000000	5.000000	-0.004225	-0.013770	-0.008537	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	8.000000	5.000000	0.010805	-0.010327	-0.061543	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	8.000000	5.000000	-0.073209	0.010159	0.209922	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	8.000000	5.000000	-0.078425	0.007979	0.227699	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	8.000000	5.000000	-0.083206	0.005485	0.244219	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	8.000000	5.000000	-0.087463	0.002696	0.259206	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	8.000000	5.000000	-0.090495	-0.000416	0.270270	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	8.000000	5.000000	-0.092018	-0.003616	0.276606	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	8.000000	5.000000	-0.092289	-0.006805	0.279028	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	8.000000	5.000000	-0.089463	-0.009909	0.271211	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	8.000000	5.000000	-0.083751	-0.012637	0.253766	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	8.000000	5.000000	-0.077180	-0.015004	0.233437	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	8.000000	5.000000	-0.069808	-0.017004	0.210339	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	8.000000	5.000000	-0.061965	-0.018532	0.185549	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	8.000000	5.000000	-0.053589	-0.019546	0.158764	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	8.000000	5.000000	-0.044739	-0.019900	0.130080	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	8.000000	5.000000	-0.033345	-0.018988	0.092010	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	8.000000	5.000000	-0.018939	-0.016568	0.042592	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	8.000000	5.000000	-0.004869	-0.013920	-0.006239	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	8.000000	5.000000	0.016652	-0.008899	-0.082470	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	8.000000	5.000000	-0.073210	0.010159	0.209924	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	8.000000	5.000000	-0.078432	0.007981	0.227722	0.000000	0.000000	0.000000

eVALUE	0.000000	0.100000	4.000000	8.000000	5.000000	-0.083215	0.005488	0.244252	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	8.000000	5.000000	-0.087471	0.002699	0.259234	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	8.000000	5.000000	-0.090504	-0.000412	0.270304	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	8.000000	5.000000	-0.092018	-0.003609	0.276612	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	8.000000	5.000000	-0.092278	-0.006800	0.278996	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	8.000000	5.000000	-0.089451	-0.009903	0.271173	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	8.000000	5.000000	-0.083724	-0.012629	0.253676	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	8.000000	5.000000	-0.077137	-0.014992	0.233293	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	8.000000	5.000000	-0.069751	-0.016986	0.210145	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	8.000000	5.000000	-0.061897	-0.018512	0.185315	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	8.000000	5.000000	-0.053501	-0.019519	0.158457	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	8.000000	5.000000	-0.044623	-0.019862	0.129668	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	8.000000	5.000000	-0.033208	-0.018942	0.091522	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	8.000000	5.000000	-0.018789	-0.016519	0.042056	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	8.000000	5.000000	-0.004745	-0.013853	-0.006696	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	8.000000	5.000000	0.023665	-0.007241	-0.107546	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	8.000000	5.000000	-0.073211	0.010159	0.209926	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	8.000000	5.000000	-0.078440	0.007983	0.227751	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	8.000000	5.000000	-0.083227	0.005492	0.244294	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	8.000000	5.000000	-0.087480	0.002703	0.259270	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	8.000000	5.000000	-0.090515	-0.000407	0.270349	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	8.000000	5.000000	-0.092020	-0.003604	0.276621	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	8.000000	5.000000	-0.092265	-0.006793	0.278956	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	8.000000	5.000000	-0.089436	-0.009896	0.271126	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	8.000000	5.000000	-0.083689	-0.012619	0.253560	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	8.000000	5.000000	-0.077081	-0.014976	0.233102	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	8.000000	5.000000	-0.069675	-0.016963	0.209886	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	8.000000	5.000000	-0.061807	-0.018487	0.185002	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	8.000000	5.000000	-0.053383	-0.019483	0.158046	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	8.000000	5.000000	-0.044466	-0.019810	0.129117	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	8.000000	5.000000	-0.033023	-0.018880	0.090864	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	8.000000	5.000000	-0.018587	-0.016453	0.041333	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	8.000000	5.000000	-0.004559	-0.013778	-0.007372	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	8.000000	5.000000	0.018280	-0.008656	-0.088231	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	10.000000	5.000000	-0.095630	0.012837	0.275115	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	10.000000	5.000000	-0.102540	0.010426	0.298694	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	10.000000	5.000000	-0.108956	0.007610	0.320836	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	10.000000	5.000000	-0.114775	0.004406	0.341215	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	10.000000	5.000000	-0.119206	0.000755	0.357125	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	10.000000	5.000000	-0.121973	-0.003075	0.367812	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	10.000000	5.000000	-0.123390	-0.006972	0.374310	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	10.000000	5.000000	-0.121393	-0.010861	0.369546	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	10.000000	5.000000	-0.116187	-0.014448	0.354111	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	10.000000	5.000000	-0.109571	-0.017669	0.333978	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	10.000000	5.000000	-0.101514	-0.020479	0.308934	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	10.000000	5.000000	-0.092249	-0.022705	0.279692	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	10.000000	5.000000	-0.082276	-0.024303	0.247876	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	10.000000	5.000000	-0.071698	-0.025110	0.213702	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	10.000000	5.000000	-0.058009	-0.024399	0.168120	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	10.000000	5.000000	-0.040478	-0.021811	0.108155	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	10.000000	5.000000	-0.022086	-0.018579	0.044382	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	10.000000	5.000000	-0.001227	-0.014172	-0.029044	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	10.000000	5.000000	-0.095631	0.012837	0.275116	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	10.000000	5.000000	-0.102541	0.010426	0.298697	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	10.000000	5.000000	-0.108958	0.007611	0.320840	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	10.000000	5.000000	-0.114776	0.004406	0.341219	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	10.000000	5.000000	-0.119207	0.000755	0.357130	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	10.000000	5.000000	-0.121973	-0.003074	0.367814	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	10.000000	5.000000	-0.123389	-0.006972	0.374309	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	10.000000	5.000000	-0.121392	-0.010860	0.369544	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	10.000000	5.000000	-0.116185	-0.014447	0.354105	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	10.000000	5.000000	-0.109567	-0.017668	0.333965	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	10.000000	5.000000	-0.101509	-0.020477	0.308916	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	10.000000	5.000000	-0.092243	-0.022703	0.279670	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	10.000000	5.000000	-0.082268	-0.024300	0.247847	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	10.000000	5.000000	-0.071687	-0.025107	0.213663	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	10.000000	5.000000	-0.057996	-0.024395	0.168073	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	10.000000	5.000000	-0.040464	-0.021807	0.108103	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	10.000000	5.000000	-0.022332	-0.018640	0.045258	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	10.000000	5.000000	-0.000314	-0.013953	-0.032310	0.000000	0.000000	0.000000

*

eVALUE	-4.000000	0.100000	3.000000	10.000000	5.000000	-0.095631	0.012837	0.275117	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	10.000000	5.000000	-0.102544	0.010428	0.298708	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	10.000000	5.000000	-0.108960	0.007612	0.320851	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	10.000000	5.000000	-0.114777	0.004407	0.341225	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	10.000000	5.000000	-0.119209	0.000758	0.357139	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	10.000000	5.000000	-0.121975	-0.003071	0.367822	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	10.000000	5.000000	-0.123387	-0.006968	0.374302	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	10.000000	5.000000	-0.121388	-0.010856	0.369534	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	10.000000	5.000000	-0.116172	-0.014442	0.354063	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	10.000000	5.000000	-0.109542	-0.017660	0.333881	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	10.000000	5.000000	-0.101472	-0.020466	0.308788	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	10.000000	5.000000	-0.092196	-0.022690	0.279508	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	10.000000	5.000000	-0.082212	-0.024283	0.247650	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	10.000000	5.000000	-0.071616	-0.025084	0.213415	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	10.000000	5.000000	-0.057901	-0.024363	0.167735	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	10.000000	5.000000	-0.040372	-0.021778	0.107776	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	10.000000	5.000000	-0.022956	-0.018784	0.047482	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	10.000000	5.000000	0.005253	-0.012609	-0.052225	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	10.000000	5.000000	-0.095632	0.012838	0.275120	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	10.000000	5.000000	-0.102553	0.010431	0.298740	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	10.000000	5.000000	-0.108973	0.007616	0.320898	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	10.000000	5.000000	-0.114789	0.004411	0.341268	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	10.000000	5.000000	-0.119224	0.000763	0.357192	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	10.000000	5.000000	-0.121980	-0.003066	0.367846	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	10.000000	5.000000	-0.123381	-0.006961	0.374287	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	10.000000	5.000000	-0.121381	-0.010849	0.369514	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	10.000000	5.000000	-0.116149	-0.014433	0.353988	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	10.000000	5.000000	-0.109497	-0.017646	0.333729	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	10.000000	5.000000	-0.101403	-0.020446	0.308556	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	10.000000	5.000000	-0.092115	-0.022667	0.279227	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	10.000000	5.000000	-0.082106	-0.024251	0.247280	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	10.000000	5.000000	-0.071475	-0.025039	0.212917	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	10.000000	5.000000	-0.057733	-0.024308	0.167138	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	10.000000	5.000000	-0.040187	-0.021718	0.107112	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	10.000000	5.000000	-0.022792	-0.018705	0.046884	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	10.000000	5.000000	0.009477	-0.011555	-0.067353	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	10.000000	5.000000	-0.095633	0.012838	0.275123	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	10.000000	5.000000	-0.102563	0.010434	0.298779	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	10.000000	5.000000	-0.108989	0.007621	0.320956	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	10.000000	5.000000	-0.114804	0.004417	0.341324	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	10.000000	5.000000	-0.119242	0.000770	0.357261	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	10.000000	5.000000	-0.121988	-0.003059	0.367878	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	10.000000	5.000000	-0.123374	-0.006952	0.374269	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	10.000000	5.000000	-0.121373	-0.010840	0.369489	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	10.000000	5.000000	-0.116119	-0.014421	0.353890	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	10.000000	5.000000	-0.109437	-0.017628	0.333529	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	10.000000	5.000000	-0.101313	-0.020419	0.308248	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	10.000000	5.000000	-0.092007	-0.022637	0.278854	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	10.000000	5.000000	-0.081964	-0.024209	0.246786	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	10.000000	5.000000	-0.071286	-0.024978	0.212250	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	10.000000	5.000000	-0.057508	-0.024234	0.166335	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	10.000000	5.000000	-0.039937	-0.021639	0.106217	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	10.000000	5.000000	-0.022553	-0.018614	0.046017	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	10.000000	5.000000	0.003730	-0.013028	-0.046761	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	12.000000	5.000000	-0.115693	0.015400	0.331838	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	12.000000	5.000000	-0.124428	0.012887	0.361701	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	12.000000	5.000000	-0.132588	0.009875	0.389865	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	12.000000	5.000000	-0.140076	0.006379	0.416020	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	12.000000	5.000000	-0.146110	0.002319	0.437470	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	12.000000	5.000000	-0.150325	-0.002027	0.453189	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	12.000000	5.000000	-0.153074	-0.006524	0.464366	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	12.000000	5.000000	-0.152149	-0.011101	0.463435	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	12.000000	5.000000	-0.147725	-0.015465	0.450890	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	12.000000	5.000000	-0.141749	-0.019519	0.433227	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	12.000000	5.000000	-0.133988	-0.023194	0.409535	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	12.000000	5.000000	-0.124291	-0.026267	0.379193	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	12.000000	5.000000	-0.113000	-0.028558	0.343252	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	12.000000	5.000000	-0.100864	-0.029934	0.304140	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	12.000000	5.000000	-0.085107	-0.029574	0.251821	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	12.000000	5.000000	-0.064791	-0.027026	0.182519	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	12.000000	5.000000	-0.043248	-0.023626	0.108016	0.000000	0.000000	0.000000


```

&VALUE 26.000000 0.100000 5.000000 12.000000 5.000000 -0.064153 -0.026826 0.180235 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 5.000000 12.000000 5.000000 -0.043600 -0.023630 0.109241 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 5.000000 12.000000 5.000000 -0.014096 -0.017748 0.005388 0.000000 0.000000 0.000000

```

*
&END

- DLOCE_P10.inp (elevator = +10 deg)

```

&ARG01 C PROTOCOL 0 DLOCE-XX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 0.2
&ARG12 X STABILZR 5 REF. BELOW

```

```

*
&SNAME &ARG10 &ARG11 &ARG12 &ARG13 &ARG06 &FUN01 &FUN02 &FUN03 &FUN04 &FUN05 &FUN06
&UNAME AOA MACH FLAP_SET STABILZR ELEVATOR CLHTE CDHTE CMHTE CY CLL CN
&UCODE 1 2 9 5 3 0 0 0 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX

```

*CONTROL DERIVATIVE INCREMENTS
*LONGITUDINAL CONTROL EFFECTORS

```

&VALUE -4.000000 0.100000 1.000000 -1.200000 10.000000 0.093295 0.001693 -0.296437 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 1.000000 -1.200000 10.000000 0.093830 0.002170 -0.298292 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 1.000000 -1.200000 10.000000 0.094163 0.002674 -0.299540 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 1.000000 -1.200000 10.000000 0.094250 0.003191 -0.300026 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 1.000000 -1.200000 10.000000 0.093703 0.003669 -0.298473 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 1.000000 -1.200000 10.000000 0.093090 0.004098 -0.296746 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 1.000000 -1.200000 10.000000 0.092422 0.004482 -0.294855 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 1.000000 -1.200000 10.000000 0.091362 0.004809 -0.291654 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 1.000000 -1.200000 10.000000 0.090048 0.005059 -0.287592 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 1.000000 -1.200000 10.000000 0.088690 0.005239 -0.283348 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 1.000000 -1.200000 10.000000 0.087262 0.005353 -0.278826 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 1.000000 -1.200000 10.000000 0.085836 0.005389 -0.274263 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 1.000000 -1.200000 10.000000 0.084363 0.005355 -0.269479 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 1.000000 -1.200000 10.000000 0.082850 0.005217 -0.264481 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 1.000000 -1.200000 10.000000 0.080944 0.004877 -0.258004 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 1.000000 -1.200000 10.000000 0.078616 0.004324 -0.249906 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 1.000000 -1.200000 10.000000 0.076000 0.003741 -0.240715 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 1.000000 -1.200000 10.000000 0.068079 0.001349 -0.212029 0.000000 0.000000 0.000000

```

```

*
&VALUE -4.000000 0.100000 2.000000 -1.200000 10.000000 0.093295 0.001693 -0.296437 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 2.000000 -1.200000 10.000000 0.093830 0.002170 -0.298292 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 2.000000 -1.200000 10.000000 0.094163 0.002674 -0.299540 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 2.000000 -1.200000 10.000000 0.094250 0.003191 -0.300026 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 2.000000 -1.200000 10.000000 0.093702 0.003669 -0.298473 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 2.000000 -1.200000 10.000000 0.093090 0.004097 -0.296745 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 2.000000 -1.200000 10.000000 0.092422 0.004481 -0.294854 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 2.000000 -1.200000 10.000000 0.091361 0.004809 -0.291653 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 2.000000 -1.200000 10.000000 0.090048 0.005059 -0.287591 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 2.000000 -1.200000 10.000000 0.088689 0.005239 -0.283346 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 2.000000 -1.200000 10.000000 0.087261 0.005353 -0.278823 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 2.000000 -1.200000 10.000000 0.085835 0.005389 -0.274260 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 2.000000 -1.200000 10.000000 0.084362 0.005355 -0.269474 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 2.000000 -1.200000 10.000000 0.082849 0.005216 -0.264476 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 2.000000 -1.200000 10.000000 0.080942 0.004876 -0.257998 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 2.000000 -1.200000 10.000000 0.078615 0.004323 -0.249899 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 2.000000 -1.200000 10.000000 0.076137 0.003779 -0.241206 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 2.000000 -1.200000 10.000000 0.068127 0.001359 -0.212200 0.000000 0.000000 0.000000

```

```

*
&VALUE -4.000000 0.100000 3.000000 -1.200000 10.000000 0.093295 0.001693 -0.296437 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 3.000000 -1.200000 10.000000 0.093830 0.002170 -0.298293 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 3.000000 -1.200000 10.000000 0.094163 0.002674 -0.299539 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 3.000000 -1.200000 10.000000 0.094249 0.003191 -0.300023 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 3.000000 -1.200000 10.000000 0.093701 0.003668 -0.298469 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 3.000000 -1.200000 10.000000 0.093089 0.004097 -0.296740 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 3.000000 -1.200000 10.000000 0.092419 0.004481 -0.294846 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 3.000000 -1.200000 10.000000 0.091359 0.004809 -0.291644 0.000000 0.000000 0.000000

```


eVALUE	-4.000000	0.100000	4.000000	4.000000	10.000000	0.010486	0.006242	-0.062836	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	4.000000	10.000000	0.008268	0.004910	-0.055262	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	4.000000	10.000000	0.006243	0.003443	-0.048205	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	4.000000	10.000000	0.004504	0.001852	-0.041959	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	4.000000	10.000000	0.003692	0.000149	-0.038675	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	4.000000	10.000000	0.004152	-0.001495	-0.039446	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	4.000000	10.000000	0.005454	-0.003036	-0.042901	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	4.000000	10.000000	0.008444	-0.004416	-0.051964	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	4.000000	10.000000	0.012204	-0.005561	-0.063586	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	4.000000	10.000000	0.016090	-0.006510	-0.075662	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	4.000000	10.000000	0.020191	-0.007264	-0.088535	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	4.000000	10.000000	0.024538	-0.007745	-0.102338	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	4.000000	10.000000	0.029092	-0.007968	-0.116986	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	4.000000	10.000000	0.033815	-0.007849	-0.132404	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	4.000000	10.000000	0.039794	-0.007076	-0.152511	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	4.000000	10.000000	0.047289	-0.005538	-0.178377	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	4.000000	10.000000	0.054075	-0.004071	-0.202038	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	4.000000	10.000000	0.069408	-0.000103	-0.256763	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	4.000000	10.000000	0.010485	0.006242	-0.062835	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	4.000000	10.000000	0.008265	0.004911	-0.055251	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	4.000000	10.000000	0.006239	0.003444	-0.048189	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	4.000000	10.000000	0.004502	0.001854	-0.041951	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	4.000000	10.000000	0.003690	0.000151	-0.038666	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	4.000000	10.000000	0.004161	-0.001492	-0.039472	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	4.000000	10.000000	0.005471	-0.003032	-0.042954	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	4.000000	10.000000	0.008463	-0.004412	-0.052024	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	4.000000	10.000000	0.012228	-0.005555	-0.063663	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	4.000000	10.000000	0.016121	-0.006501	-0.075766	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	4.000000	10.000000	0.020233	-0.007251	-0.088675	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	4.000000	10.000000	0.024588	-0.007730	-0.102508	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	4.000000	10.000000	0.029155	-0.007947	-0.117206	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	4.000000	10.000000	0.033896	-0.007821	-0.132690	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	4.000000	10.000000	0.039889	-0.007043	-0.152848	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	4.000000	10.000000	0.047391	-0.005504	-0.178744	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	4.000000	10.000000	0.054151	-0.004030	-0.202319	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	4.000000	10.000000	0.069514	-0.000203	-0.257093	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	6.000000	10.000000	-0.019054	0.008715	0.017210	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	6.000000	10.000000	-0.022667	0.006891	0.029525	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	6.000000	10.000000	-0.025966	0.004848	0.040964	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	6.000000	10.000000	-0.028866	0.002600	0.051252	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	6.000000	10.000000	-0.030707	0.000142	0.058170	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	6.000000	10.000000	-0.031163	-0.002323	0.060719	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	6.000000	10.000000	-0.030461	-0.004721	0.059607	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	6.000000	10.000000	-0.027058	-0.006957	0.049527	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	6.000000	10.000000	-0.021831	-0.008840	0.033371	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	6.000000	10.000000	-0.016327	-0.010443	0.016266	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	6.000000	10.000000	-0.010495	-0.011769	-0.002013	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	6.000000	10.000000	-0.004316	-0.012715	-0.021570	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	6.000000	10.000000	0.002243	-0.013270	-0.042601	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	6.000000	10.000000	0.009118	-0.013318	-0.064955	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	6.000000	10.000000	0.017881	-0.012399	-0.094319	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	6.000000	10.000000	0.028911	-0.010330	-0.132264	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	6.000000	10.000000	0.040409	-0.007961	-0.172358	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	6.000000	10.000000	0.048408	-0.005981	-0.200543	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	6.000000	10.000000	-0.019054	0.008715	0.017210	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	6.000000	10.000000	-0.022667	0.006891	0.029527	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	6.000000	10.000000	-0.025967	0.004848	0.040964	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	6.000000	10.000000	-0.028866	0.002601	0.051253	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	6.000000	10.000000	-0.030708	0.000143	0.058172	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	6.000000	10.000000	-0.031162	-0.002323	0.060718	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	6.000000	10.000000	-0.030460	-0.004720	0.059604	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	6.000000	10.000000	-0.027057	-0.006957	0.049523	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	6.000000	10.000000	-0.021829	-0.008839	0.033365	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	6.000000	10.000000	-0.016324	-0.010442	0.016257	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	6.000000	10.000000	-0.010491	-0.011768	-0.002025	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	6.000000	10.000000	-0.004312	-0.012713	-0.021585	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	6.000000	10.000000	0.002249	-0.013269	-0.042620	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	6.000000	10.000000	0.009125	-0.013316	-0.064980	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	6.000000	10.000000	0.017889	-0.012396	-0.094348	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	6.000000	10.000000	0.028920	-0.010328	-0.132296	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	6.000000	10.000000	0.040157	-0.008024	-0.171459	0.000000	0.000000	0.000000

&VALUE	30.000000	0.100000	2.000000	6.000000	10.000000	0.049040	-0.005818	-0.202808	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	3.000000	6.000000	10.000000	-0.019054	0.008715	0.017211	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	3.000000	6.000000	10.000000	-0.022669	0.006892	0.029531	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	3.000000	6.000000	10.000000	-0.025968	0.004849	0.040969	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	3.000000	6.000000	10.000000	-0.028866	0.002601	0.051254	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	3.000000	6.000000	10.000000	-0.030708	0.000143	0.058173	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	3.000000	6.000000	10.000000	-0.031160	-0.002322	0.060712	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	3.000000	6.000000	10.000000	-0.030452	-0.004717	0.059576	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	3.000000	6.000000	10.000000	-0.027048	-0.006954	0.049495	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	3.000000	6.000000	10.000000	-0.021815	-0.008836	0.033318	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	3.000000	6.000000	10.000000	-0.016305	-0.010436	0.016194	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	3.000000	6.000000	10.000000	-0.010467	-0.011761	-0.002109	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	3.000000	6.000000	10.000000	-0.004282	-0.012704	-0.021691	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	3.000000	6.000000	10.000000	0.002285	-0.013257	-0.042747	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	3.000000	6.000000	10.000000	0.009169	-0.013301	-0.065137	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	3.000000	6.000000	10.000000	0.017948	-0.012376	-0.094558	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	3.000000	6.000000	10.000000	0.028975	-0.010309	-0.132495	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	3.000000	6.000000	10.000000	0.039492	-0.008180	-0.169085	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	3.000000	6.000000	10.000000	0.053905	-0.004585	-0.220243	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	4.000000	6.000000	10.000000	-0.019054	0.008715	0.017213	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	4.000000	6.000000	10.000000	-0.022673	0.006893	0.029547	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	4.000000	6.000000	10.000000	-0.025974	0.004851	0.040991	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	4.000000	6.000000	10.000000	-0.028870	0.002603	0.051270	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	4.000000	6.000000	10.000000	-0.030713	0.000146	0.058192	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	4.000000	6.000000	10.000000	-0.031157	-0.002318	0.060703	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	4.000000	6.000000	10.000000	-0.030438	-0.004713	0.059532	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	4.000000	6.000000	10.000000	-0.027032	-0.006950	0.049443	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	4.000000	6.000000	10.000000	-0.021790	-0.008829	0.033234	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	4.000000	6.000000	10.000000	-0.016272	-0.010427	0.016080	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	6.000000	10.000000	-0.010422	-0.011747	-0.002261	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	6.000000	10.000000	-0.004229	-0.012689	-0.021874	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	6.000000	10.000000	0.002354	-0.013236	-0.042986	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	6.000000	10.000000	0.009259	-0.013271	-0.065453	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	6.000000	10.000000	0.018052	-0.012340	-0.094928	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	6.000000	10.000000	0.029089	-0.010272	-0.132901	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	6.000000	10.000000	0.039575	-0.008125	-0.169395	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	6.000000	10.000000	0.062063	-0.002609	-0.249434	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	6.000000	10.000000	-0.019055	0.008715	0.017214	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	6.000000	10.000000	-0.022678	0.006895	0.029567	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	6.000000	10.000000	-0.025981	0.004853	0.041018	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	6.000000	10.000000	-0.028875	0.002606	0.051290	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	6.000000	10.000000	-0.030719	0.000149	0.058217	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	6.000000	10.000000	-0.031153	-0.002314	0.060693	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	6.000000	10.000000	-0.030420	-0.004707	0.059474	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	6.000000	10.000000	-0.027012	-0.006944	0.049377	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	6.000000	10.000000	-0.021757	-0.008820	0.033124	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	6.000000	10.000000	-0.016227	-0.010414	0.015931	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	6.000000	10.000000	-0.010363	-0.011728	-0.002463	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	6.000000	10.000000	-0.004158	-0.012668	-0.022118	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	6.000000	10.000000	0.002445	-0.013207	-0.043307	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	6.000000	10.000000	0.009379	-0.013230	-0.065878	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	6.000000	10.000000	0.018192	-0.012292	-0.095426	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	6.000000	10.000000	0.029241	-0.010222	-0.133448	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	6.000000	10.000000	0.039707	-0.008067	-0.169875	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	6.000000	10.000000	0.058872	-0.003538	-0.237950	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	8.000000	10.000000	-0.046964	0.011357	0.090126	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	8.000000	10.000000	-0.052178	0.009176	0.107895	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	8.000000	10.000000	-0.056959	0.006682	0.124415	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	8.000000	10.000000	-0.061217	0.003893	0.139407	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	8.000000	10.000000	-0.064248	0.000781	0.150468	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	8.000000	10.000000	-0.065774	-0.002418	0.156811	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	1.000000	8.000000	10.000000	-0.066051	-0.005611	0.159255	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	1.000000	8.000000	10.000000	-0.063226	-0.008714	0.151441	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	1.000000	8.000000	10.000000	-0.057524	-0.011444	0.134029	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	1.000000	8.000000	10.000000	-0.050963	-0.013814	0.113734	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	1.000000	8.000000	10.000000	-0.043599	-0.015816	0.090667	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	1.000000	8.000000	10.000000	-0.035765	-0.017346	0.065909	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	1.000000	8.000000	10.000000	-0.027398	-0.018365	0.039157	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	1.000000	8.000000	10.000000	-0.018562	-0.018724	0.010524	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	1.000000	8.000000	10.000000	-0.007189	-0.017820	-0.027469	0.000000	0.000000	0.000000

eVALUE	26.000000	0.100000	1.000000	8.000000	10.000000	0.007221	-0.015397	-0.076896	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	8.000000	10.000000	0.022268	-0.012509	-0.129219	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	8.000000	10.000000	0.036191	-0.009341	-0.178263	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	8.000000	10.000000	-0.046964	0.011357	0.090126	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	8.000000	10.000000	-0.052179	0.009176	0.107897	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	8.000000	10.000000	-0.056960	0.006683	0.124418	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	8.000000	10.000000	-0.061218	0.003893	0.139409	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	8.000000	10.000000	-0.064249	0.000781	0.150471	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	8.000000	10.000000	-0.065774	-0.002417	0.156811	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	8.000000	10.000000	-0.066050	-0.005610	0.159252	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	8.000000	10.000000	-0.063225	-0.008714	0.151437	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	8.000000	10.000000	-0.057522	-0.011443	0.134022	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	8.000000	10.000000	-0.050959	-0.013813	0.113723	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	8.000000	10.000000	-0.043595	-0.015815	0.090651	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	8.000000	10.000000	-0.035760	-0.017345	0.065891	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	8.000000	10.000000	-0.027391	-0.018363	0.039134	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	8.000000	10.000000	-0.018553	-0.018721	0.010491	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	8.000000	10.000000	-0.007178	-0.017816	-0.027507	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	8.000000	10.000000	0.007232	-0.015393	-0.076938	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	8.000000	10.000000	0.022020	-0.012571	-0.128331	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	8.000000	10.000000	0.037050	-0.009129	-0.181337	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	8.000000	10.000000	-0.046965	0.011357	0.090127	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	8.000000	10.000000	-0.052181	0.009177	0.107904	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	8.000000	10.000000	-0.056962	0.006684	0.124425	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	8.000000	10.000000	-0.061219	0.003894	0.139412	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	8.000000	10.000000	-0.064250	0.000783	0.150476	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	8.000000	10.000000	-0.065773	-0.002415	0.156812	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	8.000000	10.000000	-0.066044	-0.005607	0.159234	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	8.000000	10.000000	-0.063219	-0.008711	0.151417	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	8.000000	10.000000	-0.057507	-0.011439	0.133971	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	8.000000	10.000000	-0.050936	-0.013806	0.113643	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	8.000000	10.000000	-0.043563	-0.015805	0.090545	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	8.000000	10.000000	-0.035720	-0.017333	0.065755	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	8.000000	10.000000	-0.027344	-0.018348	0.038970	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	8.000000	10.000000	-0.018495	-0.018702	0.010286	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	8.000000	10.000000	-0.007100	-0.017790	-0.027784	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	8.000000	10.000000	0.007306	-0.015369	-0.077202	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	8.000000	10.000000	0.021375	-0.012721	-0.126033	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	8.000000	10.000000	0.042897	-0.007701	-0.202264	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	8.000000	10.000000	-0.046965	0.011357	0.090129	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	8.000000	10.000000	-0.052187	0.009179	0.107928	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	8.000000	10.000000	-0.056971	0.006687	0.124458	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	8.000000	10.000000	-0.061226	0.003897	0.139440	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	8.000000	10.000000	-0.064259	0.000786	0.150510	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	8.000000	10.000000	-0.065774	-0.002411	0.156818	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	8.000000	10.000000	-0.066033	-0.005602	0.159202	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	8.000000	10.000000	-0.063207	-0.008705	0.151379	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	8.000000	10.000000	-0.057480	-0.011431	0.133882	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	8.000000	10.000000	-0.050893	-0.013794	0.113498	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	8.000000	10.000000	-0.043506	-0.015788	0.090350	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	8.000000	10.000000	-0.035653	-0.017314	0.065521	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	8.000000	10.000000	-0.027256	-0.018321	0.038662	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	8.000000	10.000000	-0.018378	-0.018663	0.009874	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	8.000000	10.000000	-0.006963	-0.017744	-0.028273	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	8.000000	10.000000	0.007456	-0.015321	-0.077738	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	8.000000	10.000000	0.021499	-0.012654	-0.126490	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	8.000000	10.000000	0.049910	-0.006043	-0.227340	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	8.000000	10.000000	-0.046966	0.011357	0.090132	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	8.000000	10.000000	-0.052195	0.009182	0.107957	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	8.000000	10.000000	-0.056982	0.006690	0.124500	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	8.000000	10.000000	-0.061236	0.003901	0.139476	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	8.000000	10.000000	-0.064271	0.000791	0.150555	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	8.000000	10.000000	-0.065775	-0.002405	0.156826	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	8.000000	10.000000	-0.066020	-0.005594	0.159162	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	8.000000	10.000000	-0.063192	-0.008697	0.151332	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	8.000000	10.000000	-0.057445	-0.011421	0.133765	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	8.000000	10.000000	-0.050836	-0.013778	0.113308	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	8.000000	10.000000	-0.043431	-0.015765	0.090092	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	8.000000	10.000000	-0.035562	-0.017288	0.065208	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	8.000000	10.000000	-0.027138	-0.018285	0.038251	0.000000	0.000000	0.000000

&VALUE	18.000000	0.100000	4.000000	10.000000	10.000000	-0.069051	-0.021477	0.159433	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	10.000000	10.000000	-0.059042	-0.023061	0.127486	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	10.000000	10.000000	-0.048411	-0.023849	0.093123	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	10.000000	10.000000	-0.034669	-0.023118	0.047344	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	10.000000	10.000000	-0.017123	-0.020528	-0.012682	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	10.000000	10.000000	0.000272	-0.017515	-0.072911	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	10.000000	10.000000	0.032541	-0.010365	-0.187148	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	10.000000	10.000000	-0.072568	0.014028	0.155329	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	10.000000	10.000000	-0.079499	0.011624	0.178984	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	10.000000	10.000000	-0.085925	0.008811	0.201162	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	10.000000	10.000000	-0.091739	0.005607	0.221529	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	10.000000	10.000000	-0.096178	0.001960	0.237467	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	10.000000	10.000000	-0.098924	-0.001869	0.248083	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	10.000000	10.000000	-0.100309	-0.005762	0.254475	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	10.000000	10.000000	-0.098308	-0.009650	0.249695	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	10.000000	10.000000	-0.093055	-0.013231	0.234096	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	10.000000	10.000000	-0.086373	-0.016438	0.213735	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	10.000000	10.000000	-0.078249	-0.019229	0.188453	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	10.000000	10.000000	-0.068943	-0.021447	0.159060	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	10.000000	10.000000	-0.058900	-0.023018	0.126991	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	10.000000	10.000000	-0.048222	-0.023788	0.092456	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	10.000000	10.000000	-0.034443	-0.023044	0.046541	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	10.000000	10.000000	-0.016873	-0.020448	-0.013577	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	10.000000	10.000000	0.000511	-0.017424	-0.073777	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	10.000000	10.000000	0.026794	-0.011838	-0.166555	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	12.000000	10.000000	-0.096055	0.016582	0.212044	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	12.000000	10.000000	-0.104790	0.014070	0.241907	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	12.000000	10.000000	-0.112951	0.011057	0.270071	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	12.000000	10.000000	-0.120438	0.007561	0.296225	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	12.000000	10.000000	-0.126472	0.003501	0.317676	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	12.000000	10.000000	-0.130687	-0.000845	0.333395	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	1.000000	12.000000	10.000000	-0.133436	-0.005342	0.344571	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	1.000000	12.000000	10.000000	-0.132511	-0.009919	0.343641	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	1.000000	12.000000	10.000000	-0.128087	-0.014283	0.331096	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	1.000000	12.000000	10.000000	-0.122112	-0.018337	0.313433	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	1.000000	12.000000	10.000000	-0.114350	-0.022012	0.289741	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	1.000000	12.000000	10.000000	-0.104654	-0.025085	0.259399	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	1.000000	12.000000	10.000000	-0.093363	-0.027375	0.223457	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	1.000000	12.000000	10.000000	-0.081226	-0.028752	0.184346	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	1.000000	12.000000	10.000000	-0.065469	-0.028391	0.132027	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	1.000000	12.000000	10.000000	-0.045154	-0.025843	0.062725	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	1.000000	12.000000	10.000000	-0.023610	-0.022444	-0.011779	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	1.000000	12.000000	10.000000	0.003543	-0.017096	-0.107226	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	2.000000	12.000000	10.000000	-0.096056	0.016582	0.212045	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	2.000000	12.000000	10.000000	-0.104791	0.014070	0.241911	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	2.000000	12.000000	10.000000	-0.112952	0.011058	0.270076	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	2.000000	12.000000	10.000000	-0.120439	0.007562	0.296231	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	2.000000	12.000000	10.000000	-0.126474	0.003501	0.317682	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	2.000000	12.000000	10.000000	-0.130688	-0.000844	0.333399	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	2.000000	12.000000	10.000000	-0.133436	-0.005341	0.344571	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	2.000000	12.000000	10.000000	-0.132511	-0.009918	0.343641	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	2.000000	12.000000	10.000000	-0.128086	-0.014282	0.331091	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	2.000000	12.000000	10.000000	-0.122108	-0.018336	0.313422	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	2.000000	12.000000	10.000000	-0.114345	-0.022010	0.289722	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	2.000000	12.000000	10.000000	-0.104647	-0.025083	0.259375	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	2.000000	12.000000	10.000000	-0.093353	-0.027372	0.223424	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	2.000000	12.000000	10.000000	-0.081213	-0.028748	0.184301	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	2.000000	12.000000	10.000000	-0.065454	-0.028386	0.131972	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	2.000000	12.000000	10.000000	-0.045137	-0.025838	0.062664	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	2.000000	12.000000	10.000000	-0.023852	-0.022504	-0.010913	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	2.000000	12.000000	10.000000	0.004322	-0.016906	-0.110015	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	3.000000	12.000000	10.000000	-0.096056	0.016582	0.212047	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	3.000000	12.000000	10.000000	-0.104795	0.014072	0.241925	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	3.000000	12.000000	10.000000	-0.112956	0.011059	0.270092	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	3.000000	12.000000	10.000000	-0.120442	0.007563	0.296241	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	3.000000	12.000000	10.000000	-0.126478	0.003504	0.317697	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	3.000000	12.000000	10.000000	-0.130693	-0.000841	0.333417	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	3.000000	12.000000	10.000000	-0.133437	-0.005336	0.344579	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	3.000000	12.000000	10.000000	-0.132511	-0.009913	0.343644	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	3.000000	12.000000	10.000000	-0.128076	-0.014276	0.331061	0.000000	0.000000	0.000000

```

&VALUE 14.000000 0.100000 3.000000 12.000000 10.000000 -0.122086 -0.018328 0.313348 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 3.000000 12.000000 10.000000 -0.114306 -0.021998 0.289589 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 3.000000 12.000000 10.000000 -0.104598 -0.025068 0.259206 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 3.000000 12.000000 10.000000 -0.093288 -0.027353 0.223197 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 3.000000 12.000000 10.000000 -0.081131 -0.028722 0.184012 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 3.000000 12.000000 10.000000 -0.065343 -0.028350 0.131578 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 3.000000 12.000000 10.000000 -0.045029 -0.025805 0.062277 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 3.000000 12.000000 10.000000 -0.024456 -0.022642 -0.008762 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 3.000000 12.000000 10.000000 0.008601 -0.015837 -0.125340 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 4.000000 12.000000 10.000000 -0.096057 0.016583 0.212051 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 4.000000 12.000000 10.000000 -0.104806 0.014075 0.241967 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 4.000000 12.000000 10.000000 -0.112973 0.011065 0.270153 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 4.000000 12.000000 10.000000 -0.120459 0.007569 0.296302 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 4.000000 12.000000 10.000000 -0.126498 0.003511 0.317772 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 4.000000 12.000000 10.000000 -0.130704 -0.000834 0.333462 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 4.000000 12.000000 10.000000 -0.133437 -0.005328 0.344584 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 4.000000 12.000000 10.000000 -0.132509 -0.009904 0.343645 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 4.000000 12.000000 10.000000 -0.128058 -0.014266 0.331004 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 4.000000 12.000000 10.000000 -0.122045 -0.018313 0.313212 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 4.000000 12.000000 10.000000 -0.114235 -0.021976 0.289346 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 4.000000 12.000000 10.000000 -0.104513 -0.025043 0.258913 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 4.000000 12.000000 10.000000 -0.093166 -0.027317 0.222770 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 4.000000 12.000000 10.000000 -0.080968 -0.028671 0.183435 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 4.000000 12.000000 10.000000 -0.065148 -0.028287 0.130883 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 4.000000 12.000000 10.000000 -0.044810 -0.025736 0.061495 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 4.000000 12.000000 10.000000 -0.024253 -0.022553 -0.009499 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 4.000000 12.000000 10.000000 0.011277 -0.015103 -0.134954 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 5.000000 12.000000 10.000000 -0.096058 0.016583 0.212055 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 5.000000 12.000000 10.000000 -0.104820 0.014080 0.242016 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 5.000000 12.000000 10.000000 -0.112994 0.011071 0.270229 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 5.000000 12.000000 10.000000 -0.120480 0.007576 0.296380 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 5.000000 12.000000 10.000000 -0.126524 0.003520 0.317869 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 5.000000 12.000000 10.000000 -0.130720 -0.000824 0.333522 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 5.000000 12.000000 10.000000 -0.133437 -0.005318 0.344592 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 5.000000 12.000000 10.000000 -0.132509 -0.009893 0.343649 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 5.000000 12.000000 10.000000 -0.128035 -0.014252 0.330932 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 5.000000 12.000000 10.000000 -0.121992 -0.018293 0.313034 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 5.000000 12.000000 10.000000 -0.114140 -0.021946 0.289025 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 5.000000 12.000000 10.000000 -0.104400 -0.025010 0.258522 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 5.000000 12.000000 10.000000 -0.093303 -0.027269 0.222201 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 5.000000 12.000000 10.000000 -0.080749 -0.028601 0.182663 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 5.000000 12.000000 10.000000 -0.064885 -0.028202 0.129947 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 5.000000 12.000000 10.000000 -0.044516 -0.025644 0.060441 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 5.000000 12.000000 10.000000 -0.023962 -0.022448 -0.010553 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 5.000000 12.000000 10.000000 0.005542 -0.016566 -0.114406 0.000000 0.000000 0.000000
*
&END

```

- DLOCE_P15.inp (elevator = +15 deg)

```

&ARG01 C PROTOCOL 0 DLOCE-XX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 0.2
&ARG12 X STABILZR 5 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG12 &ARG13 &ARG06 &FUN01 &FUN02 &FUN03 &FUN04 &FUN05 &FUN06
&UNAME AOA MACH FLAP_SET STABILZR ELEVATOR CLHTE CDHTE CMHTE CY CLL CN
&UCODE 1 2 9 5 3 0 0 0 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*CONTROL DERIVATIVE INCREMENTS
*LONGITUDINAL CONTROL EFFECTORS
&VALUE -4.000000 0.100000 1.000000 -1.200000 15.000000 0.127892 0.004362 -0.405268 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 1.000000 -1.200000 15.000000 0.128427 0.004839 -0.407123 0.000000 0.000000 0.000000

```


eVALUE	26.000000	0.100000	2.000000	2.000000	15.000000	0.117969	0.008291	-0.364428	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	2.000000	15.000000	0.108184	0.005647	-0.329525	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	2.000000	15.000000	0.098870	0.002900	-0.295748	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	2.000000	15.000000	0.142999	0.004019	-0.443682	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	2.000000	15.000000	0.143855	0.004831	-0.446668	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	2.000000	15.000000	0.144218	0.005675	-0.448139	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	2.000000	15.000000	0.144072	0.006526	-0.448012	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	2.000000	15.000000	0.143126	0.007303	-0.445338	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	2.000000	15.000000	0.142074	0.007998	-0.442374	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	2.000000	15.000000	0.140928	0.008615	-0.439135	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	2.000000	15.000000	0.139112	0.009138	-0.433649	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	2.000000	15.000000	0.136834	0.009522	-0.426589	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	2.000000	15.000000	0.134503	0.009793	-0.419288	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	2.000000	15.000000	0.132079	0.009958	-0.411598	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	2.000000	15.000000	0.129644	0.009990	-0.403783	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	2.000000	15.000000	0.127135	0.009906	-0.395609	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	2.000000	15.000000	0.124565	0.009650	-0.387099	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	2.000000	15.000000	0.121332	0.009056	-0.376088	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	2.000000	15.000000	0.117957	0.008287	-0.364386	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	2.000000	15.000000	0.109734	0.006073	-0.335075	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	2.000000	15.000000	0.099077	0.002928	-0.296485	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	2.000000	15.000000	0.142999	0.004019	-0.443683	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	2.000000	15.000000	0.143856	0.004830	-0.446671	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	2.000000	15.000000	0.144217	0.005674	-0.448137	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	2.000000	15.000000	0.144068	0.006525	-0.448001	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	2.000000	15.000000	0.143121	0.007302	-0.445323	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	2.000000	15.000000	0.142068	0.007996	-0.442354	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	2.000000	15.000000	0.140921	0.008613	-0.439111	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	2.000000	15.000000	0.139104	0.009136	-0.433622	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	2.000000	15.000000	0.136824	0.009519	-0.426554	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	2.000000	15.000000	0.134489	0.009789	-0.419242	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	2.000000	15.000000	0.132063	0.009953	-0.411541	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	2.000000	15.000000	0.129624	0.009984	-0.403714	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	2.000000	15.000000	0.127110	0.009898	-0.395523	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	2.000000	15.000000	0.124533	0.009639	-0.386988	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	2.000000	15.000000	0.121296	0.009043	-0.375960	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	2.000000	15.000000	0.117933	0.008279	-0.364299	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	2.000000	15.000000	0.110412	0.006254	-0.337497	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	2.000000	15.000000	0.096653	0.002240	-0.287782	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	2.000000	15.000000	0.142999	0.004019	-0.443683	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	2.000000	15.000000	0.143857	0.004830	-0.446675	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	2.000000	15.000000	0.144217	0.005674	-0.448135	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	2.000000	15.000000	0.144063	0.006524	-0.447987	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	2.000000	15.000000	0.143116	0.007301	-0.445305	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	2.000000	15.000000	0.142060	0.007994	-0.442330	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	2.000000	15.000000	0.140911	0.008611	-0.439080	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	2.000000	15.000000	0.139093	0.009133	-0.433586	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	2.000000	15.000000	0.136811	0.009516	-0.426510	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	2.000000	15.000000	0.134471	0.009784	-0.419181	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	2.000000	15.000000	0.132040	0.009945	-0.411466	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	2.000000	15.000000	0.129597	0.009975	-0.403622	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	2.000000	15.000000	0.127077	0.009887	-0.395407	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	2.000000	15.000000	0.124491	0.009624	-0.386837	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	2.000000	15.000000	0.121248	0.009026	-0.375787	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	2.000000	15.000000	0.117900	0.008268	-0.364182	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	2.000000	15.000000	0.110231	0.006179	-0.336839	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	2.000000	15.000000	0.092361	0.001132	-0.272388	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	4.000000	15.000000	0.039791	0.008879	-0.171669	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	4.000000	15.000000	0.037577	0.007546	-0.164107	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	4.000000	15.000000	0.035553	0.006078	-0.157053	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	4.000000	15.000000	0.033810	0.004487	-0.150795	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	4.000000	15.000000	0.032998	0.002784	-0.147513	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	4.000000	15.000000	0.033447	0.001139	-0.148246	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	4.000000	15.000000	0.034738	-0.000405	-0.151663	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	4.000000	15.000000	0.037726	-0.001785	-0.160719	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	4.000000	15.000000	0.041481	-0.002932	-0.172321	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	4.000000	15.000000	0.045357	-0.003885	-0.184364	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	4.000000	15.000000	0.049446	-0.004643	-0.197193	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	4.000000	15.000000	0.053783	-0.005126	-0.210958	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	4.000000	15.000000	0.058321	-0.005355	-0.225553	0.000000	0.000000	0.000000

&VALUE	14.000000	0.100000	4.000000	6.000000	15.000000	0.010502	-0.007803	-0.092751	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	6.000000	15.000000	0.016352	-0.009123	-0.111092	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	6.000000	15.000000	0.022545	-0.010065	-0.130706	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	6.000000	15.000000	0.029127	-0.010612	-0.151818	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	6.000000	15.000000	0.036033	-0.010647	-0.174285	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	6.000000	15.000000	0.044825	-0.009717	-0.203759	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	6.000000	15.000000	0.055862	-0.007648	-0.241733	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	6.000000	15.000000	0.066349	-0.005502	-0.278227	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	6.000000	15.000000	0.088837	0.000014	-0.358265	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	6.000000	15.000000	0.007719	0.011339	-0.091617	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	6.000000	15.000000	0.004096	0.009518	-0.079265	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	6.000000	15.000000	0.000793	0.007477	-0.067813	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	6.000000	15.000000	-0.002101	0.005230	-0.057542	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	6.000000	15.000000	-0.003945	0.002773	-0.050614	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	6.000000	15.000000	-0.004379	0.000309	-0.048139	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	6.000000	15.000000	-0.003646	-0.002083	-0.049357	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	6.000000	15.000000	-0.000238	-0.004320	-0.059454	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	6.000000	15.000000	0.005017	-0.006197	-0.075707	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	6.000000	15.000000	0.010547	-0.007790	-0.092901	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	6.000000	15.000000	0.016411	-0.009105	-0.111294	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	6.000000	15.000000	0.022616	-0.010045	-0.130950	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	6.000000	15.000000	0.029219	-0.010583	-0.152138	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	6.000000	15.000000	0.036153	-0.010607	-0.174709	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	6.000000	15.000000	0.044966	-0.009669	-0.204258	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	6.000000	15.000000	0.056015	-0.007598	-0.242280	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	6.000000	15.000000	0.066481	-0.005443	-0.278707	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	6.000000	15.000000	0.085645	-0.000915	-0.346781	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	8.000000	15.000000	-0.023034	0.013967	-0.018706	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	8.000000	15.000000	-0.028248	0.011786	-0.000937	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	8.000000	15.000000	-0.033028	0.009292	0.015583	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	8.000000	15.000000	-0.037287	0.006503	0.030575	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	8.000000	15.000000	-0.040317	0.003391	0.041636	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	8.000000	15.000000	-0.041843	0.000192	0.047980	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	1.000000	8.000000	15.000000	-0.042120	-0.003001	0.050423	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	1.000000	8.000000	15.000000	-0.039296	-0.006105	0.042609	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	1.000000	8.000000	15.000000	-0.033593	-0.008834	0.025197	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	1.000000	8.000000	15.000000	-0.027032	-0.011204	0.004903	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	1.000000	8.000000	15.000000	-0.019669	-0.013206	-0.018165	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	1.000000	8.000000	15.000000	-0.011834	-0.014736	-0.042922	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	1.000000	8.000000	15.000000	-0.003467	-0.015755	-0.069674	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	1.000000	8.000000	15.000000	0.005368	-0.016114	-0.098307	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	1.000000	8.000000	15.000000	0.016742	-0.015210	-0.136301	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	1.000000	8.000000	15.000000	0.031151	-0.012787	-0.185728	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	1.000000	8.000000	15.000000	0.046199	-0.009900	-0.238050	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	1.000000	8.000000	15.000000	0.060122	-0.006731	-0.287095	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	2.000000	8.000000	15.000000	-0.023034	0.013967	-0.018705	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	2.000000	8.000000	15.000000	-0.028248	0.011786	-0.000935	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	2.000000	8.000000	15.000000	-0.033029	0.009293	0.015586	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	2.000000	8.000000	15.000000	-0.037287	0.006503	0.030577	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	2.000000	8.000000	15.000000	-0.040318	0.003391	0.041639	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	2.000000	8.000000	15.000000	-0.041843	0.000193	0.047980	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	2.000000	8.000000	15.000000	-0.042119	-0.003001	0.050421	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	2.000000	8.000000	15.000000	-0.039295	-0.006104	0.042606	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	2.000000	8.000000	15.000000	-0.033591	-0.008834	0.025190	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	2.000000	8.000000	15.000000	-0.027029	-0.011203	0.004891	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	2.000000	8.000000	15.000000	-0.019664	-0.013205	-0.018180	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	2.000000	8.000000	15.000000	-0.011829	-0.014735	-0.042941	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	2.000000	8.000000	15.000000	-0.003460	-0.015753	-0.069698	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	2.000000	8.000000	15.000000	0.005378	-0.016111	-0.098340	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	2.000000	8.000000	15.000000	0.016753	-0.015206	-0.136339	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	2.000000	8.000000	15.000000	0.031163	-0.012783	-0.185770	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	2.000000	8.000000	15.000000	0.045950	-0.009962	-0.237162	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	2.000000	8.000000	15.000000	0.060981	-0.006519	-0.290169	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	3.000000	8.000000	15.000000	-0.023034	0.013967	-0.018704	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	3.000000	8.000000	15.000000	-0.028250	0.011787	-0.000927	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	3.000000	8.000000	15.000000	-0.033031	0.009294	0.015593	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	3.000000	8.000000	15.000000	-0.037288	0.006504	0.030580	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	3.000000	8.000000	15.000000	-0.040319	0.003392	0.041644	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	3.000000	8.000000	15.000000	-0.041843	0.000195	0.047980	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	3.000000	8.000000	15.000000	-0.042113	-0.002997	0.050403	0.000000	0.000000	0.000000

eVALUE	10.000000	0.100000	3.000000	8.000000	15.000000	-0.039288	-0.006101	0.042586	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	8.000000	15.000000	-0.033576	-0.008829	0.025140	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	8.000000	15.000000	-0.027005	-0.011196	0.004811	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	8.000000	15.000000	-0.019633	-0.013195	-0.018287	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	8.000000	15.000000	-0.011790	-0.014723	-0.043076	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	8.000000	15.000000	-0.003413	-0.015738	-0.069862	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	8.000000	15.000000	0.005436	-0.016092	-0.098545	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	8.000000	15.000000	0.016830	-0.015180	-0.136616	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	8.000000	15.000000	0.031237	-0.012760	-0.186033	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	8.000000	15.000000	0.045306	-0.010111	-0.234864	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	8.000000	15.000000	0.066828	-0.005091	-0.311095	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	8.000000	15.000000	-0.023035	0.013967	-0.018702	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	8.000000	15.000000	-0.028257	0.011789	-0.000903	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	8.000000	15.000000	-0.033040	0.009296	0.015627	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	8.000000	15.000000	-0.037295	0.006507	0.030608	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	8.000000	15.000000	-0.040328	0.003396	0.041678	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	8.000000	15.000000	-0.041843	0.000199	0.047986	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	8.000000	15.000000	-0.042103	-0.002992	0.050371	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	8.000000	15.000000	-0.039276	-0.006095	0.042548	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	8.000000	15.000000	-0.033549	-0.008821	0.025051	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	8.000000	15.000000	-0.026962	-0.011184	0.004667	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	8.000000	15.000000	-0.019576	-0.013178	-0.018481	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	8.000000	15.000000	-0.011722	-0.014704	-0.043311	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	8.000000	15.000000	-0.003325	-0.015711	-0.070169	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	8.000000	15.000000	0.005553	-0.016053	-0.098957	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	8.000000	15.000000	0.016968	-0.015134	-0.137104	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	8.000000	15.000000	0.031386	-0.012711	-0.186570	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	8.000000	15.000000	0.045430	-0.010044	-0.235322	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	8.000000	15.000000	0.073841	-0.003433	-0.336172	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	8.000000	15.000000	-0.023035	0.013967	-0.018700	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	8.000000	15.000000	-0.028264	0.011792	-0.000875	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	8.000000	15.000000	-0.033051	0.009300	0.015668	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	8.000000	15.000000	-0.037305	0.006511	0.030644	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	8.000000	15.000000	-0.040340	0.003401	0.041723	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	8.000000	15.000000	-0.041844	0.000204	0.047985	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	8.000000	15.000000	-0.042090	-0.002985	0.050331	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	8.000000	15.000000	-0.039261	-0.006088	0.042500	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	8.000000	15.000000	-0.033514	-0.008811	0.024934	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	8.000000	15.000000	-0.026906	-0.011168	0.004477	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	8.000000	15.000000	-0.019500	-0.013155	-0.018739	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	8.000000	15.000000	-0.011632	-0.014678	-0.043623	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	8.000000	15.000000	-0.003208	-0.015675	-0.070580	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	8.000000	15.000000	0.005709	-0.016002	-0.099509	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	8.000000	15.000000	0.017152	-0.015072	-0.137761	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	8.000000	15.000000	0.031588	-0.012645	-0.187293	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	8.000000	15.000000	0.045616	-0.009969	-0.235998	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	8.000000	15.000000	0.068455	-0.004847	-0.316857	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	10.000000	15.000000	-0.051535	0.016625	0.046489	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	10.000000	15.000000	-0.058445	0.014214	0.070068	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	10.000000	15.000000	-0.064861	0.011398	0.092210	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	10.000000	15.000000	-0.070680	0.008193	0.112590	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	10.000000	15.000000	-0.075111	0.004543	0.128500	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	10.000000	15.000000	-0.077878	0.000713	0.139187	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	10.000000	15.000000	-0.079295	-0.003185	0.145685	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	10.000000	15.000000	-0.077298	-0.007073	0.140920	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	10.000000	15.000000	-0.072092	-0.010660	0.125485	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	10.000000	15.000000	-0.065476	-0.013881	0.105352	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	10.000000	15.000000	-0.057419	-0.016691	0.080308	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	10.000000	15.000000	-0.048154	-0.018917	0.051066	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	10.000000	15.000000	-0.038181	-0.020515	0.019250	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	10.000000	15.000000	-0.027603	-0.021323	-0.014924	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	10.000000	15.000000	-0.013914	-0.020612	-0.060505	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	10.000000	15.000000	0.003617	-0.018024	-0.120471	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	10.000000	15.000000	0.022009	-0.014791	-0.184244	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	10.000000	15.000000	0.042868	-0.010384	-0.257670	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	10.000000	15.000000	-0.051536	0.016625	0.046490	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	10.000000	15.000000	-0.058446	0.014214	0.070071	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	10.000000	15.000000	-0.064863	0.011398	0.092215	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	10.000000	15.000000	-0.070681	0.008193	0.112593	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	10.000000	15.000000	-0.075112	0.004543	0.128504	0.000000	0.000000	0.000000

&VALUE	6.000000	0.100000	2.000000	10.000000	15.000000	-0.077878	0.000713	0.139188	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	2.000000	10.000000	15.000000	-0.079295	-0.003184	0.145683	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	2.000000	10.000000	15.000000	-0.077297	-0.007073	0.140918	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	2.000000	10.000000	15.000000	-0.072090	-0.010659	0.125479	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	2.000000	10.000000	15.000000	-0.065472	-0.013880	0.105339	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	2.000000	10.000000	15.000000	-0.057414	-0.016690	0.080290	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	2.000000	10.000000	15.000000	-0.048148	-0.018915	0.051045	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	2.000000	10.000000	15.000000	-0.038173	-0.020513	0.019221	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	2.000000	10.000000	15.000000	-0.027592	-0.021319	-0.014963	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	2.000000	10.000000	15.000000	-0.013901	-0.020607	-0.060552	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	2.000000	10.000000	15.000000	0.003631	-0.018019	-0.120522	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	2.000000	10.000000	15.000000	0.021763	-0.014852	-0.183368	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	2.000000	10.000000	15.000000	0.043781	-0.010165	-0.260935	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	3.000000	10.000000	15.000000	-0.051536	0.016625	0.046492	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	3.000000	10.000000	15.000000	-0.058449	0.014215	0.070082	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	3.000000	10.000000	15.000000	-0.064866	0.011399	0.092226	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	3.000000	10.000000	15.000000	-0.070682	0.008195	0.112600	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	3.000000	10.000000	15.000000	-0.075115	0.004545	0.128514	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	3.000000	10.000000	15.000000	-0.077880	0.000716	0.139197	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	3.000000	10.000000	15.000000	-0.079292	-0.003180	0.145677	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	3.000000	10.000000	15.000000	-0.077293	-0.007069	0.140908	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	3.000000	10.000000	15.000000	-0.072077	-0.010654	0.125437	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	3.000000	10.000000	15.000000	-0.065447	-0.013872	0.105255	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	3.000000	10.000000	15.000000	-0.057377	-0.016679	0.080163	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	3.000000	10.000000	15.000000	-0.048101	-0.018902	0.050883	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	3.000000	10.000000	15.000000	-0.038117	-0.020496	0.019024	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	3.000000	10.000000	15.000000	-0.027522	-0.021297	-0.015211	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	3.000000	10.000000	15.000000	-0.013806	-0.020576	-0.060891	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	3.000000	10.000000	15.000000	0.003722	-0.017990	-0.120850	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	3.000000	10.000000	15.000000	0.021139	-0.014996	-0.181144	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	3.000000	10.000000	15.000000	0.049348	-0.008822	-0.280851	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	4.000000	10.000000	15.000000	-0.051537	0.016625	0.046494	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	4.000000	10.000000	15.000000	-0.058458	0.014218	0.070114	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	4.000000	10.000000	15.000000	-0.064878	0.011403	0.092272	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	4.000000	10.000000	15.000000	-0.070694	0.008199	0.112643	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	4.000000	10.000000	15.000000	-0.075129	0.004550	0.128566	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	4.000000	10.000000	15.000000	-0.077886	0.000722	0.139220	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	4.000000	10.000000	15.000000	-0.079286	-0.003173	0.145661	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	4.000000	10.000000	15.000000	-0.077286	-0.007061	0.140888	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	4.000000	10.000000	15.000000	-0.072054	-0.010645	0.125362	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	4.000000	10.000000	15.000000	-0.065402	-0.013859	0.105103	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	10.000000	15.000000	-0.057308	-0.016658	0.079930	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	10.000000	15.000000	-0.048020	-0.018879	0.050602	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	10.000000	15.000000	-0.038011	-0.020464	0.018654	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	10.000000	15.000000	-0.027380	-0.021251	-0.015709	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	10.000000	15.000000	-0.013638	-0.020521	-0.061488	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	10.000000	15.000000	0.003908	-0.017931	-0.121514	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	10.000000	15.000000	0.021303	-0.014917	-0.181742	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	10.000000	15.000000	0.053571	-0.007767	-0.295979	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	10.000000	15.000000	-0.051538	0.016625	0.046497	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	10.000000	15.000000	-0.058468	0.014221	0.070153	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	10.000000	15.000000	-0.064894	0.011408	0.092330	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	10.000000	15.000000	-0.070709	0.008204	0.112698	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	10.000000	15.000000	-0.075147	0.004557	0.128635	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	10.000000	15.000000	-0.077893	0.000729	0.139252	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	10.000000	15.000000	-0.079279	-0.003165	0.145643	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	10.000000	15.000000	-0.077278	-0.007052	0.140864	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	10.000000	15.000000	-0.072024	-0.010633	0.125265	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	10.000000	15.000000	-0.065342	-0.013841	0.104904	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	10.000000	15.000000	-0.057218	-0.016631	0.079622	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	10.000000	15.000000	-0.047912	-0.018849	0.050228	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	10.000000	15.000000	-0.037869	-0.020421	0.018160	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	10.000000	15.000000	-0.027191	-0.021190	-0.016375	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	10.000000	15.000000	-0.013413	-0.020446	-0.062291	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	10.000000	15.000000	0.004158	-0.017851	-0.122408	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	10.000000	15.000000	0.021542	-0.014827	-0.182609	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	10.000000	15.000000	0.047825	-0.009240	-0.275387	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	12.000000	15.000000	-0.078149	0.019168	0.103213	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	12.000000	15.000000	-0.086883	0.016656	0.133075	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	12.000000	15.000000	-0.095044	0.013643	0.161239	0.000000	0.000000	0.000000


```

&VALUE -2.000000 0.100000 5.000000 12.000000 15.000000 -0.086913 0.016665 0.133185 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 5.000000 12.000000 15.000000 -0.095087 0.013657 0.161397 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 5.000000 12.000000 15.000000 -0.102573 0.010162 0.187549 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 5.000000 12.000000 15.000000 -0.108618 0.006106 0.209038 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 5.000000 12.000000 15.000000 -0.112813 0.001761 0.224691 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 5.000000 12.000000 15.000000 -0.115531 -0.002732 0.235760 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 5.000000 12.000000 15.000000 -0.114602 -0.007307 0.234818 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 5.000000 12.000000 15.000000 -0.110129 -0.011666 0.222100 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 5.000000 12.000000 15.000000 -0.104086 -0.015707 0.204203 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 5.000000 12.000000 15.000000 -0.096234 -0.019361 0.180193 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 5.000000 12.000000 15.000000 -0.086494 -0.022425 0.149691 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 5.000000 12.000000 15.000000 -0.075097 -0.024683 0.113369 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 5.000000 12.000000 15.000000 -0.062842 -0.026016 0.073832 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 5.000000 12.000000 15.000000 -0.046979 -0.025617 0.021116 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 5.000000 12.000000 15.000000 -0.026609 -0.023058 -0.048390 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 5.000000 12.000000 15.000000 -0.006056 -0.019862 -0.119385 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 5.000000 12.000000 15.000000 0.023449 -0.013980 -0.223238 0.000000 0.000000 0.000000

```

*
&END

• DLOCE_P20.inp (elevator = +20 deg)

```

&ARG01 C PROTOCOL 0 DLOCE-XX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 0.2
&ARG12 X STABILZR 5 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG12 &ARG13 &ARG06 &FUNG01 &FUNG02 &FUNG03 &FUNG04 &FUNG05 &FUNG06
&UNAME AOA MACH FLAP_SET STABILZR ELEVATOR CLHTE CDHTE CMHTE CY CLL CN
&UCODE 1 2 9 5 3 0 0 0 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*CONTROL DERIVATIVE INCREMENTS
*LONGITUDINAL CONTROL EFFECTORS
&VALUE -4.000000 0.100000 1.000000 -1.200000 20.000000 0.137440 0.007172 -0.436838 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 1.000000 -1.200000 20.000000 0.137974 0.007649 -0.438693 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 1.000000 -1.200000 20.000000 0.138308 0.008153 -0.439941 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 1.000000 -1.200000 20.000000 0.138395 0.008670 -0.440427 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 1.000000 -1.200000 20.000000 0.137847 0.009147 -0.438875 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 1.000000 -1.200000 20.000000 0.137235 0.009576 -0.437147 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 1.000000 -1.200000 20.000000 0.136567 0.009960 -0.435257 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 1.000000 -1.200000 20.000000 0.135507 0.010288 -0.432055 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 1.000000 -1.200000 20.000000 0.134193 0.010538 -0.427994 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 1.000000 -1.200000 20.000000 0.132835 0.010718 -0.423749 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 1.000000 -1.200000 20.000000 0.131407 0.010832 -0.419227 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 1.000000 -1.200000 20.000000 0.129981 0.010868 -0.414664 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 1.000000 -1.200000 20.000000 0.128508 0.010834 -0.409880 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 1.000000 -1.200000 20.000000 0.126995 0.010696 -0.404883 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 1.000000 -1.200000 20.000000 0.125089 0.010356 -0.398406 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 1.000000 -1.200000 20.000000 0.122761 0.009802 -0.390307 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 1.000000 -1.200000 20.000000 0.120145 0.009220 -0.381117 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 1.000000 -1.200000 20.000000 0.112224 0.006828 -0.352431 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 2.000000 -1.200000 20.000000 0.137440 0.007172 -0.436838 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 2.000000 -1.200000 20.000000 0.137975 0.007649 -0.438694 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 2.000000 -1.200000 20.000000 0.138308 0.008153 -0.439941 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 2.000000 -1.200000 20.000000 0.138395 0.008670 -0.440427 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 2.000000 -1.200000 20.000000 0.137847 0.009147 -0.438874 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 2.000000 -1.200000 20.000000 0.137235 0.009576 -0.437147 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 2.000000 -1.200000 20.000000 0.136567 0.009960 -0.435256 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 2.000000 -1.200000 20.000000 0.135506 0.010288 -0.432054 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 2.000000 -1.200000 20.000000 0.134193 0.010537 -0.427992 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 2.000000 -1.200000 20.000000 0.132834 0.010718 -0.423747 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 2.000000 -1.200000 20.000000 0.131406 0.010831 -0.419224 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 2.000000 -1.200000 20.000000 0.129980 0.010868 -0.414661 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 2.000000 -1.200000 20.000000 0.128507 0.010834 -0.409876 0.000000 0.000000 0.000000

```


eVALUE	10.000000	0.100000	4.000000	2.000000	20.000000	0.148930	0.011948	-0.465192	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	2.000000	20.000000	0.146650	0.012331	-0.458124	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	2.000000	20.000000	0.144315	0.012601	-0.450812	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	2.000000	20.000000	0.141888	0.012764	-0.443111	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	2.000000	20.000000	0.139450	0.012795	-0.435284	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	2.000000	20.000000	0.136936	0.012710	-0.427093	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	2.000000	20.000000	0.134359	0.012450	-0.418557	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	2.000000	20.000000	0.131122	0.011855	-0.407530	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	2.000000	20.000000	0.127759	0.011091	-0.395869	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	2.000000	20.000000	0.120237	0.009066	-0.369067	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	2.000000	20.000000	0.106479	0.005052	-0.319352	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	2.000000	20.000000	0.152825	0.006830	-0.475253	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	2.000000	20.000000	0.153683	0.007642	-0.478245	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	2.000000	20.000000	0.154042	0.008485	-0.479705	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	2.000000	20.000000	0.153889	0.009335	-0.479556	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	2.000000	20.000000	0.152941	0.010113	-0.476875	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	2.000000	20.000000	0.151886	0.010806	-0.473899	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	2.000000	20.000000	0.150737	0.011422	-0.470650	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	2.000000	20.000000	0.148919	0.011945	-0.465156	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	2.000000	20.000000	0.146636	0.012327	-0.458080	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	2.000000	20.000000	0.144297	0.012596	-0.450751	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	2.000000	20.000000	0.141866	0.012757	-0.443035	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	2.000000	20.000000	0.139423	0.012787	-0.435192	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	2.000000	20.000000	0.136903	0.012699	-0.426977	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	2.000000	20.000000	0.134317	0.012435	-0.418407	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	2.000000	20.000000	0.131073	0.011838	-0.407357	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	2.000000	20.000000	0.127726	0.011079	-0.395751	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	2.000000	20.000000	0.120057	0.008991	-0.368409	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	2.000000	20.000000	0.102187	0.003944	-0.303958	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	4.000000	20.000000	0.047879	0.011678	-0.203238	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	4.000000	20.000000	0.045664	0.010344	-0.195677	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	4.000000	20.000000	0.043640	0.008877	-0.188623	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	4.000000	20.000000	0.041897	0.007286	-0.182365	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	4.000000	20.000000	0.041086	0.005582	-0.179083	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	4.000000	20.000000	0.041524	0.003938	-0.179816	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	4.000000	20.000000	0.042825	0.002394	-0.183233	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	4.000000	20.000000	0.045814	0.001014	-0.192288	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	4.000000	20.000000	0.049568	-0.000134	-0.203891	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	4.000000	20.000000	0.053444	-0.001086	-0.215934	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	4.000000	20.000000	0.057533	-0.001845	-0.228763	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	4.000000	20.000000	0.061870	-0.002328	-0.242527	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	4.000000	20.000000	0.066408	-0.002556	-0.257123	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	4.000000	20.000000	0.071112	-0.002446	-0.272469	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	4.000000	20.000000	0.077071	-0.001681	-0.292501	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	4.000000	20.000000	0.084563	-0.000142	-0.318353	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	4.000000	20.000000	0.092367	0.001550	-0.345637	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	4.000000	20.000000	0.096544	0.002703	-0.360397	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	4.000000	20.000000	0.047878	0.011678	-0.203238	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	4.000000	20.000000	0.045664	0.010344	-0.195676	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	4.000000	20.000000	0.043640	0.008877	-0.188622	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	4.000000	20.000000	0.041897	0.007286	-0.182364	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	4.000000	20.000000	0.041085	0.005582	-0.179082	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	4.000000	20.000000	0.041535	0.003938	-0.179817	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	4.000000	20.000000	0.042826	0.002394	-0.183236	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	4.000000	20.000000	0.045815	0.001014	-0.192292	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	4.000000	20.000000	0.049570	-0.000133	-0.203896	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	4.000000	20.000000	0.053446	-0.001085	-0.215940	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	4.000000	20.000000	0.057536	-0.001844	-0.228771	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	4.000000	20.000000	0.061872	-0.002327	-0.242537	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	4.000000	20.000000	0.066412	-0.002555	-0.257136	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	4.000000	20.000000	0.071117	-0.002445	-0.272486	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	4.000000	20.000000	0.077077	-0.001679	-0.292521	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	4.000000	20.000000	0.084569	-0.000140	-0.318375	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	4.000000	20.000000	0.092112	0.001486	-0.344727	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	4.000000	20.000000	0.096872	0.002794	-0.361578	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	4.000000	20.000000	0.047878	0.011678	-0.203238	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	4.000000	20.000000	0.045663	0.010345	-0.195673	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	4.000000	20.000000	0.043639	0.008877	-0.188620	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	4.000000	20.000000	0.041898	0.007286	-0.182365	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	4.000000	20.000000	0.041086	0.005583	-0.179083	0.000000	0.000000	0.000000

&VALUE	6.000000	0.100000	3.000000	4.000000	20.000000	0.041538	0.003939	-0.179828	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	3.000000	4.000000	20.000000	0.042834	0.002396	-0.183261	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	3.000000	4.000000	20.000000	0.045823	0.001016	-0.192318	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	3.000000	4.000000	20.000000	0.049579	-0.000131	-0.203929	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	3.000000	4.000000	20.000000	0.053460	-0.001082	-0.215985	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	3.000000	4.000000	20.000000	0.057553	-0.001838	-0.228830	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	3.000000	4.000000	20.000000	0.061894	-0.002320	-0.242611	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	3.000000	4.000000	20.000000	0.066437	-0.002547	-0.257223	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	3.000000	4.000000	20.000000	0.071147	-0.002434	-0.272592	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	3.000000	4.000000	20.000000	0.077117	-0.001665	-0.292663	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	3.000000	4.000000	20.000000	0.084606	-0.000127	-0.318508	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	3.000000	4.000000	20.000000	0.091426	0.001323	-0.342276	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	3.000000	4.000000	20.000000	0.099899	0.003598	-0.372438	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	4.000000	4.000000	20.000000	0.047878	0.011678	-0.203237	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	4.000000	4.000000	20.000000	0.045660	0.010346	-0.195663	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	4.000000	4.000000	20.000000	0.043636	0.008878	-0.188607	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	4.000000	4.000000	20.000000	0.041896	0.007287	-0.182360	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	4.000000	4.000000	20.000000	0.041084	0.005585	-0.179076	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	4.000000	4.000000	20.000000	0.041545	0.003941	-0.179848	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	4.000000	4.000000	20.000000	0.042847	0.002399	-0.183303	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	4.000000	4.000000	20.000000	0.045837	0.001019	-0.192365	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	4.000000	4.000000	20.000000	0.049597	-0.000126	-0.203987	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	4.000000	4.000000	20.000000	0.053483	0.001075	-0.216063	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	4.000000	4.000000	20.000000	0.057584	-0.001829	-0.228936	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	4.000000	4.000000	20.000000	0.061931	-0.002309	-0.242739	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	4.000000	4.000000	20.000000	0.066484	-0.002532	-0.257387	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	4.000000	4.000000	20.000000	0.071208	-0.002414	-0.272805	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	4.000000	4.000000	20.000000	0.077187	-0.001641	-0.292912	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	4.000000	4.000000	20.000000	0.084682	-0.000102	-0.318779	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	4.000000	4.000000	20.000000	0.091468	0.001365	-0.342440	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	4.000000	4.000000	20.000000	0.106801	0.005332	-0.397165	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	5.000000	4.000000	20.000000	0.047878	0.011678	-0.203236	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	5.000000	4.000000	20.000000	0.045657	0.010347	-0.195652	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	5.000000	4.000000	20.000000	0.043631	0.008880	-0.188590	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	5.000000	4.000000	20.000000	0.041895	0.007289	-0.182353	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	5.000000	4.000000	20.000000	0.041082	0.005587	-0.179067	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	5.000000	4.000000	20.000000	0.041553	0.003944	-0.179873	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	5.000000	4.000000	20.000000	0.042863	0.002404	-0.183356	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	5.000000	4.000000	20.000000	0.045855	0.001024	-0.192426	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	5.000000	4.000000	20.000000	0.049620	-0.000120	-0.204064	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	5.000000	4.000000	20.000000	0.053514	-0.001066	-0.216167	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	5.000000	4.000000	20.000000	0.057625	-0.001815	-0.229077	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	5.000000	4.000000	20.000000	0.061980	-0.002295	-0.242909	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	5.000000	4.000000	20.000000	0.066547	-0.002512	-0.257607	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	5.000000	4.000000	20.000000	0.071289	-0.002386	-0.273091	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	5.000000	4.000000	20.000000	0.077281	-0.001608	-0.293249	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	5.000000	4.000000	20.000000	0.084784	-0.000068	-0.319145	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	5.000000	4.000000	20.000000	0.091544	0.001406	-0.342720	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	5.000000	4.000000	20.000000	0.106907	0.005233	-0.397495	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	1.000000	6.000000	20.000000	0.015109	0.014132	-0.123191	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	1.000000	6.000000	20.000000	0.011496	0.012308	-0.110876	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	1.000000	6.000000	20.000000	0.008196	0.010265	-0.099439	0.000000	0.000000	0.000000
&VALUE	2.000000	0.100000	1.000000	6.000000	20.000000	0.005297	0.008018	-0.089149	0.000000	0.000000	0.000000
&VALUE	4.000000	0.100000	1.000000	6.000000	20.000000	0.003455	0.005560	-0.082231	0.000000	0.000000	0.000000
&VALUE	6.000000	0.100000	1.000000	6.000000	20.000000	0.003000	0.003094	-0.079683	0.000000	0.000000	0.000000
&VALUE	8.000000	0.100000	1.000000	6.000000	20.000000	0.003701	0.000697	-0.080794	0.000000	0.000000	0.000000
&VALUE	10.000000	0.100000	1.000000	6.000000	20.000000	0.007104	-0.001540	-0.090874	0.000000	0.000000	0.000000
&VALUE	12.000000	0.100000	1.000000	6.000000	20.000000	0.012331	-0.003422	-0.107030	0.000000	0.000000	0.000000
&VALUE	14.000000	0.100000	1.000000	6.000000	20.000000	0.017836	-0.005025	-0.124135	0.000000	0.000000	0.000000
&VALUE	16.000000	0.100000	1.000000	6.000000	20.000000	0.023668	-0.006352	-0.142414	0.000000	0.000000	0.000000
&VALUE	18.000000	0.100000	1.000000	6.000000	20.000000	0.029846	-0.007297	-0.161972	0.000000	0.000000	0.000000
&VALUE	20.000000	0.100000	1.000000	6.000000	20.000000	0.036406	-0.007853	-0.183003	0.000000	0.000000	0.000000
&VALUE	22.000000	0.100000	1.000000	6.000000	20.000000	0.043280	-0.007901	-0.205356	0.000000	0.000000	0.000000
&VALUE	24.000000	0.100000	1.000000	6.000000	20.000000	0.052043	-0.006981	-0.234720	0.000000	0.000000	0.000000
&VALUE	26.000000	0.100000	1.000000	6.000000	20.000000	0.063073	-0.004913	-0.272666	0.000000	0.000000	0.000000
&VALUE	28.000000	0.100000	1.000000	6.000000	20.000000	0.074571	-0.002543	-0.312759	0.000000	0.000000	0.000000
&VALUE	30.000000	0.100000	1.000000	6.000000	20.000000	0.082570	-0.000564	-0.340944	0.000000	0.000000	0.000000
*											
&VALUE	-4.000000	0.100000	2.000000	6.000000	20.000000	0.015109	0.014132	-0.123191	0.000000	0.000000	0.000000
&VALUE	-2.000000	0.100000	2.000000	6.000000	20.000000	0.011495	0.012308	-0.110875	0.000000	0.000000	0.000000
&VALUE	0.000000	0.100000	2.000000	6.000000	20.000000	0.008196	0.010266	-0.099437	0.000000	0.000000	0.000000

eVALUE	2.000000	0.100000	2.000000	6.000000	20.000000	0.005296	0.008019	-0.089148	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	6.000000	20.000000	0.003455	0.005560	-0.082230	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	6.000000	20.000000	0.003000	0.003095	-0.079684	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	6.000000	20.000000	0.003702	0.000697	-0.080798	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	6.000000	20.000000	0.007105	-0.001539	-0.090878	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	6.000000	20.000000	0.012333	-0.003422	-0.107037	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	6.000000	20.000000	0.017838	-0.005024	-0.124145	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	6.000000	20.000000	0.023671	-0.006351	-0.142427	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	6.000000	20.000000	0.029850	-0.007296	-0.161986	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	6.000000	20.000000	0.036411	-0.007851	-0.183021	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	6.000000	20.000000	0.043287	-0.007898	-0.205381	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	2.000000	6.000000	20.000000	0.052051	-0.006978	-0.234749	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	2.000000	6.000000	20.000000	0.063082	-0.004910	-0.272697	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	2.000000	6.000000	20.000000	0.074320	-0.002606	-0.311860	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	2.000000	6.000000	20.000000	0.083202	-0.000400	-0.343210	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	3.000000	6.000000	20.000000	0.015109	0.014133	-0.123190	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	3.000000	6.000000	20.000000	0.011494	0.012309	-0.110870	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	3.000000	6.000000	20.000000	0.008195	0.010266	-0.099433	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	3.000000	6.000000	20.000000	0.005296	0.008019	-0.089147	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	3.000000	6.000000	20.000000	0.003454	0.005561	-0.082228	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	3.000000	6.000000	20.000000	0.003002	0.003095	-0.079689	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	3.000000	6.000000	20.000000	0.003711	0.000700	-0.080825	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	3.000000	6.000000	20.000000	0.007114	-0.001537	-0.090907	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	3.000000	6.000000	20.000000	0.012347	-0.003418	-0.107083	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	3.000000	6.000000	20.000000	0.017857	-0.005019	-0.124208	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	3.000000	6.000000	20.000000	0.023696	-0.006343	-0.142510	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	3.000000	6.000000	20.000000	0.029881	-0.007287	-0.162092	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	3.000000	6.000000	20.000000	0.036447	-0.007840	-0.183149	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	3.000000	6.000000	20.000000	0.043332	-0.007884	-0.205538	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	3.000000	6.000000	20.000000	0.052110	-0.006958	-0.234959	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	3.000000	6.000000	20.000000	0.063138	-0.004892	-0.272897	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	3.000000	6.000000	20.000000	0.073654	-0.002762	-0.309486	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	6.000000	20.000000	0.088068	0.000833	-0.360645	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	6.000000	20.000000	0.015108	0.014133	-0.123189	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	6.000000	20.000000	0.011490	0.012310	-0.110854	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	6.000000	20.000000	0.008189	0.010268	-0.099411	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	6.000000	20.000000	0.005292	0.008021	-0.089132	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	6.000000	20.000000	0.003449	0.005564	-0.082209	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	6.000000	20.000000	0.003005	0.003099	-0.079698	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	6.000000	20.000000	0.003725	0.000705	-0.080870	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	6.000000	20.000000	0.007130	-0.001532	-0.090958	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	6.000000	20.000000	0.012373	-0.003412	-0.107167	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	6.000000	20.000000	0.017891	-0.005009	-0.124321	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	6.000000	20.000000	0.023740	-0.006329	-0.142662	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	6.000000	20.000000	0.029934	-0.007271	-0.162275	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	6.000000	20.000000	0.036516	-0.007818	-0.183388	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	6.000000	20.000000	0.043421	-0.007853	-0.205855	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	6.000000	20.000000	0.052214	-0.006923	-0.235329	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	6.000000	20.000000	0.063251	-0.004854	-0.273302	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	6.000000	20.000000	0.073737	-0.002708	-0.309797	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	6.000000	20.000000	0.096225	0.002808	-0.389835	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	6.000000	20.000000	0.015108	0.014133	-0.123187	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	6.000000	20.000000	0.011484	0.012312	-0.110835	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	6.000000	20.000000	0.008181	0.010270	-0.099383	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	6.000000	20.000000	0.005287	0.008024	-0.089112	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	6.000000	20.000000	0.003443	0.005567	-0.082184	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	6.000000	20.000000	0.003010	0.003103	-0.079709	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	6.000000	20.000000	0.003743	0.000710	-0.080927	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	6.000000	20.000000	0.007150	-0.001526	-0.091024	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	6.000000	20.000000	0.012405	-0.003403	-0.107277	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	6.000000	20.000000	0.017935	-0.004996	-0.124471	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	6.000000	20.000000	0.023799	-0.006311	-0.142864	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	6.000000	20.000000	0.030004	-0.007251	-0.162520	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	6.000000	20.000000	0.036608	-0.007789	-0.183708	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	6.000000	20.000000	0.043542	-0.007813	-0.206279	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	6.000000	20.000000	0.052354	-0.006875	-0.235828	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	6.000000	20.000000	0.063404	-0.004804	-0.273850	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	6.000000	20.000000	0.073869	-0.002649	-0.310276	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	6.000000	20.000000	0.093034	0.001879	-0.378351	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	8.000000	20.000000	-0.016430	0.016756	-0.050276	0.000000	0.000000	0.000000

eVALUE	28.000000	0.100000	3.000000	10.000000	20.000000	0.026943	-0.012211	-0.212714	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	3.000000	10.000000	20.000000	0.055151	-0.006037	-0.312420	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	4.000000	10.000000	20.000000	-0.045733	0.019410	0.014924	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	4.000000	10.000000	20.000000	-0.052654	0.017003	0.038545	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	4.000000	10.000000	20.000000	-0.059075	0.014188	0.060702	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	4.000000	10.000000	20.000000	-0.064890	0.010984	0.081073	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	4.000000	10.000000	20.000000	-0.069325	0.007335	0.096997	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	4.000000	10.000000	20.000000	-0.072082	0.003507	0.107650	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	4.000000	10.000000	20.000000	-0.073482	-0.000388	0.114091	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	4.000000	10.000000	20.000000	-0.071483	-0.004276	0.109318	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	4.000000	10.000000	20.000000	-0.066250	-0.007860	0.093792	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	4.000000	10.000000	20.000000	-0.059598	-0.011074	0.073534	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	4.000000	10.000000	20.000000	-0.051505	-0.013873	0.048360	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	4.000000	10.000000	20.000000	-0.042216	-0.016094	0.019032	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	4.000000	10.000000	20.000000	-0.032207	-0.017679	-0.012915	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	4.000000	10.000000	20.000000	-0.021577	-0.018466	-0.047279	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	4.000000	10.000000	20.000000	-0.007835	-0.017736	-0.093057	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	4.000000	10.000000	20.000000	0.009711	-0.015146	-0.153084	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	4.000000	10.000000	20.000000	0.027106	-0.012132	-0.213312	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	4.000000	10.000000	20.000000	0.059375	-0.004982	-0.327549	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	5.000000	10.000000	20.000000	-0.045734	0.019410	0.014928	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	5.000000	10.000000	20.000000	-0.052665	0.017006	0.038583	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	5.000000	10.000000	20.000000	-0.059091	0.014193	0.060760	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	5.000000	10.000000	20.000000	-0.064905	0.010989	0.081128	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	5.000000	10.000000	20.000000	-0.069344	0.007342	0.097065	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	5.000000	10.000000	20.000000	-0.072090	0.003514	0.107682	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	5.000000	10.000000	20.000000	-0.073475	-0.000380	0.114073	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	5.000000	10.000000	20.000000	-0.071474	-0.004267	0.109294	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	5.000000	10.000000	20.000000	-0.066221	-0.007848	0.093695	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	5.000000	10.000000	20.000000	-0.059539	-0.011056	0.073334	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	5.000000	10.000000	20.000000	-0.051415	-0.013846	0.048052	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	5.000000	10.000000	20.000000	-0.042108	-0.016064	0.018658	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	5.000000	10.000000	20.000000	-0.032066	-0.017636	-0.013410	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	5.000000	10.000000	20.000000	-0.021388	-0.018405	-0.047945	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	5.000000	10.000000	20.000000	-0.007609	-0.017661	-0.093860	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	5.000000	10.000000	20.000000	0.009961	-0.015066	-0.153978	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	5.000000	10.000000	20.000000	0.027346	-0.012042	-0.214179	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	5.000000	10.000000	20.000000	0.053628	-0.006455	-0.306957	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	1.000000	12.000000	20.000000	-0.073208	0.021949	0.071643	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	1.000000	12.000000	20.000000	-0.081942	0.019437	0.101505	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	1.000000	12.000000	20.000000	-0.090103	0.016424	0.129669	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	1.000000	12.000000	20.000000	-0.097590	0.012928	0.155824	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	1.000000	12.000000	20.000000	-0.103624	0.008868	0.177274	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	1.000000	12.000000	20.000000	-0.107839	0.004522	0.192994	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	1.000000	12.000000	20.000000	-0.110589	0.000025	0.204170	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	1.000000	12.000000	20.000000	-0.109663	-0.004552	0.203240	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	1.000000	12.000000	20.000000	-0.105239	-0.008916	0.190695	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	1.000000	12.000000	20.000000	-0.099264	-0.012970	0.173032	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	1.000000	12.000000	20.000000	-0.091503	-0.016645	0.149339	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	1.000000	12.000000	20.000000	-0.081806	-0.019718	0.118997	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	1.000000	12.000000	20.000000	-0.070515	-0.022008	0.083056	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	1.000000	12.000000	20.000000	-0.058378	-0.023385	0.043945	0.000000	0.000000	0.000000
eVALUE	24.000000	0.100000	1.000000	12.000000	20.000000	-0.042622	-0.023024	-0.008375	0.000000	0.000000	0.000000
eVALUE	26.000000	0.100000	1.000000	12.000000	20.000000	-0.022306	-0.020476	-0.077677	0.000000	0.000000	0.000000
eVALUE	28.000000	0.100000	1.000000	12.000000	20.000000	-0.000762	-0.017077	-0.152180	0.000000	0.000000	0.000000
eVALUE	30.000000	0.100000	1.000000	12.000000	20.000000	0.026391	-0.011729	-0.247627	0.000000	0.000000	0.000000
*											
eVALUE	-4.000000	0.100000	2.000000	12.000000	20.000000	-0.073208	0.021949	0.071644	0.000000	0.000000	0.000000
eVALUE	-2.000000	0.100000	2.000000	12.000000	20.000000	-0.081943	0.019437	0.101509	0.000000	0.000000	0.000000
eVALUE	0.000000	0.100000	2.000000	12.000000	20.000000	-0.090104	0.016425	0.129675	0.000000	0.000000	0.000000
eVALUE	2.000000	0.100000	2.000000	12.000000	20.000000	-0.097592	0.012929	0.155829	0.000000	0.000000	0.000000
eVALUE	4.000000	0.100000	2.000000	12.000000	20.000000	-0.103626	0.008868	0.177280	0.000000	0.000000	0.000000
eVALUE	6.000000	0.100000	2.000000	12.000000	20.000000	-0.107840	0.004523	0.192997	0.000000	0.000000	0.000000
eVALUE	8.000000	0.100000	2.000000	12.000000	20.000000	-0.110589	0.000026	0.204170	0.000000	0.000000	0.000000
eVALUE	10.000000	0.100000	2.000000	12.000000	20.000000	-0.109663	-0.004551	0.203240	0.000000	0.000000	0.000000
eVALUE	12.000000	0.100000	2.000000	12.000000	20.000000	-0.105238	-0.008915	0.190690	0.000000	0.000000	0.000000
eVALUE	14.000000	0.100000	2.000000	12.000000	20.000000	-0.099261	-0.012969	0.173021	0.000000	0.000000	0.000000
eVALUE	16.000000	0.100000	2.000000	12.000000	20.000000	-0.091497	-0.016643	0.149320	0.000000	0.000000	0.000000
eVALUE	18.000000	0.100000	2.000000	12.000000	20.000000	-0.081799	-0.019716	0.118974	0.000000	0.000000	0.000000
eVALUE	20.000000	0.100000	2.000000	12.000000	20.000000	-0.070505	-0.022005	0.083023	0.000000	0.000000	0.000000
eVALUE	22.000000	0.100000	2.000000	12.000000	20.000000	-0.058365	-0.023381	0.043899	0.000000	0.000000	0.000000

```

&VALUE 24.000000 0.100000 2.000000 12.000000 20.000000 -0.042606 -0.023019 -0.008429 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 2.000000 12.000000 20.000000 -0.022289 -0.020471 -0.077738 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 2.000000 12.000000 20.000000 -0.001004 -0.017137 -0.151314 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 2.000000 12.000000 20.000000 0.027170 -0.011539 -0.250417 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 3.000000 12.000000 20.000000 -0.073208 0.021949 0.071646 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 3.000000 12.000000 20.000000 -0.081947 0.019438 0.101524 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 3.000000 12.000000 20.000000 -0.090108 0.016426 0.129690 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 3.000000 12.000000 20.000000 -0.097594 0.012930 0.155840 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 3.000000 12.000000 20.000000 -0.103630 0.008871 0.177296 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 3.000000 12.000000 20.000000 -0.107845 0.004526 0.193015 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 3.000000 12.000000 20.000000 -0.110590 0.000031 0.204177 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 3.000000 12.000000 20.000000 -0.109663 -0.004546 0.203242 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 3.000000 12.000000 20.000000 -0.105228 -0.008909 0.190659 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 3.000000 12.000000 20.000000 -0.099238 -0.012961 0.172946 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 3.000000 12.000000 20.000000 -0.091458 -0.016631 0.149188 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 3.000000 12.000000 20.000000 -0.081750 -0.019701 0.118805 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 3.000000 12.000000 20.000000 -0.070440 -0.021986 0.082795 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 3.000000 12.000000 20.000000 -0.058284 -0.023355 0.043611 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 3.000000 12.000000 20.000000 -0.042496 -0.022983 -0.008823 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 3.000000 12.000000 20.000000 -0.022181 -0.020438 -0.078124 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 3.000000 12.000000 20.000000 -0.001608 -0.017275 -0.149163 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 3.000000 12.000000 20.000000 0.031449 -0.010470 -0.265741 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 4.000000 12.000000 20.000000 -0.073209 0.021949 0.071649 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 4.000000 12.000000 20.000000 -0.081958 0.019442 0.101565 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 4.000000 12.000000 20.000000 -0.090125 0.016431 0.129751 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 4.000000 12.000000 20.000000 -0.097611 0.012936 0.155901 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 4.000000 12.000000 20.000000 -0.103650 0.008878 0.177371 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 4.000000 12.000000 20.000000 -0.107856 0.004533 0.193061 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 4.000000 12.000000 20.000000 -0.110589 0.000039 0.204182 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 4.000000 12.000000 20.000000 -0.109662 -0.004538 0.203244 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 4.000000 12.000000 20.000000 -0.105210 -0.008899 0.190603 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 4.000000 12.000000 20.000000 -0.099198 -0.012946 0.172811 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 4.000000 12.000000 20.000000 -0.091387 -0.016609 0.148945 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 4.000000 12.000000 20.000000 -0.081665 -0.019676 0.118511 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 4.000000 12.000000 20.000000 -0.070318 -0.021950 0.082369 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 4.000000 12.000000 20.000000 -0.058120 -0.023304 0.043034 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 4.000000 12.000000 20.000000 -0.042300 -0.022920 -0.009519 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 4.000000 12.000000 20.000000 -0.021962 -0.020369 -0.078907 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 4.000000 12.000000 20.000000 -0.001406 -0.017186 -0.149900 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 4.000000 12.000000 20.000000 0.034125 -0.009736 -0.275355 0.000000 0.000000 0.000000
*
&VALUE -4.000000 0.100000 5.000000 12.000000 20.000000 -0.073211 0.021950 0.071653 0.000000 0.000000 0.000000
&VALUE -2.000000 0.100000 5.000000 12.000000 20.000000 -0.081972 0.019447 0.101615 0.000000 0.000000 0.000000
&VALUE 0.000000 0.100000 5.000000 12.000000 20.000000 -0.090146 0.016438 0.129827 0.000000 0.000000 0.000000
&VALUE 2.000000 0.100000 5.000000 12.000000 20.000000 -0.097632 0.012943 0.155979 0.000000 0.000000 0.000000
&VALUE 4.000000 0.100000 5.000000 12.000000 20.000000 -0.103677 0.008887 0.177468 0.000000 0.000000 0.000000
&VALUE 6.000000 0.100000 5.000000 12.000000 20.000000 -0.107872 0.004542 0.193121 0.000000 0.000000 0.000000
&VALUE 8.000000 0.100000 5.000000 12.000000 20.000000 -0.110589 0.000049 0.204191 0.000000 0.000000 0.000000
&VALUE 10.000000 0.100000 5.000000 12.000000 20.000000 -0.109661 -0.004526 0.203248 0.000000 0.000000 0.000000
&VALUE 12.000000 0.100000 5.000000 12.000000 20.000000 -0.105188 -0.008885 0.190530 0.000000 0.000000 0.000000
&VALUE 14.000000 0.100000 5.000000 12.000000 20.000000 -0.099145 -0.012926 0.172633 0.000000 0.000000 0.000000
&VALUE 16.000000 0.100000 5.000000 12.000000 20.000000 -0.091293 -0.016579 0.148623 0.000000 0.000000 0.000000
&VALUE 18.000000 0.100000 5.000000 12.000000 20.000000 -0.081552 -0.019644 0.118121 0.000000 0.000000 0.000000
&VALUE 20.000000 0.100000 5.000000 12.000000 20.000000 -0.070155 -0.021902 0.081800 0.000000 0.000000 0.000000
&VALUE 22.000000 0.100000 5.000000 12.000000 20.000000 -0.057901 -0.023235 0.042262 0.000000 0.000000 0.000000
&VALUE 24.000000 0.100000 5.000000 12.000000 20.000000 -0.042037 -0.022836 -0.010454 0.000000 0.000000 0.000000
&VALUE 26.000000 0.100000 5.000000 12.000000 20.000000 -0.021668 -0.020277 -0.079960 0.000000 0.000000 0.000000
&VALUE 28.000000 0.100000 5.000000 12.000000 20.000000 -0.001114 -0.017081 -0.150954 0.000000 0.000000 0.000000
&VALUE 30.000000 0.100000 5.000000 12.000000 20.000000 0.028390 -0.011199 -0.254808 0.000000 0.000000 0.000000
*
&END
&END

```

- KLOCE.inp (mach correction for elevator)

```

&ARG01 C PROTOCOL 0 DLOCE-XX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0 0
&ARG06 X ELEVATOR 3 0 0

```

```

&ARG07      X      RUDDER      10      0.0
&ARG08      X      AILERON      4      0.0
&ARG09      X      SIDESLIP     11      0.0
&ARG10      X      AOA          1      REF. BELOW
&ARG11      X      MACH         2      REF. BELOW
*
&SNAME      &ARG10      &ARG11      &ARG04      &FUN01      &FUN02      &FUN03
&UNAME      AOA          MACH          FLAP_SET   KCLIHT     KCDIHT     KCMIHT
&UCODE      1          2          9          0          0          0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*LONGITUDINAL CONTROL EFFECTOR
*
&VALUE      -4.000000  0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      -2.000000  0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      0.000000  0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      2.000000  0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      4.000000  0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      6.000000  0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      8.000000  0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      10.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      12.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      14.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      16.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      18.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      20.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      22.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      24.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      26.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      28.000000 0.100000  1.000000  1.000000  1.000000  1.000000
&VALUE      30.000000 0.100000  1.000000  1.000000  1.000000  1.000000
*
&VALUE      -4.000000  0.200000  1.000000  1.000601  1.125952  1.003502
&VALUE      -2.000000  0.200000  1.000000  0.987076  1.129500  1.006940
&VALUE      0.000000  0.200000  1.000000  0.992801  1.125377  1.020298
&VALUE      2.000000  0.200000  1.000000  0.994078  1.117438  0.983773
&VALUE      4.000000  0.200000  1.000000  0.994787  1.110286  0.994479
&VALUE      6.000000  0.200000  1.000000  0.995324  1.104909  0.996595
&VALUE      8.000000  0.200000  1.000000  0.995752  1.100935  0.997534
&VALUE      10.000000 0.200000  1.000000  0.996104  1.098035  0.998077
&VALUE      12.000000 0.200000  1.000000  0.996407  1.095868  0.998370
&VALUE      14.000000 0.200000  1.000000  0.996705  1.093173  0.998634
&VALUE      16.000000 0.200000  1.000000  0.996999  1.089779  0.998961
&VALUE      18.000000 0.200000  1.000000  0.997303  1.085837  0.999317
&VALUE      20.000000 0.200000  1.000000  0.997583  1.081402  0.999609
&VALUE      22.000000 0.200000  1.000000  0.998810  1.077806  1.006249
&VALUE      24.000000 0.200000  1.000000  1.004382  1.077294  1.005057
&VALUE      26.000000 0.200000  1.000000  1.002487  1.059668  1.006753
&VALUE      28.000000 0.200000  1.000000  0.993312  1.042734  1.002665
&VALUE      30.000000 0.200000  1.000000  0.983317  1.029253  0.996554
*
&VALUE      -4.000000  0.300000  1.000000  1.005485  1.155877  1.000483
&VALUE      -2.000000  0.300000  1.000000  0.965318  1.156219  1.024292
&VALUE      0.000000  0.300000  1.000000  0.983028  1.147434  1.071248
&VALUE      2.000000  0.300000  1.000000  0.987803  1.136717  0.952337
&VALUE      4.000000  0.300000  1.000000  0.990978  1.129699  0.986726
&VALUE      6.000000  0.300000  1.000000  0.993917  1.126260  0.995130
&VALUE      8.000000  0.300000  1.000000  0.996557  1.125168  0.999782
&VALUE      10.000000 0.300000  1.000000  0.998939  1.125477  1.003033
&VALUE      12.000000 0.300000  1.000000  1.001298  1.126845  1.005879
&VALUE      14.000000 0.300000  1.000000  1.003671  1.127366  1.008678
&VALUE      16.000000 0.300000  1.000000  1.006073  1.126683  1.011998
&VALUE      18.000000 0.300000  1.000000  1.008485  1.124894  1.014956
&VALUE      20.000000 0.300000  1.000000  1.011809  1.123662  1.019149
&VALUE      22.000000 0.300000  1.000000  1.019937  1.128982  1.033186
&VALUE      24.000000 0.300000  1.000000  1.065159  1.176190  1.033695
&VALUE      26.000000 0.300000  1.000000  1.039352  1.101304  1.057732
&VALUE      28.000000 0.300000  1.000000  1.013483  1.071127  1.061759
&VALUE      30.000000 0.300000  1.000000  0.974257  1.034964  1.091302
*
&VALUE      -4.000000  0.400000  1.000000  1.010953  1.165887  0.999308
&VALUE      -2.000000  0.400000  1.000000  0.934238  1.161711  1.044084
&VALUE      0.000000  0.400000  1.000000  0.967331  1.147166  1.137228
&VALUE      2.000000  0.400000  1.000000  0.976422  1.133344  0.916521
&VALUE      4.000000  0.400000  1.000000  0.982491  1.126494  0.976591

```

&VALUE	6.000000	0.400000	1.000000	0.988120	1.125348	0.991925
&VALUE	8.000000	0.400000	1.000000	0.993139	1.127511	1.000480
&VALUE	10.000000	0.400000	1.000000	0.997699	1.131423	1.006530
&VALUE	12.000000	0.400000	1.000000	1.002224	1.136749	1.011782
&VALUE	14.000000	0.400000	1.000000	1.006788	1.141139	1.016915
&VALUE	16.000000	0.400000	1.000000	1.011424	1.144044	1.023033
&VALUE	18.000000	0.400000	1.000000	1.016061	1.145451	1.028201
&VALUE	20.000000	0.400000	1.000000	1.027300	1.157308	4.045462
&VALUE	22.000000	0.400000	1.000000	1.061903	1.201376	1.050871
&VALUE	24.000000	0.400000	1.000000	1.120898	1.245784	1.061443
&VALUE	26.000000	0.400000	1.000000	1.059881	1.119299	1.106846
&VALUE	28.000000	0.400000	1.000000	1.003342	1.068570	1.112265
&VALUE	30.000000	0.400000	1.000000	0.946850	1.024276	1.158474
*						
&VALUE	-4.000000	0.500000	1.000000	1.017895	1.177644	1.001656
&VALUE	-2.000000	0.500000	1.000000	0.893147	1.168460	1.069077
&VALUE	0.000000	0.500000	1.000000	0.944955	1.146181	1.231546
&VALUE	2.000000	0.500000	1.000000	0.959256	1.127287	0.874479
&VALUE	4.000000	0.500000	1.000000	0.968699	1.119131	0.963316
&VALUE	6.000000	0.500000	1.000000	0.977319	1.119397	0.986664
&VALUE	8.000000	0.500000	1.000000	0.984904	1.124269	0.999584
&VALUE	10.000000	0.500000	1.000000	0.991852	1.131581	1.008762
&VALUE	12.000000	0.500000	1.000000	0.998687	1.140776	1.016403
&VALUE	14.000000	0.500000	1.000000	1.005582	1.149114	1.023783
&VALUE	16.000000	0.500000	1.000000	1.012597	1.155821	1.032616
&VALUE	18.000000	0.500000	1.000000	1.019654	1.160727	1.040017
&VALUE	20.000000	0.500000	1.000000	1.036144	1.181228	4.171188
&VALUE	22.000000	0.500000	1.000000	1.105209	1.277227	1.076292
&VALUE	24.000000	0.500000	1.000000	1.147575	1.274490	1.099670
&VALUE	26.000000	0.500000	1.000000	1.072956	1.136753	1.157091
&VALUE	28.000000	0.500000	1.000000	0.993921	1.065362	1.166120
&VALUE	30.000000	0.500000	1.000000	0.929202	1.018779	1.216440
*						
&VALUE	-4.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	-2.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	0.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	2.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	4.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	6.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	8.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	10.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	12.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	14.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	16.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	18.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	20.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	22.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	24.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	26.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	28.000000	0.100000	2.000000	1.000000	1.000000	1.000000
&VALUE	30.000000	0.100000	2.000000	1.000000	1.000000	1.000000
*						
&VALUE	-4.000000	0.200000	2.000000	0.999559	1.125952	1.003502
&VALUE	-2.000000	0.200000	2.000000	0.990238	1.129498	1.006940
&VALUE	0.000000	0.200000	2.000000	0.993565	1.125375	1.020301
&VALUE	2.000000	0.200000	2.000000	0.994499	1.117437	0.983779
&VALUE	4.000000	0.200000	2.000000	0.995074	1.110286	0.994480
&VALUE	6.000000	0.200000	2.000000	0.995540	1.104910	0.996595
&VALUE	8.000000	0.200000	2.000000	0.995925	1.100937	0.997534
&VALUE	10.000000	0.200000	2.000000	0.996248	1.098036	0.998077
&VALUE	12.000000	0.200000	2.000000	0.996532	1.095870	0.998370
&VALUE	14.000000	0.200000	2.000000	0.996814	1.093175	0.998634
&VALUE	16.000000	0.200000	2.000000	0.997096	1.089781	0.998961
&VALUE	18.000000	0.200000	2.000000	0.997390	1.085840	0.999318
&VALUE	20.000000	0.200000	2.000000	0.997662	1.081404	0.999610
&VALUE	22.000000	0.200000	2.000000	0.998875	1.077809	1.006248
&VALUE	24.000000	0.200000	2.000000	1.004401	1.077296	1.005057
&VALUE	26.000000	0.200000	2.000000	1.002527	1.059671	1.006754
&VALUE	28.000000	0.200000	2.000000	0.993526	1.042871	1.003806
&VALUE	30.000000	0.200000	2.000000	0.983568	1.029226	0.996495
*						
&VALUE	-4.000000	0.300000	2.000000	1.003245	1.155877	1.000483
&VALUE	-2.000000	0.300000	2.000000	0.973679	1.156217	1.024292
&VALUE	0.000000	0.300000	2.000000	0.984951	1.147431	1.071260

&VALUE	2.000000	0.300000	2.000000	0.988815	1.136717	0.952355
&VALUE	4.000000	0.300000	2.000000	0.991636	1.129699	0.986731
&VALUE	6.000000	0.300000	2.000000	0.994381	1.126262	0.995132
&VALUE	8.000000	0.300000	2.000000	0.996903	1.125170	0.999784
&VALUE	10.000000	0.300000	2.000000	0.999206	1.125479	1.003035
&VALUE	12.000000	0.300000	2.000000	1.001507	1.126847	1.005880
&VALUE	14.000000	0.300000	2.000000	1.003834	1.127369	1.008679
&VALUE	16.000000	0.300000	2.000000	1.006199	1.126687	1.012000
&VALUE	18.000000	0.300000	2.000000	1.008580	1.124897	1.014958
&VALUE	20.000000	0.300000	2.000000	1.011869	1.123666	1.019151
&VALUE	22.000000	0.300000	2.000000	1.019927	1.128986	1.033194
&VALUE	24.000000	0.300000	2.000000	1.064743	1.176195	1.033705
&VALUE	26.000000	0.300000	2.000000	1.039152	1.101308	1.057739
&VALUE	28.000000	0.300000	2.000000	1.013601	1.071252	1.062666
&VALUE	30.000000	0.300000	2.000000	0.974706	1.034902	1.091490
*						
&VALUE	-4.000000	0.400000	2.000000	1.006506	1.165887	0.999307
&VALUE	-2.000000	0.400000	2.000000	0.949741	1.161708	1.044084
&VALUE	0.000000	0.400000	2.000000	0.970997	1.147164	1.137251
&VALUE	2.000000	0.400000	2.000000	0.978369	1.133344	0.916553
&VALUE	4.000000	0.400000	2.000000	0.983764	1.126494	0.976600
&VALUE	6.000000	0.400000	2.000000	0.989025	1.125350	0.991930
&VALUE	8.000000	0.400000	2.000000	0.993819	1.127514	1.000483
&VALUE	10.000000	0.400000	2.000000	0.998227	1.131425	1.006533
&VALUE	12.000000	0.400000	2.000000	1.002641	1.136752	1.011785
&VALUE	14.000000	0.400000	2.000000	1.007118	1.141143	1.016917
&VALUE	16.000000	0.400000	2.000000	1.011681	1.144048	1.023036
&VALUE	18.000000	0.400000	2.000000	1.016259	1.145455	1.028204
&VALUE	20.000000	0.400000	2.000000	1.027389	1.157313	4.045066
&VALUE	22.000000	0.400000	2.000000	1.061692	1.201383	1.050889
&VALUE	24.000000	0.400000	2.000000	1.120127	1.245791	1.061463
&VALUE	26.000000	0.400000	2.000000	1.059665	1.119304	1.106858
&VALUE	28.000000	0.400000	2.000000	1.003824	1.068813	1.114466
&VALUE	30.000000	0.400000	2.000000	0.947705	1.024151	1.158161
*						
&VALUE	-4.000000	0.500000	2.000000	1.010001	1.177643	1.001655
&VALUE	-2.000000	0.500000	2.000000	0.917566	1.168457	1.069076
&VALUE	0.000000	0.500000	2.000000	0.950989	1.146179	1.231585
&VALUE	2.000000	0.500000	2.000000	0.962518	1.127287	0.874528
&VALUE	4.000000	0.500000	2.000000	0.970865	1.119131	0.963331
&VALUE	6.000000	0.500000	2.000000	0.978888	1.119399	0.986672
&VALUE	8.000000	0.500000	2.000000	0.986106	1.124271	0.999590
&VALUE	10.000000	0.500000	2.000000	0.992807	1.131583	1.008767
&VALUE	12.000000	0.500000	2.000000	0.999461	1.140780	1.016408
&VALUE	14.000000	0.500000	2.000000	1.006214	1.149118	1.023787
&VALUE	16.000000	0.500000	2.000000	1.013113	1.155826	1.032620
&VALUE	18.000000	0.500000	2.000000	1.020073	1.160731	1.040022
&VALUE	20.000000	0.500000	2.000000	1.036402	1.181233	4.170799
&VALUE	22.000000	0.500000	2.000000	1.104866	1.277235	1.076317
&VALUE	24.000000	0.500000	2.000000	1.146826	1.274497	1.099695
&VALUE	26.000000	0.500000	2.000000	1.072891	1.136757	1.157107
&VALUE	28.000000	0.500000	2.000000	0.994810	1.065686	1.169423
&VALUE	30.000000	0.500000	2.000000	0.930424	1.018586	1.215295
*						
&VALUE	-4.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	-2.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	0.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	2.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	4.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	6.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	8.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	10.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	12.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	14.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	16.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	18.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	20.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	22.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	24.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	26.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	28.000000	0.100000	3.000000	1.000000	1.000000	1.000000
&VALUE	30.000000	0.100000	3.000000	1.000000	1.000000	1.000000
*						
&VALUE	-4.000000	0.200000	3.000000	0.940049	1.125951	1.002114

eVALUE	-2.000000	0.200000	3.000000	0.991070	1.129491	1.005973
eVALUE	0.000000	0.200000	3.000000	0.993086	1.125370	1.012892
eVALUE	2.000000	0.200000	3.000000	0.993992	1.117437	0.967973
eVALUE	4.000000	0.200000	3.000000	0.994600	1.110286	0.993356
eVALUE	6.000000	0.200000	3.000000	0.995127	1.104913	0.996209
eVALUE	8.000000	0.200000	3.000000	0.995543	1.100945	0.997336
eVALUE	10.000000	0.200000	3.000000	0.995888	1.098044	0.997962
eVALUE	12.000000	0.200000	3.000000	0.996188	1.095880	0.998291
eVALUE	14.000000	0.200000	3.000000	0.996482	1.093187	0.998577
eVALUE	16.000000	0.200000	3.000000	0.996773	1.089795	0.998992
eVALUE	18.000000	0.200000	3.000000	0.997073	1.085856	0.999361
eVALUE	20.000000	0.200000	3.000000	0.997351	1.081420	0.999663
eVALUE	22.000000	0.200000	3.000000	0.998513	1.077826	1.007347
eVALUE	24.000000	0.200000	3.000000	1.003736	1.077320	1.005837
eVALUE	26.000000	0.200000	3.000000	1.001907	1.059690	1.007701
eVALUE	28.000000	0.200000	3.000000	0.993788	1.043528	1.010770
eVALUE	30.000000	0.200000	3.000000	0.984078	1.029022	0.995325
*						
eVALUE	-4.000000	0.300000	3.000000	0.810402	1.155875	0.986421
eVALUE	-2.000000	0.300000	3.000000	0.974143	1.156210	1.026140
eVALUE	0.000000	0.300000	3.000000	0.982038	1.147431	1.058430
eVALUE	2.000000	0.300000	3.000000	0.986050	1.136724	0.880054
eVALUE	4.000000	0.300000	3.000000	0.989073	1.129703	0.976793
eVALUE	6.000000	0.300000	3.000000	0.992144	1.126269	0.990375
eVALUE	8.000000	0.300000	3.000000	0.994795	1.125183	0.996764
eVALUE	10.000000	0.300000	3.000000	0.997163	1.125492	1.000890
eVALUE	12.000000	0.300000	3.000000	0.999498	1.126864	1.004247
eVALUE	14.000000	0.300000	3.000000	1.001841	1.127390	1.007398
eVALUE	16.000000	0.300000	3.000000	1.004211	1.126712	1.011450
eVALUE	18.000000	0.300000	3.000000	1.006590	1.124927	1.014581
eVALUE	20.000000	0.300000	3.000000	1.009817	1.123695	1.018981
eVALUE	22.000000	0.300000	3.000000	1.017509	1.129018	1.033988
eVALUE	24.000000	0.300000	3.000000	1.059623	1.176250	1.034044
eVALUE	26.000000	0.300000	3.000000	1.035235	1.101339	1.061403
eVALUE	28.000000	0.300000	3.000000	1.011444	1.071867	1.072579
eVALUE	30.000000	0.300000	3.000000	0.974528	1.034361	1.101021
*						
eVALUE	-4.000000	0.400000	3.000000	0.686441	1.165885	0.976013
eVALUE	-2.000000	0.400000	3.000000	0.950732	1.161703	1.048161
eVALUE	0.000000	0.400000	3.000000	0.965529	1.147168	1.112632
eVALUE	2.000000	0.400000	3.000000	0.973126	1.133359	0.799420
eVALUE	4.000000	0.400000	3.000000	0.978876	1.126502	0.958571
eVALUE	6.000000	0.400000	3.000000	0.984734	1.125359	0.983116
eVALUE	8.000000	0.400000	3.000000	0.989763	1.127528	0.994824
eVALUE	10.000000	0.400000	3.000000	0.994284	1.131441	1.002483
eVALUE	12.000000	0.400000	3.000000	0.998750	1.136773	1.008675
eVALUE	14.000000	0.400000	3.000000	1.003244	1.141170	1.014456
eVALUE	16.000000	0.400000	3.000000	1.007804	1.144080	1.021979
eVALUE	18.000000	0.400000	3.000000	1.012364	1.145494	1.027455
eVALUE	20.000000	0.400000	3.000000	1.023059	1.157353	4.529973
eVALUE	22.000000	0.400000	3.000000	1.055426	1.201429	1.050231
eVALUE	24.000000	0.400000	3.000000	1.109875	1.245872	1.061629
eVALUE	26.000000	0.400000	3.000000	1.052866	1.119341	1.113579
eVALUE	28.000000	0.400000	3.000000	1.001005	1.069702	1.131602
eVALUE	30.000000	0.400000	3.000000	0.947446	1.022957	1.166129
*						
eVALUE	-4.000000	0.500000	3.000000	0.571215	1.177642	0.972422
eVALUE	-2.000000	0.500000	3.000000	0.920103	1.168454	1.074393
eVALUE	0.000000	0.500000	3.000000	0.942868	1.146190	1.182582
eVALUE	2.000000	0.500000	3.000000	0.954571	1.127311	0.722151
eVALUE	4.000000	0.500000	3.000000	0.963393	1.119144	0.937879
eVALUE	6.000000	0.500000	3.000000	0.972287	1.119409	0.974128
eVALUE	8.000000	0.500000	3.000000	0.979851	1.124286	0.991502
eVALUE	10.000000	0.500000	3.000000	0.986708	1.131600	1.002974
eVALUE	12.000000	0.500000	3.000000	0.993429	1.140803	1.011942
eVALUE	14.000000	0.500000	3.000000	1.000197	1.149149	1.020236
eVALUE	16.000000	0.500000	3.000000	1.007077	1.155863	1.031197
eVALUE	18.000000	0.500000	3.000000	1.013992	1.160777	1.039029
eVALUE	20.000000	0.500000	3.000000	1.029639	1.181282	4.678178
eVALUE	22.000000	0.500000	3.000000	1.093745	1.277295	1.075804
eVALUE	24.000000	0.500000	3.000000	1.132489	1.274596	1.101865
eVALUE	26.000000	0.500000	3.000000	1.063052	1.136799	1.167633
eVALUE	28.000000	0.500000	3.000000	0.990656	1.066607	1.192202
eVALUE	30.000000	0.500000	3.000000	0.929091	1.016850	1.219952

*						
&VALUE	-4.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	-2.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	0.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	2.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	4.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	6.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	8.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	10.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	12.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	14.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	16.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	18.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	20.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	22.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	24.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	26.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	28.000000	0.100000	4.000000	1.000000	1.000000	1.000000
&VALUE	30.000000	0.100000	4.000000	1.000000	1.000000	1.000000
*						
&VALUE	-4.000000	0.200000	4.000000	0.988734	1.125949	1.002114
&VALUE	-2.000000	0.200000	4.000000	0.991507	1.129472	1.005977
&VALUE	0.000000	0.200000	4.000000	0.992691	1.125351	1.012927
&VALUE	2.000000	0.200000	4.000000	0.993452	1.117428	0.968132
&VALUE	4.000000	0.200000	4.000000	0.994032	1.110283	0.993356
&VALUE	6.000000	0.200000	4.000000	0.994550	1.104920	0.996204
&VALUE	8.000000	0.200000	4.000000	0.994975	1.100958	0.997330
&VALUE	10.000000	0.200000	4.000000	0.995332	1.098058	0.997957
&VALUE	12.000000	0.200000	4.000000	0.995644	1.095898	0.998286
&VALUE	14.000000	0.200000	4.000000	0.995947	1.093209	0.998573
&VALUE	16.000000	0.200000	4.000000	0.996243	1.089820	0.998987
&VALUE	18.000000	0.200000	4.000000	0.996544	1.085883	0.999355
&VALUE	20.000000	0.200000	4.000000	0.996822	1.081450	0.999658
&VALUE	22.000000	0.200000	4.000000	0.997894	1.077862	1.007313
&VALUE	24.000000	0.200000	4.000000	1.002610	1.077360	1.005817
&VALUE	26.000000	0.200000	4.000000	1.000869	1.059729	1.007679
&VALUE	28.000000	0.200000	4.000000	0.993580	1.043577	1.010732
&VALUE	30.000000	0.200000	4.000000	0.984506	1.028113	0.983473
*						
&VALUE	-4.000000	0.300000	4.000000	0.963708	1.155872	0.986421
&VALUE	-2.000000	0.300000	4.000000	0.974684	1.156181	1.026157
&VALUE	0.000000	0.300000	4.000000	0.979678	1.147404	1.058578
&VALUE	2.000000	0.300000	4.000000	0.983183	1.136714	0.880668
&VALUE	4.000000	0.300000	4.000000	0.986089	1.129700	0.976805
&VALUE	6.000000	0.300000	4.000000	0.989049	1.126281	0.990370
&VALUE	8.000000	0.300000	4.000000	0.991668	1.125206	0.996758
&VALUE	10.000000	0.300000	4.000000	0.994028	1.125516	1.000882
&VALUE	12.000000	0.300000	4.000000	0.996339	1.126895	1.004241
&VALUE	14.000000	0.300000	4.000000	0.998648	1.127428	1.007395
&VALUE	16.000000	0.300000	4.000000	1.000969	1.126757	1.011449
&VALUE	18.000000	0.300000	4.000000	1.003285	1.124975	1.014580
&VALUE	20.000000	0.300000	4.000000	1.006352	1.123750	1.018984
&VALUE	22.000000	0.300000	4.000000	1.013402	1.129085	1.034024
&VALUE	24.000000	0.300000	4.000000	1.051037	1.176336	1.034141
&VALUE	26.000000	0.300000	4.000000	1.028710	1.101407	1.061459
&VALUE	28.000000	0.300000	4.000000	1.007279	1.071923	1.072330
&VALUE	30.000000	0.300000	4.000000	0.973331	1.032131	1.068424
*						
&VALUE	-4.000000	0.400000	4.000000	0.931610	1.165882	0.976014
&VALUE	-2.000000	0.400000	4.000000	0.951794	1.161669	1.048196
&VALUE	0.000000	0.400000	4.000000	0.961122	1.147137	1.112936
&VALUE	2.000000	0.400000	4.000000	0.967719	1.133346	0.800357
&VALUE	4.000000	0.400000	4.000000	0.973213	1.126498	0.958588
&VALUE	6.000000	0.400000	4.000000	0.978829	1.125373	0.983106
&VALUE	8.000000	0.400000	4.000000	0.983775	1.127556	0.994811
&VALUE	10.000000	0.400000	4.000000	0.988260	1.131470	1.002468
&VALUE	12.000000	0.400000	4.000000	0.992658	1.136810	1.008664
&VALUE	14.000000	0.400000	4.000000	0.997066	1.141217	1.014450
&VALUE	16.000000	0.400000	4.000000	1.001509	1.144137	1.021976
&VALUE	18.000000	0.400000	4.000000	1.005930	1.145554	1.027453
&VALUE	20.000000	0.400000	4.000000	1.015793	1.157426	4.522331
&VALUE	22.000000	0.400000	4.000000	1.044909	1.201528	1.050339
&VALUE	24.000000	0.400000	4.000000	1.092876	1.245993	1.061789
&VALUE	26.000000	0.400000	4.000000	1.041597	1.119426	1.113654

&VALUE	28.000000	0.400000	4.000000	0.995398	1.069754	1.131000
&VALUE	30.000000	0.400000	4.000000	0.945652	1.018690	1.093211
*						
&VALUE	-4.000000	0.500000	4.000000	0.891832	1.177638	0.972424
&VALUE	-2.000000	0.500000	4.000000	0.922161	1.168414	1.074453
&VALUE	0.000000	0.500000	4.000000	0.936353	1.146152	1.183117
&VALUE	2.000000	0.500000	4.000000	0.946407	1.127295	0.723311
&VALUE	4.000000	0.500000	4.000000	0.954769	1.119137	0.937899
&VALUE	6.000000	0.500000	4.000000	0.963252	1.119422	0.974108
&VALUE	8.000000	0.500000	4.000000	0.970670	1.124315	0.991479
&VALUE	10.000000	0.500000	4.000000	0.977442	1.131630	1.002948
&VALUE	12.000000	0.500000	4.000000	0.984040	1.140843	1.011921
&VALUE	14.000000	0.500000	4.000000	0.990653	1.149202	1.020220
&VALUE	16.000000	0.500000	4.000000	0.997330	1.155927	1.031185
&VALUE	18.000000	0.500000	4.000000	1.004002	1.160847	1.039017
&VALUE	20.000000	0.500000	4.000000	1.018361	1.181368	4.670009
&VALUE	22.000000	0.500000	4.000000	1.075299	1.277426	1.075915
&VALUE	24.000000	0.500000	4.000000	1.108900	1.274737	1.102004
&VALUE	26.000000	0.500000	4.000000	1.046839	1.136901	1.167675
&VALUE	28.000000	0.500000	4.000000	0.982780	1.066660	1.191235
&VALUE	30.000000	0.500000	4.000000	0.925359	1.011233	1.114787
*						
&VALUE	-4.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	-2.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	0.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	2.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	4.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	6.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	8.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	10.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	12.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	14.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	16.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	18.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	20.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	22.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	24.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	26.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	28.000000	0.100000	5.000000	1.000000	1.000000	1.000000
&VALUE	30.000000	0.100000	5.000000	1.000000	1.000000	1.000000
*						
&VALUE	-4.000000	0.200000	5.000000	0.990528	1.125947	1.002115
&VALUE	-2.000000	0.200000	5.000000	0.991682	1.129449	1.005983
&VALUE	0.000000	0.200000	5.000000	0.992451	1.125327	1.012970
&VALUE	2.000000	0.200000	5.000000	0.993055	1.117417	0.968334
&VALUE	4.000000	0.200000	5.000000	0.993562	1.110280	0.993354
&VALUE	6.000000	0.200000	5.000000	0.994036	1.104929	0.996197
&VALUE	8.000000	0.200000	5.000000	0.994441	1.100976	0.997323
&VALUE	10.000000	0.200000	5.000000	0.994789	1.098077	0.997950
&VALUE	12.000000	0.200000	5.000000	0.995097	1.095921	0.998279
&VALUE	14.000000	0.200000	5.000000	0.995395	1.093239	0.998566
&VALUE	16.000000	0.200000	5.000000	0.995687	1.089855	0.998980
&VALUE	18.000000	0.200000	5.000000	0.995980	1.085920	0.999349
&VALUE	20.000000	0.200000	5.000000	0.996251	1.081491	0.999651
&VALUE	22.000000	0.200000	5.000000	0.997220	1.077910	1.007267
&VALUE	24.000000	0.200000	5.000000	1.001387	1.077414	1.005785
&VALUE	26.000000	0.200000	5.000000	0.999764	1.059783	1.007646
&VALUE	28.000000	0.200000	5.000000	0.993365	1.043624	1.010708
&VALUE	30.000000	0.200000	5.000000	0.985113	1.027589	0.973391
*						
&VALUE	-4.000000	0.300000	5.000000	0.970126	1.155870	0.986420
&VALUE	-2.000000	0.300000	5.000000	0.974901	1.156148	1.026178
&VALUE	0.000000	0.300000	5.000000	0.978254	1.147371	1.058759
&VALUE	2.000000	0.300000	5.000000	0.981081	1.136701	0.881441
&VALUE	4.000000	0.300000	5.000000	0.983633	1.129696	0.976820
&VALUE	6.000000	0.300000	5.000000	0.986303	1.126297	0.990363
&VALUE	8.000000	0.300000	5.000000	0.988741	1.125237	0.996750
&VALUE	10.000000	0.300000	5.000000	0.990978	1.125547	1.000873
&VALUE	12.000000	0.300000	5.000000	0.993173	1.126935	1.004234
&VALUE	14.000000	0.300000	5.000000	0.995371	1.127479	1.007391
&VALUE	16.000000	0.300000	5.000000	0.997580	1.126817	1.011447
&VALUE	18.000000	0.300000	5.000000	0.999779	1.125039	1.014579
&VALUE	20.000000	0.300000	5.000000	1.002631	1.123823	1.018988
&VALUE	22.000000	0.300000	5.000000	1.008961	1.129175	1.034076

```

&VALUE 24.000000 0.300000 5.000000 1.041853 1.176453 1.034270
&VALUE 26.000000 0.300000 5.000000 1.021842 1.101500 1.061534
&VALUE 28.000000 0.300000 5.000000 1.002956 1.071987 1.072039
&VALUE 30.000000 0.300000 5.000000 0.973085 1.031510 1.044798
*
&VALUE -4.000000 0.400000 5.000000 0.943394 1.165879 0.976013
&VALUE -2.000000 0.400000 5.000000 0.952220 1.161629 1.048239
&VALUE 0.000000 0.400000 5.000000 0.958472 1.147097 1.113311
&VALUE 2.000000 0.400000 5.000000 0.963771 1.133331 0.801526
&VALUE 4.000000 0.400000 5.000000 0.968576 1.126493 0.958612
&VALUE 6.000000 0.400000 5.000000 0.973616 1.125392 0.983094
&VALUE 8.000000 0.400000 5.000000 0.978203 1.127592 0.994796
&VALUE 10.000000 0.400000 5.000000 0.982432 1.131507 1.002451
&VALUE 12.000000 0.400000 5.000000 0.986590 1.136859 1.008650
&VALUE 14.000000 0.400000 5.000000 0.990766 1.141280 1.014441
&VALUE 16.000000 0.400000 5.000000 0.994971 1.144212 1.021971
&VALUE 18.000000 0.400000 5.000000 0.999147 1.145636 1.027449
&VALUE 20.000000 0.400000 5.000000 1.008052 1.157524 4.512091
&VALUE 22.000000 0.400000 5.000000 1.033679 1.201661 1.050487
&VALUE 24.000000 0.400000 5.000000 1.074962 1.246156 1.062005
&VALUE 26.000000 0.400000 5.000000 1.029841 1.119542 1.113760
&VALUE 28.000000 0.400000 5.000000 0.989600 1.069792 1.130384
&VALUE 30.000000 0.400000 5.000000 0.946423 1.018539 1.071713
*
&VALUE -4.000000 0.500000 5.000000 0.909689 1.177634 0.972425
&VALUE -2.000000 0.500000 5.000000 0.922986 1.168368 1.074525
&VALUE 0.000000 0.500000 5.000000 0.932451 1.146105 1.183778
&VALUE 2.000000 0.500000 5.000000 0.940477 1.127275 0.724761
&VALUE 4.000000 0.500000 5.000000 0.947748 1.119128 0.937926
&VALUE 6.000000 0.500000 5.000000 0.955327 1.119440 0.974083
&VALUE 8.000000 0.500000 5.000000 0.962179 1.124353 0.991450
&VALUE 10.000000 0.500000 5.000000 0.968536 1.131670 1.002917
&VALUE 12.000000 0.500000 5.000000 0.974750 1.140897 1.011896
&VALUE 14.000000 0.500000 5.000000 0.980988 1.149272 1.020200
&VALUE 16.000000 0.500000 5.000000 0.987277 1.156012 1.031170
&VALUE 18.000000 0.500000 5.000000 0.993547 1.160940 1.039002
&VALUE 20.000000 0.500000 5.000000 1.006440 1.181483 4.659089
&VALUE 22.000000 0.500000 5.000000 1.055885 1.277602 1.076073
&VALUE 24.000000 0.500000 5.000000 1.084326 1.274925 1.102191
&VALUE 26.000000 0.500000 5.000000 1.030085 1.137038 1.167733
&VALUE 28.000000 0.500000 5.000000 0.974677 1.066678 1.190324
&VALUE 30.000000 0.500000 5.000000 0.925541 1.012186 1.108001
*
&END

```

- SPDBRK.inp (speedbrake)

```

&ARG01 C PROTOCOL 0 LDGR
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 REF. BELOW
&ARG12 X SPEED_BR 6 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG12 &FUN01 &FUN02
&UNAME AOA MACH SPEED_BR CDSBP CLSPB
&UCODE 1 2 6 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
* SPEED BREAKS EXTENDED
*
&VALUE -4.000000 0.100000 30.000000 0.003626 -0.076130
&VALUE -2.000000 0.100000 30.000000 0.004594 -0.076130
&VALUE 0.000000 0.100000 30.000000 0.005562 -0.076130
&VALUE 2.000000 0.100000 30.000000 0.006530 -0.076130
&VALUE 4.000000 0.100000 30.000000 0.007498 -0.076130
&VALUE 6.000000 0.100000 30.000000 0.008466 -0.076130
&VALUE 8.000000 0.100000 30.000000 0.009435 -0.076130

```

&VALUE	10.000000	0.100000	30.000000	0.010403	-0.076130
&VALUE	12.000000	0.100000	30.000000	0.011371	-0.076130
&VALUE	14.000000	0.100000	30.000000	0.012339	-0.076130
&VALUE	16.000000	0.100000	30.000000	0.013307	-0.076130
&VALUE	18.000000	0.100000	30.000000	0.014275	-0.076130
&VALUE	20.000000	0.100000	30.000000	0.015243	-0.076130
&VALUE	22.000000	0.100000	30.000000	0.016211	-0.076130
&VALUE	24.000000	0.100000	30.000000	0.017179	-0.076130
&VALUE	26.000000	0.100000	30.000000	0.018147	-0.076130
&VALUE	28.000000	0.100000	30.000000	0.019115	-0.076130
&VALUE	30.000000	0.100000	30.000000	0.020083	-0.076130
*					
&VALUE	-4.000000	0.200000	30.000000	0.003619	-0.076804
&VALUE	-2.000000	0.200000	30.000000	0.004602	-0.076804
&VALUE	0.000000	0.200000	30.000000	0.005586	-0.076804
&VALUE	2.000000	0.200000	30.000000	0.006569	-0.076804
&VALUE	4.000000	0.200000	30.000000	0.007553	-0.076804
&VALUE	6.000000	0.200000	30.000000	0.008537	-0.076804
&VALUE	8.000000	0.200000	30.000000	0.009520	-0.076804
&VALUE	10.000000	0.200000	30.000000	0.010504	-0.076804
&VALUE	12.000000	0.200000	30.000000	0.011487	-0.076804
&VALUE	14.000000	0.200000	30.000000	0.012471	-0.076804
&VALUE	16.000000	0.200000	30.000000	0.013455	-0.076804
&VALUE	18.000000	0.200000	30.000000	0.014438	-0.076804
&VALUE	20.000000	0.200000	30.000000	0.015422	-0.076804
&VALUE	22.000000	0.200000	30.000000	0.016406	-0.076804
&VALUE	24.000000	0.200000	30.000000	0.017389	-0.076804
&VALUE	26.000000	0.200000	30.000000	0.018373	-0.076804
&VALUE	28.000000	0.200000	30.000000	0.019356	-0.076804
&VALUE	30.000000	0.200000	30.000000	0.020340	-0.076804
*					
&VALUE	-4.000000	0.300000	30.000000	0.003619	-0.078448
&VALUE	-2.000000	0.300000	30.000000	0.004629	-0.078448
&VALUE	0.000000	0.300000	30.000000	0.005640	-0.078448
&VALUE	2.000000	0.300000	30.000000	0.006651	-0.078448
&VALUE	4.000000	0.300000	30.000000	0.007662	-0.078448
&VALUE	6.000000	0.300000	30.000000	0.008673	-0.078448
&VALUE	8.000000	0.300000	30.000000	0.009683	-0.078448
&VALUE	10.000000	0.300000	30.000000	0.010694	-0.078448
&VALUE	12.000000	0.300000	30.000000	0.011705	-0.078448
&VALUE	14.000000	0.300000	30.000000	0.012716	-0.078448
&VALUE	16.000000	0.300000	30.000000	0.013727	-0.078448
&VALUE	18.000000	0.300000	30.000000	0.014737	-0.078448
&VALUE	20.000000	0.300000	30.000000	0.015748	-0.078448
&VALUE	22.000000	0.300000	30.000000	0.016759	-0.078448
&VALUE	24.000000	0.300000	30.000000	0.017770	-0.078448
&VALUE	26.000000	0.300000	30.000000	0.018781	-0.078448
&VALUE	28.000000	0.300000	30.000000	0.019791	-0.078448
&VALUE	30.000000	0.300000	30.000000	0.020802	-0.078448
*					
&VALUE	-4.000000	0.400000	30.000000	0.003612	-0.080641
&VALUE	-2.000000	0.400000	30.000000	0.004664	-0.080641
&VALUE	0.000000	0.400000	30.000000	0.005716	-0.080641
&VALUE	2.000000	0.400000	30.000000	0.006768	-0.080641
&VALUE	4.000000	0.400000	30.000000	0.007819	-0.080641
&VALUE	6.000000	0.400000	30.000000	0.008871	-0.080641
&VALUE	8.000000	0.400000	30.000000	0.009923	-0.080641
&VALUE	10.000000	0.400000	30.000000	0.010975	-0.080641
&VALUE	12.000000	0.400000	30.000000	0.012027	-0.080641
&VALUE	14.000000	0.400000	30.000000	0.013079	-0.080641
&VALUE	16.000000	0.400000	30.000000	0.014130	-0.080641
&VALUE	18.000000	0.400000	30.000000	0.015182	-0.080641
&VALUE	20.000000	0.400000	30.000000	0.016234	-0.080641
&VALUE	22.000000	0.400000	30.000000	0.017286	-0.080641
&VALUE	24.000000	0.400000	30.000000	0.018338	-0.080641
&VALUE	26.000000	0.400000	30.000000	0.019390	-0.080641
&VALUE	28.000000	0.400000	30.000000	0.020442	-0.080641
&VALUE	30.000000	0.400000	30.000000	0.021493	-0.080641
*					
&VALUE	-4.000000	0.500000	30.000000	0.003598	-0.083523
&VALUE	-2.000000	0.500000	30.000000	0.004709	-0.083523
&VALUE	0.000000	0.500000	30.000000	0.005819	-0.083523
&VALUE	2.000000	0.500000	30.000000	0.006930	-0.083523
&VALUE	4.000000	0.500000	30.000000	0.008040	-0.083523

&VALUE	6.000000	0.500000	30.000000	0.009151	-0.083523
&VALUE	8.000000	0.500000	30.000000	0.010261	-0.083523
&VALUE	10.000000	0.500000	30.000000	0.011372	-0.083523
&VALUE	12.000000	0.500000	30.000000	0.012482	-0.083523
&VALUE	14.000000	0.500000	30.000000	0.013593	-0.083523
&VALUE	16.000000	0.500000	30.000000	0.014704	-0.083523
&VALUE	18.000000	0.500000	30.000000	0.015814	-0.083523
&VALUE	20.000000	0.500000	30.000000	0.016925	-0.083523
&VALUE	22.000000	0.500000	30.000000	0.018035	-0.083523
&VALUE	24.000000	0.500000	30.000000	0.019146	-0.083523
&VALUE	26.000000	0.500000	30.000000	0.020256	-0.083523
&VALUE	28.000000	0.500000	30.000000	0.021367	-0.083523
&VALUE	30.000000	0.500000	30.000000	0.022477	-0.083523
*					
&VALUE	-4.000000	0.100000	60.000000	0.014391	-0.122411
&VALUE	-2.000000	0.100000	60.000000	0.015948	-0.122411
&VALUE	0.000000	0.100000	60.000000	0.017504	-0.122411
&VALUE	2.000000	0.100000	60.000000	0.019061	-0.122411
&VALUE	4.000000	0.100000	60.000000	0.020618	-0.122411
&VALUE	6.000000	0.100000	60.000000	0.022175	-0.122411
&VALUE	8.000000	0.100000	60.000000	0.023732	-0.122411
&VALUE	10.000000	0.100000	60.000000	0.025289	-0.122411
&VALUE	12.000000	0.100000	60.000000	0.026845	-0.122411
&VALUE	14.000000	0.100000	60.000000	0.028402	-0.122411
&VALUE	16.000000	0.100000	60.000000	0.029959	-0.122411
&VALUE	18.000000	0.100000	60.000000	0.031516	-0.122411
&VALUE	20.000000	0.100000	60.000000	0.033073	-0.122411
&VALUE	22.000000	0.100000	60.000000	0.034629	-0.122411
&VALUE	24.000000	0.100000	60.000000	0.036186	-0.122411
&VALUE	26.000000	0.100000	60.000000	0.037743	-0.122411
&VALUE	28.000000	0.100000	60.000000	0.039300	-0.122411
&VALUE	30.000000	0.100000	60.000000	0.040857	-0.122411
*					
&VALUE	-4.000000	0.200000	60.000000	0.014403	-0.123496
&VALUE	-2.000000	0.200000	60.000000	0.015984	-0.123496
&VALUE	0.000000	0.200000	60.000000	0.017566	-0.123496
&VALUE	2.000000	0.200000	60.000000	0.019148	-0.123496
&VALUE	4.000000	0.200000	60.000000	0.020730	-0.123496
&VALUE	6.000000	0.200000	60.000000	0.022312	-0.123496
&VALUE	8.000000	0.200000	60.000000	0.023893	-0.123496
&VALUE	10.000000	0.200000	60.000000	0.025475	-0.123496
&VALUE	12.000000	0.200000	60.000000	0.027057	-0.123496
&VALUE	14.000000	0.200000	60.000000	0.028639	-0.123496
&VALUE	16.000000	0.200000	60.000000	0.030221	-0.123496
&VALUE	18.000000	0.200000	60.000000	0.031802	-0.123496
&VALUE	20.000000	0.200000	60.000000	0.033384	-0.123496
&VALUE	22.000000	0.200000	60.000000	0.034966	-0.123496
&VALUE	24.000000	0.200000	60.000000	0.036548	-0.123496
&VALUE	26.000000	0.200000	60.000000	0.038130	-0.123496
&VALUE	28.000000	0.200000	60.000000	0.039712	-0.123496
&VALUE	30.000000	0.200000	60.000000	0.041293	-0.123496
*					
&VALUE	-4.000000	0.300000	60.000000	0.014458	-0.126139
&VALUE	-2.000000	0.300000	60.000000	0.016083	-0.126139
&VALUE	0.000000	0.300000	60.000000	0.017709	-0.126139
&VALUE	2.000000	0.300000	60.000000	0.019334	-0.126139
&VALUE	4.000000	0.300000	60.000000	0.020960	-0.126139
&VALUE	6.000000	0.300000	60.000000	0.022585	-0.126139
&VALUE	8.000000	0.300000	60.000000	0.024211	-0.126139
&VALUE	10.000000	0.300000	60.000000	0.025836	-0.126139
&VALUE	12.000000	0.300000	60.000000	0.027462	-0.126139
&VALUE	14.000000	0.300000	60.000000	0.029087	-0.126139
&VALUE	16.000000	0.300000	60.000000	0.030713	-0.126139
&VALUE	18.000000	0.300000	60.000000	0.032338	-0.126139
&VALUE	20.000000	0.300000	60.000000	0.033964	-0.126139
&VALUE	22.000000	0.300000	60.000000	0.035589	-0.126139
&VALUE	24.000000	0.300000	60.000000	0.037215	-0.126139
&VALUE	26.000000	0.300000	60.000000	0.038840	-0.126139
&VALUE	28.000000	0.300000	60.000000	0.040466	-0.126139
&VALUE	30.000000	0.300000	60.000000	0.042091	-0.126139
*					
&VALUE	-4.000000	0.400000	60.000000	0.014523	-0.129665
&VALUE	-2.000000	0.400000	60.000000	0.016215	-0.129665
&VALUE	0.000000	0.400000	60.000000	0.017906	-0.129665

```

&VALUE      2.000000  0.400000  60.000000  0.019598  -0.129665
&VALUE      4.000000  0.400000  60.000000  0.021290  -0.129665
&VALUE      6.000000  0.400000  60.000000  0.022981  -0.129665
&VALUE      8.000000  0.400000  60.000000  0.024673  -0.129665
&VALUE     10.000000  0.400000  60.000000  0.026364  -0.129665
&VALUE     12.000000  0.400000  60.000000  0.028056  -0.129665
&VALUE     14.000000  0.400000  60.000000  0.029747  -0.129665
&VALUE     16.000000  0.400000  60.000000  0.031439  -0.129665
&VALUE     18.000000  0.400000  60.000000  0.033130  -0.129665
&VALUE     20.000000  0.400000  60.000000  0.034822  -0.129665
&VALUE     22.000000  0.400000  60.000000  0.036513  -0.129665
&VALUE     24.000000  0.400000  60.000000  0.038205  -0.129665
&VALUE     26.000000  0.400000  60.000000  0.039896  -0.129665
&VALUE     28.000000  0.400000  60.000000  0.041588  -0.129665
&VALUE     30.000000  0.400000  60.000000  0.043279  -0.129665
*
&VALUE     -4.000000  0.500000  60.000000  0.014605  -0.134299
&VALUE     -2.000000  0.500000  60.000000  0.016391  -0.134299
&VALUE      0.000000  0.500000  60.000000  0.018177  -0.134299
&VALUE      2.000000  0.500000  60.000000  0.019963  -0.134299
&VALUE      4.000000  0.500000  60.000000  0.021749  -0.134299
&VALUE      6.000000  0.500000  60.000000  0.023535  -0.134299
&VALUE      8.000000  0.500000  60.000000  0.025321  -0.134299
&VALUE     10.000000  0.500000  60.000000  0.027107  -0.134299
&VALUE     12.000000  0.500000  60.000000  0.028893  -0.134299
&VALUE     14.000000  0.500000  60.000000  0.030679  -0.134299
&VALUE     16.000000  0.500000  60.000000  0.032465  -0.134299
&VALUE     18.000000  0.500000  60.000000  0.034251  -0.134299
&VALUE     20.000000  0.500000  60.000000  0.036037  -0.134299
&VALUE     22.000000  0.500000  60.000000  0.037823  -0.134299
&VALUE     24.000000  0.500000  60.000000  0.039609  -0.134299
&VALUE     26.000000  0.500000  60.000000  0.041395  -0.134299
&VALUE     28.000000  0.500000  60.000000  0.043180  -0.134299
&VALUE     30.000000  0.500000  60.000000  0.044966  -0.134299
*
&END

```

- LDGR.inp (landing gear)

```

&ARG01      C      PROTOCOL      0      LDGR
&ARG02      C      TEST_CONDITION  0      TEST0001.CND
&ARG03      C      REPORT_CODE     0      00-01
&ARG04      X      FLAP_SET        9      REF. BELOW
&ARG05      X      STABILZR        5      0.0
&ARG06      X      ELEVATOR        3      0.0
&ARG07      X      RUDDER          10     0.0
&ARG08      X      AILERON         4      0.0
&ARG09      X      SIDESLIP        11     0.0
&ARG10      X      AOA              1      REF. BELOW
&ARG11      X      MACH             2      REF. BELOW
*
&SNAME      &ARG10  &ARG11  &ARG12  &FUN01  &FUN02
&UNAME      AOA      MACH      FLAP_SET  CDLGMAX  CMLGMAX
&UCODE      1        2        9        0        0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*LANDING GEAR EXTENDED
*
&VALUE     -4.000000  0.100000  1.000000  0.018476  -0.021906
&VALUE     -2.000000  0.100000  1.000000  0.017811  -0.020575
&VALUE      0.000000  0.100000  1.000000  0.017165  -0.019198
&VALUE      2.000000  0.100000  1.000000  0.016543  -0.017784
&VALUE      4.000000  0.100000  1.000000  0.015949  -0.016347
&VALUE      6.000000  0.100000  1.000000  0.015390  -0.014898
&VALUE      8.000000  0.100000  1.000000  0.014866  -0.013446
&VALUE     10.000000  0.100000  1.000000  0.014385  -0.012006
&VALUE     12.000000  0.100000  1.000000  0.013948  -0.010585
&VALUE     14.000000  0.100000  1.000000  0.013539  -0.009169
&VALUE     16.000000  0.100000  1.000000  0.013163  -0.007770
&VALUE     18.000000  0.100000  1.000000  0.012825  -0.006396
&VALUE     20.000000  0.100000  1.000000  0.012522  -0.005053
&VALUE     22.000000  0.100000  1.000000  0.012304  -0.003810
&VALUE     24.000000  0.100000  1.000000  0.012359  -0.002936
&VALUE     26.000000  0.100000  1.000000  0.012862  -0.002689

```

&VALUE	28.000000	0.100000	1.000000	0.013266	-0.002309
&VALUE	30.000000	0.100000	1.000000	0.013625	-0.001867
*					
&VALUE	-4.000000	0.200000	1.000000	0.018475	-0.021906
&VALUE	-2.000000	0.200000	1.000000	0.017807	-0.020571
&VALUE	0.000000	0.200000	1.000000	0.017159	-0.019190
&VALUE	2.000000	0.200000	1.000000	0.016534	-0.017774
&VALUE	4.000000	0.200000	1.000000	0.015939	-0.016334
&VALUE	6.000000	0.200000	1.000000	0.015378	-0.014884
&VALUE	8.000000	0.200000	1.000000	0.014853	-0.013430
&VALUE	10.000000	0.200000	1.000000	0.014372	-0.011989
&VALUE	12.000000	0.200000	1.000000	0.013934	-0.010567
&VALUE	14.000000	0.200000	1.000000	0.013525	-0.009151
&VALUE	16.000000	0.200000	1.000000	0.013150	-0.007752
&VALUE	18.000000	0.200000	1.000000	0.012812	-0.006380
&VALUE	20.000000	0.200000	1.000000	0.012511	-0.005037
&VALUE	22.000000	0.200000	1.000000	0.012298	-0.003802
&VALUE	24.000000	0.200000	1.000000	0.012380	-0.002967
&VALUE	26.000000	0.200000	1.000000	0.012874	-0.002705
&VALUE	28.000000	0.200000	1.000000	0.013237	-0.002268
&VALUE	30.000000	0.200000	1.000000	0.013556	-0.001770
*					
&VALUE	-4.000000	0.300000	1.000000	0.018474	-0.021904
&VALUE	-2.000000	0.300000	1.000000	0.017801	-0.020564
&VALUE	0.000000	0.300000	1.000000	0.017149	-0.019180
&VALUE	2.000000	0.300000	1.000000	0.016524	-0.017763
&VALUE	4.000000	0.300000	1.000000	0.015931	-0.016325
&VALUE	6.000000	0.300000	1.000000	0.015374	-0.014879
&VALUE	8.000000	0.300000	1.000000	0.014855	-0.013433
&VALUE	10.000000	0.300000	1.000000	0.014382	-0.012001
&VALUE	12.000000	0.300000	1.000000	0.013953	-0.010591
&VALUE	14.000000	0.300000	1.000000	0.013554	-0.009188
&VALUE	16.000000	0.300000	1.000000	0.013190	-0.007805
&VALUE	18.000000	0.300000	1.000000	0.012864	-0.006449
&VALUE	20.000000	0.300000	1.000000	0.012579	-0.005131
&VALUE	22.000000	0.300000	1.000000	0.012402	-0.003946
&VALUE	24.000000	0.300000	1.000000	0.012667	-0.003365
&VALUE	26.000000	0.300000	1.000000	0.013038	-0.002936
&VALUE	28.000000	0.300000	1.000000	0.013324	-0.002390
&VALUE	30.000000	0.300000	1.000000	0.013518	-0.001716
*					
&VALUE	-4.000000	0.400000	1.000000	0.018471	-0.021902
&VALUE	-2.000000	0.400000	1.000000	0.017791	-0.020553
&VALUE	0.000000	0.400000	1.000000	0.017134	-0.019163
&VALUE	2.000000	0.400000	1.000000	0.016507	-0.017742
&VALUE	4.000000	0.400000	1.000000	0.015913	-0.016304
&VALUE	6.000000	0.400000	1.000000	0.015359	-0.014861
&VALUE	8.000000	0.400000	1.000000	0.014845	-0.013420
&VALUE	10.000000	0.400000	1.000000	0.014377	-0.011996
&VALUE	12.000000	0.400000	1.000000	0.013956	-0.010596
&VALUE	14.000000	0.400000	1.000000	0.013567	-0.009205
&VALUE	16.000000	0.400000	1.000000	0.013213	-0.007836
&VALUE	18.000000	0.400000	1.000000	0.012899	-0.006496
&VALUE	20.000000	0.400000	1.000000	0.012652	-0.005230
&VALUE	22.000000	0.400000	1.000000	0.012600	-0.004217
&VALUE	24.000000	0.400000	1.000000	0.012906	-0.003697
&VALUE	26.000000	0.400000	1.000000	0.013126	-0.003058
&VALUE	28.000000	0.400000	1.000000	0.013281	-0.002329
&VALUE	30.000000	0.400000	1.000000	0.013399	-0.001547
*					
&VALUE	-4.000000	0.500000	1.000000	0.018469	-0.021899
&VALUE	-2.000000	0.500000	1.000000	0.017777	-0.020538
&VALUE	0.000000	0.500000	1.000000	0.017112	-0.019137
&VALUE	2.000000	0.500000	1.000000	0.016479	-0.017710
&VALUE	4.000000	0.500000	1.000000	0.015883	-0.016268
&VALUE	6.000000	0.500000	1.000000	0.015330	-0.014826
&VALUE	8.000000	0.500000	1.000000	0.014819	-0.013388
&VALUE	10.000000	0.500000	1.000000	0.014357	-0.011970
&VALUE	12.000000	0.500000	1.000000	0.013943	-0.010578
&VALUE	14.000000	0.500000	1.000000	0.013562	-0.009199
&VALUE	16.000000	0.500000	1.000000	0.013218	-0.007842
&VALUE	18.000000	0.500000	1.000000	0.012915	-0.006518
&VALUE	20.000000	0.500000	1.000000	0.012693	-0.005286
&VALUE	22.000000	0.500000	1.000000	0.012790	-0.004479

&VALUE	24.000000	0.500000	1.000000	0.013013	-0.003846
&VALUE	26.000000	0.500000	1.000000	0.013180	-0.003134
&VALUE	28.000000	0.500000	1.000000	0.013240	-0.002271
&VALUE	30.000000	0.500000	1.000000	0.013319	-0.001434
*					
&VALUE	-4.000000	0.100000	2.000000	0.018419	-0.021846
&VALUE	-2.000000	0.100000	2.000000	0.017756	-0.020514
&VALUE	0.000000	0.100000	2.000000	0.017111	-0.019137
&VALUE	2.000000	0.100000	2.000000	0.016490	-0.017723
&VALUE	4.000000	0.100000	2.000000	0.015898	-0.016286
&VALUE	6.000000	0.100000	2.000000	0.015339	-0.014837
&VALUE	8.000000	0.100000	2.000000	0.014817	-0.013385
&VALUE	10.000000	0.100000	2.000000	0.014337	-0.011945
&VALUE	12.000000	0.100000	2.000000	0.013901	-0.010524
&VALUE	14.000000	0.100000	2.000000	0.013493	-0.009109
&VALUE	16.000000	0.100000	2.000000	0.013118	-0.007710
&VALUE	18.000000	0.100000	2.000000	0.012781	-0.006337
&VALUE	20.000000	0.100000	2.000000	0.012479	-0.004994
&VALUE	22.000000	0.100000	2.000000	0.012261	-0.003751
&VALUE	24.000000	0.100000	2.000000	0.012316	-0.002877
&VALUE	26.000000	0.100000	2.000000	0.012818	-0.002627
&VALUE	28.000000	0.100000	2.000000	0.013220	-0.002243
&VALUE	30.000000	0.100000	2.000000	0.013580	-0.001804
*					
&VALUE	-4.000000	0.200000	2.000000	0.018419	-0.021846
&VALUE	-2.000000	0.200000	2.000000	0.017752	-0.020511
&VALUE	0.000000	0.200000	2.000000	0.017105	-0.019129
&VALUE	2.000000	0.200000	2.000000	0.016482	-0.017713
&VALUE	4.000000	0.200000	2.000000	0.015887	-0.016274
&VALUE	6.000000	0.200000	2.000000	0.015328	-0.014823
&VALUE	8.000000	0.200000	2.000000	0.014804	-0.013369
&VALUE	10.000000	0.200000	2.000000	0.014324	-0.011929
&VALUE	12.000000	0.200000	2.000000	0.013888	-0.010507
&VALUE	14.000000	0.200000	2.000000	0.013480	-0.009091
&VALUE	16.000000	0.200000	2.000000	0.013106	-0.007692
&VALUE	18.000000	0.200000	2.000000	0.012768	-0.006320
&VALUE	20.000000	0.200000	2.000000	0.012467	-0.004978
&VALUE	22.000000	0.200000	2.000000	0.012255	-0.003743
&VALUE	24.000000	0.200000	2.000000	0.012338	-0.002907
&VALUE	26.000000	0.200000	2.000000	0.012830	-0.002643
&VALUE	28.000000	0.200000	2.000000	0.013192	-0.002203
&VALUE	30.000000	0.200000	2.000000	0.013512	-0.001707
*					
&VALUE	-4.000000	0.300000	2.000000	0.018418	-0.021845
&VALUE	-2.000000	0.300000	2.000000	0.017747	-0.020504
&VALUE	0.000000	0.300000	2.000000	0.017096	-0.019120
&VALUE	2.000000	0.300000	2.000000	0.016473	-0.017703
&VALUE	4.000000	0.300000	2.000000	0.015880	-0.016265
&VALUE	6.000000	0.300000	2.000000	0.015325	-0.014819
&VALUE	8.000000	0.300000	2.000000	0.014807	-0.013373
&VALUE	10.000000	0.300000	2.000000	0.014334	-0.011942
&VALUE	12.000000	0.300000	2.000000	0.013907	-0.010532
&VALUE	14.000000	0.300000	2.000000	0.013509	-0.009129
&VALUE	16.000000	0.300000	2.000000	0.013146	-0.007746
&VALUE	18.000000	0.300000	2.000000	0.012821	-0.006391
&VALUE	20.000000	0.300000	2.000000	0.012537	-0.005072
&VALUE	22.000000	0.300000	2.000000	0.012360	-0.003888
&VALUE	24.000000	0.300000	2.000000	0.012624	-0.003305
&VALUE	26.000000	0.300000	2.000000	0.012994	-0.002874
&VALUE	28.000000	0.300000	2.000000	0.013279	-0.002326
&VALUE	30.000000	0.300000	2.000000	0.013474	-0.001654
*					
&VALUE	-4.000000	0.400000	2.000000	0.018417	-0.021844
&VALUE	-2.000000	0.400000	2.000000	0.017738	-0.020495
&VALUE	0.000000	0.400000	2.000000	0.017082	-0.019104
&VALUE	2.000000	0.400000	2.000000	0.016456	-0.017683
&VALUE	4.000000	0.400000	2.000000	0.015863	-0.016245
&VALUE	6.000000	0.400000	2.000000	0.015311	-0.014802
&VALUE	8.000000	0.400000	2.000000	0.014798	-0.013361
&VALUE	10.000000	0.400000	2.000000	0.014331	-0.011938
&VALUE	12.000000	0.400000	2.000000	0.013911	-0.010537
&VALUE	14.000000	0.400000	2.000000	0.013522	-0.009147
&VALUE	16.000000	0.400000	2.000000	0.013170	-0.007778
&VALUE	18.000000	0.400000	2.000000	0.012856	-0.006438

&VALUE	20.000000	0.400000	2.000000	0.012610	-0.005173
&VALUE	22.000000	0.400000	2.000000	0.012558	-0.004160
&VALUE	24.000000	0.400000	2.000000	0.012863	-0.003637
&VALUE	26.000000	0.400000	2.000000	0.013082	-0.002997
&VALUE	28.000000	0.400000	2.000000	0.013237	-0.002267
&VALUE	30.000000	0.400000	2.000000	0.013356	-0.001487
*					
&VALUE	-4.000000	0.500000	2.000000	0.018416	-0.021842
&VALUE	-2.000000	0.500000	2.000000	0.017726	-0.020481
&VALUE	0.000000	0.500000	2.000000	0.017061	-0.019080
&VALUE	2.000000	0.500000	2.000000	0.016430	-0.017653
&VALUE	4.000000	0.500000	2.000000	0.015835	-0.016211
&VALUE	6.000000	0.500000	2.000000	0.015283	-0.014769
&VALUE	8.000000	0.500000	2.000000	0.014774	-0.013331
&VALUE	10.000000	0.500000	2.000000	0.014312	-0.011914
&VALUE	12.000000	0.500000	2.000000	0.013899	-0.010522
&VALUE	14.000000	0.500000	2.000000	0.013519	-0.009142
&VALUE	16.000000	0.500000	2.000000	0.013176	-0.007786
&VALUE	18.000000	0.500000	2.000000	0.012873	-0.006461
&VALUE	20.000000	0.500000	2.000000	0.012652	-0.005230
&VALUE	22.000000	0.500000	2.000000	0.012748	-0.004422
&VALUE	24.000000	0.500000	2.000000	0.012971	-0.003787
&VALUE	26.000000	0.500000	2.000000	0.013137	-0.003075
&VALUE	28.000000	0.500000	2.000000	0.013197	-0.002211
&VALUE	30.000000	0.500000	2.000000	0.013277	-0.001375
*					
&VALUE	-4.000000	0.100000	3.000000	0.018050	-0.021452
&VALUE	-2.000000	0.100000	3.000000	0.017394	-0.020117
&VALUE	0.000000	0.100000	3.000000	0.016758	-0.018737
&VALUE	2.000000	0.100000	3.000000	0.016145	-0.017323
&VALUE	4.000000	0.100000	3.000000	0.015560	-0.015885
&VALUE	6.000000	0.100000	3.000000	0.015012	-0.014439
&VALUE	8.000000	0.100000	3.000000	0.014497	-0.012988
&VALUE	10.000000	0.100000	3.000000	0.014025	-0.011550
&VALUE	12.000000	0.100000	3.000000	0.013595	-0.010131
&VALUE	14.000000	0.100000	3.000000	0.013194	-0.008717
&VALUE	16.000000	0.100000	3.000000	0.012825	-0.007320
&VALUE	18.000000	0.100000	3.000000	0.012493	-0.005950
&VALUE	20.000000	0.100000	3.000000	0.012197	-0.004609
&VALUE	22.000000	0.100000	3.000000	0.011982	-0.003368
&VALUE	24.000000	0.100000	3.000000	0.012036	-0.002488
&VALUE	26.000000	0.100000	3.000000	0.012530	-0.002224
&VALUE	28.000000	0.100000	3.000000	0.012924	-0.001826
&VALUE	30.000000	0.100000	3.000000	0.013291	-0.001393
*					
&VALUE	-4.000000	0.200000	3.000000	0.018047	-0.021449
&VALUE	-2.000000	0.200000	3.000000	0.017388	-0.020110
&VALUE	0.000000	0.200000	3.000000	0.016749	-0.018727
&VALUE	2.000000	0.200000	3.000000	0.016134	-0.017309
&VALUE	4.000000	0.200000	3.000000	0.015547	-0.015869
&VALUE	6.000000	0.200000	3.000000	0.014997	-0.014421
&VALUE	8.000000	0.200000	3.000000	0.014482	-0.012970
&VALUE	10.000000	0.200000	3.000000	0.014009	-0.011531
&VALUE	12.000000	0.200000	3.000000	0.013580	-0.010111
&VALUE	14.000000	0.200000	3.000000	0.013178	-0.008696
&VALUE	16.000000	0.200000	3.000000	0.012810	-0.007300
&VALUE	18.000000	0.200000	3.000000	0.012479	-0.005930
&VALUE	20.000000	0.200000	3.000000	0.012183	-0.004591
&VALUE	22.000000	0.200000	3.000000	0.011975	-0.003357
&VALUE	24.000000	0.200000	3.000000	0.012056	-0.002515
&VALUE	26.000000	0.200000	3.000000	0.012540	-0.002237
&VALUE	28.000000	0.200000	3.000000	0.012895	-0.001785
&VALUE	30.000000	0.200000	3.000000	0.013221	-0.001295
*					
&VALUE	-4.000000	0.300000	3.000000	0.018039	-0.021441
&VALUE	-2.000000	0.300000	3.000000	0.017376	-0.020097
&VALUE	0.000000	0.300000	3.000000	0.016734	-0.018710
&VALUE	2.000000	0.300000	3.000000	0.016118	-0.017292
&VALUE	4.000000	0.300000	3.000000	0.015534	-0.015853
&VALUE	6.000000	0.300000	3.000000	0.014989	-0.014411
&VALUE	8.000000	0.300000	3.000000	0.014480	-0.012967
&VALUE	10.000000	0.300000	3.000000	0.014014	-0.011537
&VALUE	12.000000	0.300000	3.000000	0.013593	-0.010128
&VALUE	14.000000	0.300000	3.000000	0.013202	-0.008727

&VALUE	16.000000	0.300000	3.000000	0.012845	-0.007346
&VALUE	18.000000	0.300000	3.000000	0.012525	-0.005993
&VALUE	20.000000	0.300000	3.000000	0.012246	-0.004677
&VALUE	22.000000	0.300000	3.000000	0.012073	-0.003492
&VALUE	24.000000	0.300000	3.000000	0.012332	-0.002900
&VALUE	26.000000	0.300000	3.000000	0.012697	-0.002458
&VALUE	28.000000	0.300000	3.000000	0.012976	-0.001899
&VALUE	30.000000	0.300000	3.000000	0.013178	-0.001234
*					
&VALUE	-4.000000	0.400000	3.000000	0.018029	-0.021430
&VALUE	-2.000000	0.400000	3.000000	0.017358	-0.020078
&VALUE	0.000000	0.400000	3.000000	0.016711	-0.018685
&VALUE	2.000000	0.400000	3.000000	0.016093	-0.017263
&VALUE	4.000000	0.400000	3.000000	0.015508	-0.015823
&VALUE	6.000000	0.400000	3.000000	0.014967	-0.014384
&VALUE	8.000000	0.400000	3.000000	0.014463	-0.012945
&VALUE	10.000000	0.400000	3.000000	0.014003	-0.011523
&VALUE	12.000000	0.400000	3.000000	0.013590	-0.010124
&VALUE	14.000000	0.400000	3.000000	0.013208	-0.008735
&VALUE	16.000000	0.400000	3.000000	0.012861	-0.007368
&VALUE	18.000000	0.400000	3.000000	0.012553	-0.006030
&VALUE	20.000000	0.400000	3.000000	0.012312	-0.004767
&VALUE	22.000000	0.400000	3.000000	0.012261	-0.003751
&VALUE	24.000000	0.400000	3.000000	0.012561	-0.003217
&VALUE	26.000000	0.400000	3.000000	0.012777	-0.002569
&VALUE	28.000000	0.400000	3.000000	0.012929	-0.001832
&VALUE	30.000000	0.400000	3.000000	0.013053	-0.001057
*					
&VALUE	-4.000000	0.500000	3.000000	0.018016	-0.021416
&VALUE	-2.000000	0.500000	3.000000	0.017334	-0.020051
&VALUE	0.000000	0.500000	3.000000	0.016679	-0.018648
&VALUE	2.000000	0.500000	3.000000	0.016056	-0.017219
&VALUE	4.000000	0.500000	3.000000	0.015469	-0.015776
&VALUE	6.000000	0.500000	3.000000	0.014929	-0.014339
&VALUE	8.000000	0.500000	3.000000	0.014429	-0.012903
&VALUE	10.000000	0.500000	3.000000	0.013975	-0.011487
&VALUE	12.000000	0.500000	3.000000	0.013568	-0.010096
&VALUE	14.000000	0.500000	3.000000	0.013194	-0.008718
&VALUE	16.000000	0.500000	3.000000	0.012858	-0.007364
&VALUE	18.000000	0.500000	3.000000	0.012561	-0.006041
&VALUE	20.000000	0.500000	3.000000	0.012344	-0.004810
&VALUE	22.000000	0.500000	3.000000	0.012439	-0.003996
&VALUE	24.000000	0.500000	3.000000	0.012658	-0.003352
&VALUE	26.000000	0.500000	3.000000	0.012822	-0.002632
&VALUE	28.000000	0.500000	3.000000	0.012881	-0.001765
&VALUE	30.000000	0.500000	3.000000	0.012965	-0.000932
*					
&VALUE	-4.000000	0.100000	4.000000	0.017340	-0.020696
&VALUE	-2.000000	0.100000	4.000000	0.016702	-0.019357
&VALUE	0.000000	0.100000	4.000000	0.016082	-0.017974
&VALUE	2.000000	0.100000	4.000000	0.015486	-0.016558
&VALUE	4.000000	0.100000	4.000000	0.014917	-0.015121
&VALUE	6.000000	0.100000	4.000000	0.014384	-0.013676
&VALUE	8.000000	0.100000	4.000000	0.013885	-0.012228
&VALUE	10.000000	0.100000	4.000000	0.013427	-0.010793
&VALUE	12.000000	0.100000	4.000000	0.013010	-0.009377
&VALUE	14.000000	0.100000	4.000000	0.012621	-0.007967
&VALUE	16.000000	0.100000	4.000000	0.012264	-0.006575
&VALUE	18.000000	0.100000	4.000000	0.011943	-0.005209
&VALUE	20.000000	0.100000	4.000000	0.011656	-0.003873
&VALUE	22.000000	0.100000	4.000000	0.011449	-0.002634
&VALUE	24.000000	0.100000	4.000000	0.011502	-0.001745
&VALUE	26.000000	0.100000	4.000000	0.011979	-0.001452
&VALUE	28.000000	0.100000	4.000000	0.012360	-0.001031
&VALUE	30.000000	0.100000	4.000000	0.012723	-0.000588
*					
&VALUE	-4.000000	0.200000	4.000000	0.017332	-0.020687
&VALUE	-2.000000	0.200000	4.000000	0.016690	-0.019344
&VALUE	0.000000	0.200000	4.000000	0.016068	-0.017958
&VALUE	2.000000	0.200000	4.000000	0.015470	-0.016539
&VALUE	4.000000	0.200000	4.000000	0.014900	-0.015099
&VALUE	6.000000	0.200000	4.000000	0.014366	-0.013653
&VALUE	8.000000	0.200000	4.000000	0.013865	-0.012204
&VALUE	10.000000	0.200000	4.000000	0.013407	-0.010768

&VALUE	12.000000	0.200000	4.000000	0.012990	-0.009352
&VALUE	14.000000	0.200000	4.000000	0.012602	-0.007942
&VALUE	16.000000	0.200000	4.000000	0.012245	-0.006550
&VALUE	18.000000	0.200000	4.000000	0.011925	-0.005185
&VALUE	20.000000	0.200000	4.000000	0.011639	-0.003850
&VALUE	22.000000	0.200000	4.000000	0.011438	-0.002617
&VALUE	24.000000	0.200000	4.000000	0.011516	-0.001765
&VALUE	26.000000	0.200000	4.000000	0.011984	-0.001459
&VALUE	28.000000	0.200000	4.000000	0.012328	-0.000985
&VALUE	30.000000	0.200000	4.000000	0.012649	-0.000483
*					
&VALUE	-4.000000	0.300000	4.000000	0.017312	-0.020666
&VALUE	-2.000000	0.300000	4.000000	0.016667	-0.019318
&VALUE	0.000000	0.300000	4.000000	0.016042	-0.017928
&VALUE	2.000000	0.300000	4.000000	0.015444	-0.016509
&VALUE	4.000000	0.300000	4.000000	0.014876	-0.015071
&VALUE	6.000000	0.300000	4.000000	0.014347	-0.013630
&VALUE	8.000000	0.300000	4.000000	0.013853	-0.012188
&VALUE	10.000000	0.300000	4.000000	0.013401	-0.010761
&VALUE	12.000000	0.300000	4.000000	0.012994	-0.009356
&VALUE	14.000000	0.300000	4.000000	0.012615	-0.007959
&VALUE	16.000000	0.300000	4.000000	0.012269	-0.006582
&VALUE	18.000000	0.300000	4.000000	0.011960	-0.005233
&VALUE	20.000000	0.300000	4.000000	0.011691	-0.003920
&VALUE	22.000000	0.300000	4.000000	0.011524	-0.002736
&VALUE	24.000000	0.300000	4.000000	0.011774	-0.002124
&VALUE	26.000000	0.300000	4.000000	0.012127	-0.001658
&VALUE	28.000000	0.300000	4.000000	0.012396	-0.001081
&VALUE	30.000000	0.300000	4.000000	0.012594	-0.000405
*					
&VALUE	-4.000000	0.400000	4.000000	0.017286	-0.020638
&VALUE	-2.000000	0.400000	4.000000	0.016633	-0.019281
&VALUE	0.000000	0.400000	4.000000	0.016004	-0.017885
&VALUE	2.000000	0.400000	4.000000	0.015403	-0.016463
&VALUE	4.000000	0.400000	4.000000	0.014836	-0.015024
&VALUE	6.000000	0.400000	4.000000	0.014310	-0.013586
&VALUE	8.000000	0.400000	4.000000	0.013822	-0.012150
&VALUE	10.000000	0.400000	4.000000	0.013377	-0.010730
&VALUE	12.000000	0.400000	4.000000	0.012977	-0.009334
&VALUE	14.000000	0.400000	4.000000	0.012607	-0.007949
&VALUE	16.000000	0.400000	4.000000	0.012272	-0.006585
&VALUE	18.000000	0.400000	4.000000	0.011974	-0.005251
&VALUE	20.000000	0.400000	4.000000	0.011742	-0.003989
&VALUE	22.000000	0.400000	4.000000	0.011692	-0.002968
&VALUE	24.000000	0.400000	4.000000	0.011982	-0.002413
&VALUE	26.000000	0.400000	4.000000	0.012190	-0.001748
&VALUE	28.000000	0.400000	4.000000	0.012337	-0.000998
&VALUE	30.000000	0.400000	4.000000	0.012453	-0.000206
*					
&VALUE	-4.000000	0.500000	4.000000	0.017250	-0.020600
&VALUE	-2.000000	0.500000	4.000000	0.016588	-0.019231
&VALUE	0.000000	0.500000	4.000000	0.015951	-0.017826
&VALUE	2.000000	0.500000	4.000000	0.015346	-0.016396
&VALUE	4.000000	0.500000	4.000000	0.014777	-0.014954
&VALUE	6.000000	0.500000	4.000000	0.014254	-0.013518
&VALUE	8.000000	0.500000	4.000000	0.013769	-0.012085
&VALUE	10.000000	0.500000	4.000000	0.013330	-0.010671
&VALUE	12.000000	0.500000	4.000000	0.012937	-0.009283
&VALUE	14.000000	0.500000	4.000000	0.012576	-0.007908
&VALUE	16.000000	0.500000	4.000000	0.012251	-0.006557
&VALUE	18.000000	0.500000	4.000000	0.011964	-0.005238
&VALUE	20.000000	0.500000	4.000000	0.011755	-0.004008
&VALUE	22.000000	0.500000	4.000000	0.011847	-0.003180
&VALUE	24.000000	0.500000	4.000000	0.012058	-0.002518
&VALUE	26.000000	0.500000	4.000000	0.012216	-0.001784
&VALUE	28.000000	0.500000	4.000000	0.012273	-0.000908
&VALUE	30.000000	0.500000	4.000000	0.012345	-0.000053
*					
&VALUE	-4.000000	0.100000	5.000000	0.016408	-0.019703
&VALUE	-2.000000	0.100000	5.000000	0.015793	-0.018358
&VALUE	0.000000	0.100000	5.000000	0.015196	-0.016972
&VALUE	2.000000	0.100000	5.000000	0.014622	-0.015556
&VALUE	4.000000	0.100000	5.000000	0.014075	-0.014120
&VALUE	6.000000	0.100000	5.000000	0.013564	-0.012678

&VALUE	8.000000	0.100000	5.000000	0.013084	-0.011235
&VALUE	10.000000	0.100000	5.000000	0.012645	-0.009804
&VALUE	12.000000	0.100000	5.000000	0.012247	-0.008394
&VALUE	14.000000	0.100000	5.000000	0.011875	-0.006990
&VALUE	16.000000	0.100000	5.000000	0.011534	-0.005604
&VALUE	18.000000	0.100000	5.000000	0.011227	-0.004245
&VALUE	20.000000	0.100000	5.000000	0.010954	-0.002916
&VALUE	22.000000	0.100000	5.000000	0.010756	-0.001679
&VALUE	24.000000	0.100000	5.000000	0.010806	-0.000779
&VALUE	26.000000	0.100000	5.000000	0.011262	-0.000447
&VALUE	28.000000	0.100000	5.000000	0.011625	0.000006
&VALUE	30.000000	0.100000	5.000000	0.011954	0.000502
*					
&VALUE	-4.000000	0.200000	5.000000	0.016393	-0.019686
&VALUE	-2.000000	0.200000	5.000000	0.015774	-0.018337
&VALUE	0.000000	0.200000	5.000000	0.015175	-0.016949
&VALUE	2.000000	0.200000	5.000000	0.014599	-0.015530
&VALUE	4.000000	0.200000	5.000000	0.014052	-0.014092
&VALUE	6.000000	0.200000	5.000000	0.013539	-0.012648
&VALUE	8.000000	0.200000	5.000000	0.013059	-0.011204
&VALUE	10.000000	0.200000	5.000000	0.012620	-0.009773
&VALUE	12.000000	0.200000	5.000000	0.012222	-0.008361
&VALUE	14.000000	0.200000	5.000000	0.011850	-0.006958
&VALUE	16.000000	0.200000	5.000000	0.011510	-0.005573
&VALUE	18.000000	0.200000	5.000000	0.011204	-0.004214
&VALUE	20.000000	0.200000	5.000000	0.010931	-0.002886
&VALUE	22.000000	0.200000	5.000000	0.010740	-0.001656
&VALUE	24.000000	0.200000	5.000000	0.010814	-0.000790
&VALUE	26.000000	0.200000	5.000000	0.011260	-0.000445
&VALUE	28.000000	0.200000	5.000000	0.011589	0.000058
&VALUE	30.000000	0.200000	5.000000	0.011875	0.000615
*					
&VALUE	-4.000000	0.300000	5.000000	0.016358	-0.019649
&VALUE	-2.000000	0.300000	5.000000	0.015736	-0.018296
&VALUE	0.000000	0.300000	5.000000	0.015135	-0.016904
&VALUE	2.000000	0.300000	5.000000	0.014560	-0.015484
&VALUE	4.000000	0.300000	5.000000	0.014014	-0.014047
&VALUE	6.000000	0.300000	5.000000	0.013507	-0.012609
&VALUE	8.000000	0.300000	5.000000	0.013034	-0.011172
&VALUE	10.000000	0.300000	5.000000	0.012602	-0.009749
&VALUE	12.000000	0.300000	5.000000	0.012212	-0.008349
&VALUE	14.000000	0.300000	5.000000	0.011850	-0.006958
&VALUE	16.000000	0.300000	5.000000	0.011520	-0.005587
&VALUE	18.000000	0.300000	5.000000	0.011226	-0.004243
&VALUE	20.000000	0.300000	5.000000	0.010969	-0.002937
&VALUE	22.000000	0.300000	5.000000	0.010810	-0.001753
&VALUE	24.000000	0.300000	5.000000	0.011048	-0.001115
&VALUE	26.000000	0.300000	5.000000	0.011384	-0.000619
&VALUE	28.000000	0.300000	5.000000	0.011641	-0.000017
&VALUE	30.000000	0.300000	5.000000	0.011809	0.000708
*					
&VALUE	-4.000000	0.400000	5.000000	0.016311	-0.019598
&VALUE	-2.000000	0.400000	5.000000	0.015683	-0.018237
&VALUE	0.000000	0.400000	5.000000	0.015078	-0.016839
&VALUE	2.000000	0.400000	5.000000	0.014501	-0.015416
&VALUE	4.000000	0.400000	5.000000	0.013956	-0.013978
&VALUE	6.000000	0.400000	5.000000	0.013453	-0.012544
&VALUE	8.000000	0.400000	5.000000	0.012985	-0.011111
&VALUE	10.000000	0.400000	5.000000	0.012560	-0.009696
&VALUE	12.000000	0.400000	5.000000	0.012178	-0.008305
&VALUE	14.000000	0.400000	5.000000	0.011825	-0.006925
&VALUE	16.000000	0.400000	5.000000	0.011506	-0.005567
&VALUE	18.000000	0.400000	5.000000	0.011222	-0.004239
&VALUE	20.000000	0.400000	5.000000	0.011001	-0.002980
&VALUE	22.000000	0.400000	5.000000	0.010954	-0.001951
&VALUE	24.000000	0.400000	5.000000	0.011229	-0.001367
&VALUE	26.000000	0.400000	5.000000	0.011428	-0.000680
&VALUE	28.000000	0.400000	5.000000	0.011568	0.000087
&VALUE	30.000000	0.400000	5.000000	0.011658	0.000921
*					
&VALUE	-4.000000	0.500000	5.000000	0.016247	-0.019530
&VALUE	-2.000000	0.500000	5.000000	0.015610	-0.018157
&VALUE	0.000000	0.500000	5.000000	0.014999	-0.016749
&VALUE	2.000000	0.500000	5.000000	0.014419	-0.015320

```

&VALUE 4.000000 0.500000 5.000000 0.013873 -0.013880
&VALUE 6.000000 0.500000 5.000000 0.013373 -0.012447
&VALUE 8.000000 0.500000 5.000000 0.012910 -0.011018
&VALUE 10.000000 0.500000 5.000000 0.012490 -0.009608
&VALUE 12.000000 0.500000 5.000000 0.012116 -0.008225
&VALUE 14.000000 0.500000 5.000000 0.011772 -0.006855
&VALUE 16.000000 0.500000 5.000000 0.011462 -0.005510
&VALUE 18.000000 0.500000 5.000000 0.011190 -0.004195
&VALUE 20.000000 0.500000 5.000000 0.010991 -0.002967
&VALUE 22.000000 0.500000 5.000000 0.011078 -0.002122
&VALUE 24.000000 0.500000 5.000000 0.011279 -0.001436
&VALUE 26.000000 0.500000 5.000000 0.011429 -0.000682
&VALUE 28.000000 0.500000 5.000000 0.011483 0.000206
&VALUE 30.000000 0.500000 5.000000 0.011536 0.001095
*
&END

```

- GRD_1430.inp (ground effect = 1.430 m)

```

&ARG01 C PROTOCOL 0 GRD+X.XXX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 REF. BELOW
&ARG12 X ALTITUDE 20 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG04 &ARG13 &FUN01 &FUN02 &FUN03
&UNAME AOA MACH FLAP_SET HGE CLGR CDGR CMGR
&UCODE 1 2 9 20 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*GROUND EFFECT*
*
&VALUE -4.000000 0.100000 1.000000 1.430000 -0.022439 -0.000002 0.008280
&VALUE -2.000000 0.100000 1.000000 1.430000 0.053410 -0.000405 -0.039931
&VALUE 0.000000 0.100000 1.000000 1.430000 0.102542 -0.001464 -0.077508
&VALUE 2.000000 0.100000 1.000000 1.430000 0.132054 -0.003172 -0.106343
&VALUE 4.000000 0.100000 1.000000 1.430000 0.179080 -0.005497 -0.140118
&VALUE 6.000000 0.100000 1.000000 1.430000 0.164210 -0.009386 -0.147304
&VALUE 8.000000 0.100000 1.000000 1.430000 0.149958 -0.013114 -0.148901
&VALUE 10.000000 0.100000 1.000000 1.430000 0.137735 -0.017240 -0.145220
&VALUE 12.000000 0.100000 1.000000 1.430000 0.126453 -0.021640 -0.142501
&VALUE 14.000000 0.100000 1.000000 1.430000 0.112563 -0.026162 -0.133926
&VALUE 16.000000 0.100000 1.000000 1.430000 0.098243 -0.030649 -0.125203
&VALUE 18.000000 0.100000 1.000000 1.430000 0.086486 -0.034946 -0.119071
&VALUE 20.000000 0.100000 1.000000 1.430000 0.064173 -0.038902 -0.105226
&VALUE 22.000000 0.100000 1.000000 1.430000 0.003854 -0.040641 -0.066743
&VALUE 24.000000 0.100000 1.000000 1.430000 -0.174980 -0.035795 0.037610
&VALUE 26.000000 0.100000 1.000000 1.430000 -0.166624 -0.023430 0.087226
&VALUE 28.000000 0.100000 1.000000 1.430000 -0.165254 -0.017298 0.155742
&VALUE 30.000000 0.100000 1.000000 1.430000 -0.143120 -0.012453 0.206706
*
&VALUE -4.000000 0.200000 1.000000 1.430000 -0.022600 -0.000002 0.008355
&VALUE -2.000000 0.200000 1.000000 1.430000 0.053756 -0.000403 -0.040101
&VALUE 0.000000 0.200000 1.000000 1.430000 0.102967 -0.001461 -0.077725
&VALUE 2.000000 0.200000 1.000000 1.430000 0.132371 -0.003164 -0.106513
&VALUE 4.000000 0.200000 1.000000 1.430000 0.179370 -0.005474 -0.140306
&VALUE 6.000000 0.200000 1.000000 1.430000 0.164191 -0.009335 -0.147369
&VALUE 8.000000 0.200000 1.000000 1.430000 0.149782 -0.013013 -0.148932
&VALUE 10.000000 0.200000 1.000000 1.430000 0.137399 -0.017070 -0.145281
&VALUE 12.000000 0.200000 1.000000 1.430000 0.126012 -0.021380 -0.142549
&VALUE 14.000000 0.200000 1.000000 1.430000 0.112070 -0.025794 -0.134003
&VALUE 16.000000 0.200000 1.000000 1.430000 0.097919 -0.030161 -0.125509
&VALUE 18.000000 0.200000 1.000000 1.430000 0.086284 -0.034328 -0.119653
&VALUE 20.000000 0.200000 1.000000 1.430000 0.063158 -0.038151 -0.105509
&VALUE 22.000000 0.200000 1.000000 1.430000 -0.002522 -0.039683 -0.065177
&VALUE 24.000000 0.200000 1.000000 1.430000 -0.168534 -0.034365 0.033343
&VALUE 26.000000 0.200000 1.000000 1.430000 -0.148536 -0.022838 0.077731

```

&VALUE	28.000000	0.200000	1.000000	1.430000	-0.148539	-0.017401	0.149452
&VALUE	30.000000	0.200000	1.000000	1.430000	-0.132072	-0.012950	0.205921
*							
&VALUE	-4.000000	0.300000	1.000000	1.430000	-0.022772	-0.000002	0.008393
&VALUE	-2.000000	0.300000	1.000000	1.430000	0.054048	-0.000407	-0.040080
&VALUE	0.000000	0.300000	1.000000	1.430000	0.102752	-0.001477	-0.077370
&VALUE	2.000000	0.300000	1.000000	1.430000	0.131328	-0.003188	-0.105659
&VALUE	4.000000	0.300000	1.000000	1.430000	0.177569	-0.005492	-0.138775
&VALUE	6.000000	0.300000	1.000000	1.430000	0.161793	-0.009332	-0.145257
&VALUE	8.000000	0.300000	1.000000	1.430000	0.147015	-0.012947	-0.146251
&VALUE	10.000000	0.300000	1.000000	1.430000	0.134473	-0.016904	-0.142002
&VALUE	12.000000	0.300000	1.000000	1.430000	0.123227	-0.021069	-0.138804
&VALUE	14.000000	0.300000	1.000000	1.430000	0.109687	-0.025292	-0.129936
&VALUE	16.000000	0.300000	1.000000	1.430000	0.095785	-0.029422	-0.120951
&VALUE	18.000000	0.300000	1.000000	1.430000	0.083575	-0.033312	-0.114112
&VALUE	20.000000	0.300000	1.000000	1.430000	0.056207	-0.036720	-0.096874
&VALUE	22.000000	0.300000	1.000000	1.430000	-0.063887	-0.037412	-0.031928
&VALUE	24.000000	0.300000	1.000000	1.430000	-0.127562	-0.028585	0.025455
&VALUE	26.000000	0.300000	1.000000	1.430000	-0.115270	-0.021370	0.078494
&VALUE	28.000000	0.300000	1.000000	1.430000	-0.095251	-0.016609	0.158972
&VALUE	30.000000	0.300000	1.000000	1.430000	-0.054867	-0.013882	0.225114
*							
&VALUE	-4.000000	0.400000	1.000000	1.430000	-0.023070	-0.000002	0.008507
&VALUE	-2.000000	0.400000	1.000000	1.430000	0.054672	-0.000419	-0.040255
&VALUE	0.000000	0.400000	1.000000	1.430000	0.102979	-0.001514	-0.077296
&VALUE	2.000000	0.400000	1.000000	1.430000	0.130693	-0.003256	-0.105092
&VALUE	4.000000	0.400000	1.000000	1.430000	0.176090	-0.005586	-0.137610
&VALUE	6.000000	0.400000	1.000000	1.430000	0.159652	-0.009454	-0.143546
&VALUE	8.000000	0.400000	1.000000	1.430000	0.144380	-0.013052	-0.144042
&VALUE	10.000000	0.400000	1.000000	1.430000	0.131536	-0.016961	-0.139352
&VALUE	12.000000	0.400000	1.000000	1.430000	0.120308	-0.021035	-0.135800
&VALUE	14.000000	0.400000	1.000000	1.430000	0.107123	-0.025122	-0.126967
&VALUE	16.000000	0.400000	1.000000	1.430000	0.093812	-0.029072	-0.118228
&VALUE	18.000000	0.400000	1.000000	1.430000	0.076403	-0.032738	-0.108607
&VALUE	20.000000	0.400000	1.000000	1.430000	0.029026	-0.035246	-0.080756
&VALUE	22.000000	0.400000	1.000000	1.430000	-0.088549	-0.033232	-0.014725
&VALUE	24.000000	0.400000	1.000000	1.430000	-0.072472	-0.024949	0.008833
&VALUE	26.000000	0.400000	1.000000	1.430000	-0.070283	-0.020959	0.069184
&VALUE	28.000000	0.400000	1.000000	1.430000	-0.076753	-0.017551	0.174786
&VALUE	30.000000	0.400000	1.000000	1.430000	-0.075815	-0.015477	0.272737
*							
&VALUE	-4.000000	0.500000	1.000000	1.430000	-0.023526	-0.000002	0.008713
&VALUE	-2.000000	0.500000	1.000000	1.430000	0.055687	-0.000436	-0.040638
&VALUE	0.000000	0.500000	1.000000	1.430000	0.103708	-0.001574	-0.077497
&VALUE	2.000000	0.500000	1.000000	1.430000	0.130495	-0.003371	-0.104771
&VALUE	4.000000	0.500000	1.000000	1.430000	0.175007	-0.005755	-0.136762
&VALUE	6.000000	0.500000	1.000000	1.430000	0.157768	-0.009698	-0.142119
&VALUE	8.000000	0.500000	1.000000	1.430000	0.141740	-0.013321	-0.142095
&VALUE	10.000000	0.500000	1.000000	1.430000	0.128517	-0.017221	-0.137128
&VALUE	12.000000	0.500000	1.000000	1.430000	0.117183	-0.021243	-0.133283
&VALUE	14.000000	0.500000	1.000000	1.430000	0.104214	-0.025233	-0.124499
&VALUE	16.000000	0.500000	1.000000	1.430000	0.091391	-0.029035	-0.116100
&VALUE	18.000000	0.500000	1.000000	1.430000	0.071382	-0.032509	-0.105157
&VALUE	20.000000	0.500000	1.000000	1.430000	-0.011399	-0.034482	-0.060474
&VALUE	22.000000	0.500000	1.000000	1.430000	-0.062532	-0.029389	-0.020765
&VALUE	24.000000	0.500000	1.000000	1.430000	-0.051292	-0.024029	0.002996
&VALUE	26.000000	0.500000	1.000000	1.430000	-0.038371	-0.020467	0.058499
&VALUE	28.000000	0.500000	1.000000	1.430000	-0.067592	-0.018508	0.175817
&VALUE	30.000000	0.500000	1.000000	1.430000	-0.098323	-0.016552	0.290260
*							
&VALUE	-4.000000	0.100000	2.000000	1.430000	-0.022439	-0.000002	0.008280
&VALUE	-2.000000	0.100000	2.000000	1.430000	0.053410	-0.000405	-0.039931
&VALUE	0.000000	0.100000	2.000000	1.430000	0.102542	-0.001464	-0.077508
&VALUE	2.000000	0.100000	2.000000	1.430000	0.132054	-0.003172	-0.106343
&VALUE	4.000000	0.100000	2.000000	1.430000	0.179080	-0.005497	-0.140118
&VALUE	6.000000	0.100000	2.000000	1.430000	0.164210	-0.009386	-0.147304
&VALUE	8.000000	0.100000	2.000000	1.430000	0.149958	-0.013114	-0.148901
&VALUE	10.000000	0.100000	2.000000	1.430000	0.137735	-0.017240	-0.145220
&VALUE	12.000000	0.100000	2.000000	1.430000	0.126453	-0.021640	-0.142501
&VALUE	14.000000	0.100000	2.000000	1.430000	0.112563	-0.026162	-0.133926
&VALUE	16.000000	0.100000	2.000000	1.430000	0.098243	-0.030649	-0.125203
&VALUE	18.000000	0.100000	2.000000	1.430000	0.086486	-0.034946	-0.119071
&VALUE	20.000000	0.100000	2.000000	1.430000	0.064173	-0.038902	-0.105226
&VALUE	22.000000	0.100000	2.000000	1.430000	0.003854	-0.040641	-0.066743

eVALUE	24.000000	0.100000	2.000000	1.430000	-0.174980	-0.035795	0.037610
eVALUE	26.000000	0.100000	2.000000	1.430000	-0.166624	-0.023430	0.087226
eVALUE	28.000000	0.100000	2.000000	1.430000	-0.165254	-0.017298	0.155742
eVALUE	30.000000	0.100000	2.000000	1.430000	-0.143120	-0.012453	0.206706
*							
eVALUE	-4.000000	0.200000	2.000000	1.430000	-0.022600	-0.000002	0.008355
eVALUE	-2.000000	0.200000	2.000000	1.430000	0.053756	-0.000403	-0.040101
eVALUE	0.000000	0.200000	2.000000	1.430000	0.102967	-0.001461	-0.077725
eVALUE	2.000000	0.200000	2.000000	1.430000	0.132371	-0.003164	-0.106513
eVALUE	4.000000	0.200000	2.000000	1.430000	0.179370	-0.005474	-0.140306
eVALUE	6.000000	0.200000	2.000000	1.430000	0.164191	-0.009335	-0.147369
eVALUE	8.000000	0.200000	2.000000	1.430000	0.149782	-0.013013	-0.148932
eVALUE	10.000000	0.200000	2.000000	1.430000	0.137399	-0.017070	-0.145281
eVALUE	12.000000	0.200000	2.000000	1.430000	0.126012	-0.021380	-0.142549
eVALUE	14.000000	0.200000	2.000000	1.430000	0.112070	-0.025794	-0.134003
eVALUE	16.000000	0.200000	2.000000	1.430000	0.097919	-0.030161	-0.125509
eVALUE	18.000000	0.200000	2.000000	1.430000	0.086284	-0.034328	-0.119653
eVALUE	20.000000	0.200000	2.000000	1.430000	0.063158	-0.038151	-0.105509
eVALUE	22.000000	0.200000	2.000000	1.430000	+0.002522	-0.039683	-0.065177
eVALUE	24.000000	0.200000	2.000000	1.430000	-0.168534	-0.034365	0.033343
eVALUE	26.000000	0.200000	2.000000	1.430000	-0.148536	-0.022838	0.077731
eVALUE	28.000000	0.200000	2.000000	1.430000	-0.148539	-0.017401	0.149452
eVALUE	30.000000	0.200000	2.000000	1.430000	-0.132072	-0.012950	0.205921
*							
eVALUE	-4.000000	0.300000	2.000000	1.430000	-0.022772	-0.000002	0.008393
eVALUE	-2.000000	0.300000	2.000000	1.430000	0.054048	-0.000407	-0.040080
eVALUE	0.000000	0.300000	2.000000	1.430000	0.102752	-0.001477	-0.077370
eVALUE	2.000000	0.300000	2.000000	1.430000	0.131328	-0.003188	-0.105659
eVALUE	4.000000	0.300000	2.000000	1.430000	0.177569	-0.005492	-0.138775
eVALUE	6.000000	0.300000	2.000000	1.430000	0.161793	-0.009332	-0.145257
eVALUE	8.000000	0.300000	2.000000	1.430000	0.147015	-0.012947	-0.146251
eVALUE	10.000000	0.300000	2.000000	1.430000	0.134473	-0.016904	-0.142002
eVALUE	12.000000	0.300000	2.000000	1.430000	0.123227	-0.021069	-0.138804
eVALUE	14.000000	0.300000	2.000000	1.430000	0.109687	-0.025292	-0.129936
eVALUE	16.000000	0.300000	2.000000	1.430000	0.095785	-0.029422	-0.120951
eVALUE	18.000000	0.300000	2.000000	1.430000	0.083575	-0.033312	-0.114112
eVALUE	20.000000	0.300000	2.000000	1.430000	0.056207	-0.036720	-0.096874
eVALUE	22.000000	0.300000	2.000000	1.430000	-0.063887	-0.037412	-0.031928
eVALUE	24.000000	0.300000	2.000000	1.430000	-0.127562	-0.028585	0.025455
eVALUE	26.000000	0.300000	2.000000	1.430000	-0.115270	-0.021370	0.078494
eVALUE	28.000000	0.300000	2.000000	1.430000	-0.095251	-0.016609	0.158972
eVALUE	30.000000	0.300000	2.000000	1.430000	-0.054867	-0.013882	0.225114
*							
eVALUE	-4.000000	0.400000	2.000000	1.430000	-0.023070	-0.000002	0.008507
eVALUE	-2.000000	0.400000	2.000000	1.430000	0.054672	-0.000419	-0.040255
eVALUE	0.000000	0.400000	2.000000	1.430000	0.102979	-0.001514	-0.077296
eVALUE	2.000000	0.400000	2.000000	1.430000	0.130693	-0.003256	-0.105092
eVALUE	4.000000	0.400000	2.000000	1.430000	0.176090	-0.005586	-0.137610
eVALUE	6.000000	0.400000	2.000000	1.430000	0.159652	-0.009454	-0.143546
eVALUE	8.000000	0.400000	2.000000	1.430000	0.144380	-0.013052	-0.144042
eVALUE	10.000000	0.400000	2.000000	1.430000	0.131536	-0.016961	-0.139352
eVALUE	12.000000	0.400000	2.000000	1.430000	0.120308	-0.021035	-0.135800
eVALUE	14.000000	0.400000	2.000000	1.430000	0.107123	-0.025122	-0.126967
eVALUE	16.000000	0.400000	2.000000	1.430000	0.093812	-0.029072	-0.118228
eVALUE	18.000000	0.400000	2.000000	1.430000	0.076403	-0.032738	-0.108607
eVALUE	20.000000	0.400000	2.000000	1.430000	0.029026	-0.035246	-0.080756
eVALUE	22.000000	0.400000	2.000000	1.430000	-0.088549	-0.033232	-0.014725
eVALUE	24.000000	0.400000	2.000000	1.430000	-0.072472	-0.024949	0.008833
eVALUE	26.000000	0.400000	2.000000	1.430000	-0.070283	-0.020959	0.069184
eVALUE	28.000000	0.400000	2.000000	1.430000	-0.076753	-0.017551	0.174786
eVALUE	30.000000	0.400000	2.000000	1.430000	-0.075815	-0.015477	0.272737
*							
eVALUE	-4.000000	0.500000	2.000000	1.430000	-0.023526	-0.000002	0.008713
eVALUE	-2.000000	0.500000	2.000000	1.430000	0.055687	-0.000436	-0.040638
eVALUE	0.000000	0.500000	2.000000	1.430000	0.103708	-0.001574	-0.077497
eVALUE	2.000000	0.500000	2.000000	1.430000	0.130495	-0.003371	-0.104771
eVALUE	4.000000	0.500000	2.000000	1.430000	0.175007	-0.005755	-0.136762
eVALUE	6.000000	0.500000	2.000000	1.430000	0.157768	-0.009698	-0.142119
eVALUE	8.000000	0.500000	2.000000	1.430000	0.141740	-0.013321	-0.142095
eVALUE	10.000000	0.500000	2.000000	1.430000	0.128517	-0.017221	-0.137128
eVALUE	12.000000	0.500000	2.000000	1.430000	0.117183	-0.021243	-0.133283
eVALUE	14.000000	0.500000	2.000000	1.430000	0.104214	-0.025233	-0.124499
eVALUE	16.000000	0.500000	2.000000	1.430000	0.091391	-0.029035	-0.116100
eVALUE	18.000000	0.500000	2.000000	1.430000	0.071382	-0.032509	-0.105157

eVALUE	20.000000	0.500000	2.000000	1.430000	-0.011399	-0.034482	-0.060474
eVALUE	22.000000	0.500000	2.000000	1.430000	-0.062532	-0.029389	-0.020765
eVALUE	24.000000	0.500000	2.000000	1.430000	-0.051292	-0.024029	0.002996
eVALUE	26.000000	0.500000	2.000000	1.430000	-0.038371	-0.020467	0.058499
eVALUE	28.000000	0.500000	2.000000	1.430000	-0.067592	-0.018508	0.175817
eVALUE	30.000000	0.500000	2.000000	1.430000	-0.098323	-0.016552	0.290260
*							
eVALUE	-4.000000	0.100000	3.000000	1.430000	-0.022439	-0.000002	0.008474
eVALUE	-2.000000	0.100000	3.000000	1.430000	0.053410	-0.000405	-0.040334
eVALUE	0.000000	0.100000	3.000000	1.430000	0.102542	-0.001464	-0.078279
eVALUE	2.000000	0.100000	3.000000	1.430000	0.132054	-0.003172	-0.107317
eVALUE	4.000000	0.100000	3.000000	1.430000	0.179080	-0.005497	-0.141451
eVALUE	6.000000	0.100000	3.000000	1.430000	0.164210	-0.009386	-0.148471
eVALUE	8.000000	0.100000	3.000000	1.430000	0.149958	-0.013114	-0.149925
eVALUE	10.000000	0.100000	3.000000	1.430000	0.137735	-0.017240	-0.146136
eVALUE	12.000000	0.100000	3.000000	1.430000	0.126453	-0.021640	-0.143315
eVALUE	14.000000	0.100000	3.000000	1.430000	0.112563	-0.026162	-0.134630
eVALUE	16.000000	0.100000	3.000000	1.430000	0.098243	-0.030649	-0.125793
eVALUE	18.000000	0.100000	3.000000	1.430000	0.086486	-0.034946	-0.119565
eVALUE	20.000000	0.100000	3.000000	1.430000	0.064173	-0.038902	-0.105543
eVALUE	22.000000	0.100000	3.000000	1.430000	0.003854	-0.040641	-0.066585
eVALUE	24.000000	0.100000	3.000000	1.430000	-0.174980	-0.035795	0.039202
eVALUE	26.000000	0.100000	3.000000	1.430000	-0.166624	-0.023430	0.088592
eVALUE	28.000000	0.100000	3.000000	1.430000	-0.165254	-0.017298	0.156893
eVALUE	30.000000	0.100000	3.000000	1.430000	-0.143120	-0.012453	0.207482
*							
eVALUE	-4.000000	0.200000	3.000000	1.430000	-0.022600	-0.000002	0.008563
eVALUE	-2.000000	0.200000	3.000000	1.430000	0.053756	-0.000403	-0.040535
eVALUE	0.000000	0.200000	3.000000	1.430000	0.102967	-0.001461	-0.078552
eVALUE	2.000000	0.200000	3.000000	1.430000	0.132371	-0.003164	-0.107556
eVALUE	4.000000	0.200000	3.000000	1.430000	0.179370	-0.005474	-0.141732
eVALUE	6.000000	0.200000	3.000000	1.430000	0.164191	-0.009335	-0.148615
eVALUE	8.000000	0.200000	3.000000	1.430000	0.149782	-0.013013	-0.150023
eVALUE	10.000000	0.200000	3.000000	1.430000	0.137399	-0.017070	-0.146256
eVALUE	12.000000	0.200000	3.000000	1.430000	0.126012	-0.021380	-0.143414
eVALUE	14.000000	0.200000	3.000000	1.430000	0.112070	-0.025794	-0.134749
eVALUE	16.000000	0.200000	3.000000	1.430000	0.097919	-0.030161	-0.126135
eVALUE	18.000000	0.200000	3.000000	1.430000	0.086284	-0.034328	-0.120176
eVALUE	20.000000	0.200000	3.000000	1.430000	0.063158	-0.038151	-0.105836
eVALUE	22.000000	0.200000	3.000000	1.430000	-0.002522	-0.039683	-0.064948
eVALUE	24.000000	0.200000	3.000000	1.430000	-0.168534	-0.034365	0.034990
eVALUE	26.000000	0.200000	3.000000	1.430000	-0.148536	-0.022838	0.079032
eVALUE	28.000000	0.200000	3.000000	1.430000	-0.148539	-0.017401	0.150528
eVALUE	30.000000	0.200000	3.000000	1.430000	-0.132072	-0.012950	0.206636
*							
eVALUE	-4.000000	0.300000	3.000000	1.430000	-0.022772	-0.000002	0.008695
eVALUE	-2.000000	0.300000	3.000000	1.430000	0.054048	-0.000407	-0.040705
eVALUE	0.000000	0.300000	3.000000	1.430000	0.102752	-0.001477	-0.078553
eVALUE	2.000000	0.300000	3.000000	1.430000	0.131328	-0.003188	-0.107141
eVALUE	4.000000	0.300000	3.000000	1.430000	0.177569	-0.005492	-0.140797
eVALUE	6.000000	0.300000	3.000000	1.430000	0.161793	-0.009332	-0.147015
eVALUE	8.000000	0.300000	3.000000	1.430000	0.147015	-0.012947	-0.147785
eVALUE	10.000000	0.300000	3.000000	1.430000	0.134473	-0.016904	-0.143368
eVALUE	12.000000	0.300000	3.000000	1.430000	0.123227	-0.021069	-0.140017
eVALUE	14.000000	0.300000	3.000000	1.430000	0.109687	-0.025292	-0.130987
eVALUE	16.000000	0.300000	3.000000	1.430000	0.095785	-0.029422	-0.121835
eVALUE	18.000000	0.300000	3.000000	1.430000	0.083575	-0.033312	-0.114845
eVALUE	20.000000	0.300000	3.000000	1.430000	0.056207	-0.036720	-0.097278
eVALUE	22.000000	0.300000	3.000000	1.430000	-0.063887	-0.037412	-0.030835
eVALUE	24.000000	0.300000	3.000000	1.430000	-0.127562	-0.028585	0.027239
eVALUE	26.000000	0.300000	3.000000	1.430000	-0.115270	-0.021370	0.079858
eVALUE	28.000000	0.300000	3.000000	1.430000	-0.095251	-0.016609	0.159677
eVALUE	30.000000	0.300000	3.000000	1.430000	-0.054867	-0.013882	0.224894
*							
eVALUE	-4.000000	0.400000	3.000000	1.430000	-0.023070	-0.000002	0.008919
eVALUE	-2.000000	0.400000	3.000000	1.430000	0.054672	-0.000419	-0.041112
eVALUE	0.000000	0.400000	3.000000	1.430000	0.102979	-0.001514	-0.078900
eVALUE	2.000000	0.400000	3.000000	1.430000	0.130693	-0.003256	-0.107085
eVALUE	4.000000	0.400000	3.000000	1.430000	0.176090	-0.005586	-0.140320
eVALUE	6.000000	0.400000	3.000000	1.430000	0.159652	-0.009454	-0.145889
eVALUE	8.000000	0.400000	3.000000	1.430000	0.144380	-0.013052	-0.146075
eVALUE	10.000000	0.400000	3.000000	1.430000	0.131536	-0.016961	-0.141156
eVALUE	12.000000	0.400000	3.000000	1.430000	0.120308	-0.021035	-0.137399
eVALUE	14.000000	0.400000	3.000000	1.430000	0.107123	-0.025122	-0.128355

&VALUE	16.000000	0.400000	3.000000	1.430000	0.093812	-0.029072	-0.119400
&VALUE	18.000000	0.400000	3.000000	1.430000	0.076403	-0.032738	-0.109488
&VALUE	20.000000	0.400000	3.000000	1.430000	0.029026	-0.035246	-0.080852
&VALUE	22.000000	0.400000	3.000000	1.430000	-0.088549	-0.033232	-0.012856
&VALUE	24.000000	0.400000	3.000000	1.430000	-0.072472	-0.024949	0.010237
&VALUE	26.000000	0.400000	3.000000	1.430000	-0.070283	-0.020959	0.070179
&VALUE	28.000000	0.400000	3.000000	1.430000	-0.076753	-0.017551	0.175273
&VALUE	30.000000	0.400000	3.000000	1.430000	-0.075815	-0.015477	0.272552
*							
&VALUE	-4.000000	0.500000	3.000000	1.430000	-0.023526	-0.000002	0.009262
&VALUE	-2.000000	0.500000	3.000000	1.430000	0.055687	-0.000436	-0.041778
&VALUE	0.000000	0.500000	3.000000	1.430000	0.103708	-0.001574	-0.079607
&VALUE	2.000000	0.500000	3.000000	1.430000	0.130495	-0.003371	-0.107369
&VALUE	4.000000	0.500000	3.000000	1.430000	0.175007	-0.005755	-0.140275
&VALUE	6.000000	0.500000	3.000000	1.430000	0.157768	-0.009698	-0.145138
&VALUE	8.000000	0.500000	3.000000	1.430000	0.141740	-0.013321	-0.144693
&VALUE	10.000000	0.500000	3.000000	1.430000	0.128517	-0.017221	-0.139419
&VALUE	12.000000	0.500000	3.000000	1.430000	0.117183	-0.021243	-0.135307
&VALUE	14.000000	0.500000	3.000000	1.430000	0.104214	-0.025233	-0.126252
&VALUE	16.000000	0.500000	3.000000	1.430000	0.091391	-0.029035	-0.117583
&VALUE	18.000000	0.500000	3.000000	1.430000	0.071382	-0.032509	-0.106201
&VALUE	20.000000	0.500000	3.000000	1.430000	-0.011399	-0.034482	-0.059699
&VALUE	22.000000	0.500000	3.000000	1.430000	-0.062532	-0.029389	-0.018962
&VALUE	24.000000	0.500000	3.000000	1.430000	-0.051292	-0.024029	0.004318
&VALUE	26.000000	0.500000	3.000000	1.430000	-0.038371	-0.020467	0.059045
&VALUE	28.000000	0.500000	3.000000	1.430000	-0.067592	-0.018508	0.176206
&VALUE	30.000000	0.500000	3.000000	1.430000	-0.098323	-0.016552	0.290458
*							
&VALUE	-4.000000	0.100000	4.000000	1.430000	-0.022439	-0.000002	0.008474
&VALUE	-2.000000	0.100000	4.000000	1.430000	0.053410	-0.000405	-0.040334
&VALUE	0.000000	0.100000	4.000000	1.430000	0.102542	-0.001464	-0.078279
&VALUE	2.000000	0.100000	4.000000	1.430000	0.132054	-0.003172	-0.107317
&VALUE	4.000000	0.100000	4.000000	1.430000	0.179080	-0.005497	-0.141451
&VALUE	6.000000	0.100000	4.000000	1.430000	0.164210	-0.009386	-0.148471
&VALUE	8.000000	0.100000	4.000000	1.430000	0.149958	-0.013114	-0.149925
&VALUE	10.000000	0.100000	4.000000	1.430000	0.137735	-0.017240	-0.146136
&VALUE	12.000000	0.100000	4.000000	1.430000	0.126453	-0.021640	-0.143315
&VALUE	14.000000	0.100000	4.000000	1.430000	0.112563	-0.026162	-0.134630
&VALUE	16.000000	0.100000	4.000000	1.430000	0.098243	-0.030649	-0.125793
&VALUE	18.000000	0.100000	4.000000	1.430000	0.086486	-0.034946	-0.119565
&VALUE	20.000000	0.100000	4.000000	1.430000	0.064173	-0.038902	-0.105543
&VALUE	22.000000	0.100000	4.000000	1.430000	0.003854	-0.040641	-0.066585
&VALUE	24.000000	0.100000	4.000000	1.430000	-0.174980	-0.035795	0.039202
&VALUE	26.000000	0.100000	4.000000	1.430000	-0.166624	-0.023430	0.088592
&VALUE	28.000000	0.100000	4.000000	1.430000	-0.165254	-0.017298	0.156893
&VALUE	30.000000	0.100000	4.000000	1.430000	-0.143120	-0.012453	0.207482
*							
&VALUE	-4.000000	0.200000	4.000000	1.430000	-0.022600	-0.000002	0.008563
&VALUE	-2.000000	0.200000	4.000000	1.430000	0.053756	-0.000403	-0.040535
&VALUE	0.000000	0.200000	4.000000	1.430000	0.102967	-0.001461	-0.078552
&VALUE	2.000000	0.200000	4.000000	1.430000	0.132371	-0.003164	-0.107556
&VALUE	4.000000	0.200000	4.000000	1.430000	0.179370	-0.005474	-0.141732
&VALUE	6.000000	0.200000	4.000000	1.430000	0.164191	-0.009335	-0.148615
&VALUE	8.000000	0.200000	4.000000	1.430000	0.149782	-0.013013	-0.150023
&VALUE	10.000000	0.200000	4.000000	1.430000	0.137399	-0.017070	-0.146256
&VALUE	12.000000	0.200000	4.000000	1.430000	0.126012	-0.021380	-0.143414
&VALUE	14.000000	0.200000	4.000000	1.430000	0.112070	-0.025794	-0.134749
&VALUE	16.000000	0.200000	4.000000	1.430000	0.097919	-0.030161	-0.126135
&VALUE	18.000000	0.200000	4.000000	1.430000	0.086284	-0.034328	-0.120176
&VALUE	20.000000	0.200000	4.000000	1.430000	0.063158	-0.038151	-0.105836
&VALUE	22.000000	0.200000	4.000000	1.430000	-0.002522	-0.039683	-0.064948
&VALUE	24.000000	0.200000	4.000000	1.430000	-0.168534	-0.034365	0.034990
&VALUE	26.000000	0.200000	4.000000	1.430000	-0.148536	-0.022838	0.079032
&VALUE	28.000000	0.200000	4.000000	1.430000	-0.148539	-0.017401	0.150528
&VALUE	30.000000	0.200000	4.000000	1.430000	-0.132072	-0.012950	0.206636
*							
&VALUE	-4.000000	0.300000	4.000000	1.430000	-0.022772	-0.000002	0.008695
&VALUE	-2.000000	0.300000	4.000000	1.430000	0.054048	-0.000407	-0.040705
&VALUE	0.000000	0.300000	4.000000	1.430000	0.102752	-0.001477	-0.078553
&VALUE	2.000000	0.300000	4.000000	1.430000	0.131328	-0.003188	-0.107141
&VALUE	4.000000	0.300000	4.000000	1.430000	0.177569	-0.005492	-0.140797
&VALUE	6.000000	0.300000	4.000000	1.430000	0.161793	-0.009332	-0.147015
&VALUE	8.000000	0.300000	4.000000	1.430000	0.147015	-0.012947	-0.147785
&VALUE	10.000000	0.300000	4.000000	1.430000	0.134473	-0.016904	-0.143368

&VALUE	12.000000	0.300000	4.000000	1.430000	0.123227	-0.021069	-0.140017
&VALUE	14.000000	0.300000	4.000000	1.430000	0.109687	-0.025292	-0.130987
&VALUE	16.000000	0.300000	4.000000	1.430000	0.095785	-0.029422	-0.121835
&VALUE	18.000000	0.300000	4.000000	1.430000	0.083575	-0.033312	-0.114845
&VALUE	20.000000	0.300000	4.000000	1.430000	0.056207	-0.036720	-0.097278
&VALUE	22.000000	0.300000	4.000000	1.430000	-0.063887	-0.037412	-0.030835
&VALUE	24.000000	0.300000	4.000000	1.430000	-0.127562	-0.028585	0.027239
&VALUE	26.000000	0.300000	4.000000	1.430000	-0.115270	-0.021370	0.079858
&VALUE	28.000000	0.300000	4.000000	1.430000	-0.095251	-0.016609	0.159677
&VALUE	30.000000	0.300000	4.000000	1.430000	-0.054867	-0.013882	0.224894
*							
&VALUE	-4.000000	0.400000	4.000000	1.430000	-0.023070	-0.000002	0.008919
&VALUE	-2.000000	0.400000	4.000000	1.430000	0.054672	-0.000419	-0.041112
&VALUE	0.000000	0.400000	4.000000	1.430000	0.102979	-0.001514	-0.078900
&VALUE	2.000000	0.400000	4.000000	1.430000	0.130693	-0.003256	-0.107085
&VALUE	4.000000	0.400000	4.000000	1.430000	0.176090	-0.005586	-0.140320
&VALUE	6.000000	0.400000	4.000000	1.430000	0.159652	-0.009454	-0.145889
&VALUE	8.000000	0.400000	4.000000	1.430000	0.144380	-0.013052	-0.146075
&VALUE	10.000000	0.400000	4.000000	1.430000	0.131536	-0.016961	-0.141156
&VALUE	12.000000	0.400000	4.000000	1.430000	0.120308	-0.021035	-0.137399
&VALUE	14.000000	0.400000	4.000000	1.430000	0.107123	-0.025122	-0.128355
&VALUE	16.000000	0.400000	4.000000	1.430000	0.093812	-0.029072	-0.119400
&VALUE	18.000000	0.400000	4.000000	1.430000	0.076403	-0.032738	-0.109488
&VALUE	20.000000	0.400000	4.000000	1.430000	0.029026	-0.035246	-0.080852
&VALUE	22.000000	0.400000	4.000000	1.430000	-0.088549	-0.033232	-0.012856
&VALUE	24.000000	0.400000	4.000000	1.430000	-0.072472	-0.024949	0.010237
&VALUE	26.000000	0.400000	4.000000	1.430000	-0.070283	-0.020959	0.070179
&VALUE	28.000000	0.400000	4.000000	1.430000	-0.076753	-0.017551	0.175273
&VALUE	30.000000	0.400000	4.000000	1.430000	-0.075815	-0.015477	0.272552
*							
&VALUE	-4.000000	0.500000	4.000000	1.430000	-0.023526	-0.000002	0.009262
&VALUE	-2.000000	0.500000	4.000000	1.430000	0.055687	-0.000436	-0.041778
&VALUE	0.000000	0.500000	4.000000	1.430000	0.103708	-0.001574	-0.079607
&VALUE	2.000000	0.500000	4.000000	1.430000	0.130495	-0.003371	-0.107369
&VALUE	4.000000	0.500000	4.000000	1.430000	0.175007	-0.005755	-0.140275
&VALUE	6.000000	0.500000	4.000000	1.430000	0.157768	-0.009698	-0.145138
&VALUE	8.000000	0.500000	4.000000	1.430000	0.141740	-0.013321	-0.144693
&VALUE	10.000000	0.500000	4.000000	1.430000	0.128517	-0.017021	-0.139419
&VALUE	12.000000	0.500000	4.000000	1.430000	0.117183	-0.021243	-0.135307
&VALUE	14.000000	0.500000	4.000000	1.430000	0.104214	-0.025233	-0.126252
&VALUE	16.000000	0.500000	4.000000	1.430000	0.091391	-0.029035	-0.117583
&VALUE	18.000000	0.500000	4.000000	1.430000	0.071382	-0.032509	-0.106201
&VALUE	20.000000	0.500000	4.000000	1.430000	-0.011399	-0.034482	-0.059699
&VALUE	22.000000	0.500000	4.000000	1.430000	-0.062532	-0.029389	-0.018962
&VALUE	24.000000	0.500000	4.000000	1.430000	-0.051292	-0.024029	0.004318
&VALUE	26.000000	0.500000	4.000000	1.430000	-0.038371	-0.020467	0.059045
&VALUE	28.000000	0.500000	4.000000	1.430000	-0.067592	-0.018508	0.176206
&VALUE	30.000000	0.500000	4.000000	1.430000	-0.098323	-0.016552	0.290458
*							
&VALUE	-4.000000	0.100000	5.000000	1.430000	-0.022439	-0.000002	0.008474
&VALUE	-2.000000	0.100000	5.000000	1.430000	0.053410	-0.000405	-0.040334
&VALUE	0.000000	0.100000	5.000000	1.430000	0.102542	-0.001464	-0.078279
&VALUE	2.000000	0.100000	5.000000	1.430000	0.132054	-0.003172	-0.107317
&VALUE	4.000000	0.100000	5.000000	1.430000	0.179080	-0.005497	-0.141451
&VALUE	6.000000	0.100000	5.000000	1.430000	0.164210	-0.009386	-0.148471
&VALUE	8.000000	0.100000	5.000000	1.430000	0.149958	-0.013114	-0.149925
&VALUE	10.000000	0.100000	5.000000	1.430000	0.137735	-0.017240	-0.146136
&VALUE	12.000000	0.100000	5.000000	1.430000	0.126453	-0.021640	-0.143315
&VALUE	14.000000	0.100000	5.000000	1.430000	0.112563	-0.026162	-0.134630
&VALUE	16.000000	0.100000	5.000000	1.430000	0.098243	-0.030649	-0.125793
&VALUE	18.000000	0.100000	5.000000	1.430000	0.086486	-0.034946	-0.119565
&VALUE	20.000000	0.100000	5.000000	1.430000	0.064173	-0.038902	-0.105543
&VALUE	22.000000	0.100000	5.000000	1.430000	0.003854	-0.040641	-0.066585
&VALUE	24.000000	0.100000	5.000000	1.430000	-0.174980	-0.035795	0.039202
&VALUE	26.000000	0.100000	5.000000	1.430000	-0.166624	-0.023430	0.088592
&VALUE	28.000000	0.100000	5.000000	1.430000	-0.165254	-0.017298	0.156893
&VALUE	30.000000	0.100000	5.000000	1.430000	-0.143120	-0.012453	0.207482
*							
&VALUE	-4.000000	0.200000	5.000000	1.430000	-0.022600	-0.000002	0.008563
&VALUE	-2.000000	0.200000	5.000000	1.430000	0.053756	-0.000403	-0.040535
&VALUE	0.000000	0.200000	5.000000	1.430000	0.102967	-0.001461	-0.078552
&VALUE	2.000000	0.200000	5.000000	1.430000	0.132371	-0.003164	-0.107556
&VALUE	4.000000	0.200000	5.000000	1.430000	0.179370	-0.005474	-0.141732
&VALUE	6.000000	0.200000	5.000000	1.430000	0.164191	-0.009335	-0.148615

```

&VALUE      8.000000  0.200000  5.000000  1.430000  0.149782  -0.013013  -0.150023
&VALUE     10.000000  0.200000  5.000000  1.430000  0.137399  -0.017070  -0.146256
&VALUE     12.000000  0.200000  5.000000  1.430000  0.126012  -0.021380  -0.143414
&VALUE     14.000000  0.200000  5.000000  1.430000  0.112070  -0.025794  -0.134749
&VALUE     16.000000  0.200000  5.000000  1.430000  0.097919  -0.030161  -0.126135
&VALUE     18.000000  0.200000  5.000000  1.430000  0.086284  -0.034328  -0.120176
&VALUE     20.000000  0.200000  5.000000  1.430000  0.063158  -0.038151  -0.105836
&VALUE     22.000000  0.200000  5.000000  1.430000  -0.002522  -0.039683  -0.064948
&VALUE     24.000000  0.200000  5.000000  1.430000  -0.168534  -0.034365  0.034990
&VALUE     26.000000  0.200000  5.000000  1.430000  -0.148536  -0.022838  0.079032
&VALUE     28.000000  0.200000  5.000000  1.430000  -0.148539  -0.017401  0.150528
&VALUE     30.000000  0.200000  5.000000  1.430000  -0.132072  -0.012950  0.206636
*
&VALUE     -4.000000  0.300000  5.000000  1.430000  -0.022772  -0.000002  0.008695
&VALUE     -2.000000  0.300000  5.000000  1.430000  0.054048  -0.000407  -0.040705
&VALUE      0.000000  0.300000  5.000000  1.430000  0.102752  -0.001477  -0.078553
&VALUE      2.000000  0.300000  5.000000  1.430000  0.131328  -0.003188  -0.107141
&VALUE      4.000000  0.300000  5.000000  1.430000  0.177569  -0.005492  -0.140797
&VALUE      6.000000  0.300000  5.000000  1.430000  0.161793  -0.009332  -0.147015
&VALUE      8.000000  0.300000  5.000000  1.430000  0.147015  -0.012947  -0.147785
&VALUE     10.000000  0.300000  5.000000  1.430000  0.134473  -0.016904  -0.143368
&VALUE     12.000000  0.300000  5.000000  1.430000  0.123227  -0.021069  -0.140017
&VALUE     14.000000  0.300000  5.000000  1.430000  0.109687  -0.025292  -0.130987
&VALUE     16.000000  0.300000  5.000000  1.430000  0.095785  -0.029422  -0.121835
&VALUE     18.000000  0.300000  5.000000  1.430000  0.083575  -0.033312  -0.114845
&VALUE     20.000000  0.300000  5.000000  1.430000  0.056207  -0.036720  -0.097278
&VALUE     22.000000  0.300000  5.000000  1.430000  -0.063887  -0.037412  -0.030835
&VALUE     24.000000  0.300000  5.000000  1.430000  -0.127562  -0.028585  0.027239
&VALUE     26.000000  0.300000  5.000000  1.430000  -0.115270  -0.021370  0.079858
&VALUE     28.000000  0.300000  5.000000  1.430000  -0.095251  -0.016609  0.159677
&VALUE     30.000000  0.300000  5.000000  1.430000  -0.054867  -0.013882  0.224894
*
&VALUE     -4.000000  0.400000  5.000000  1.430000  -0.023070  -0.000002  0.008919
&VALUE     -2.000000  0.400000  5.000000  1.430000  0.054672  -0.000419  -0.041112
&VALUE      0.000000  0.400000  5.000000  1.430000  0.102979  -0.001514  -0.078900
&VALUE      2.000000  0.400000  5.000000  1.430000  0.130693  -0.003256  -0.107085
&VALUE      4.000000  0.400000  5.000000  1.430000  0.176090  -0.005586  -0.140320
&VALUE      6.000000  0.400000  5.000000  1.430000  0.159652  -0.009454  -0.145889
&VALUE      8.000000  0.400000  5.000000  1.430000  0.144380  -0.013052  -0.146075
&VALUE     10.000000  0.400000  5.000000  1.430000  0.131536  -0.016961  -0.141156
&VALUE     12.000000  0.400000  5.000000  1.430000  0.120308  -0.021035  -0.137399
&VALUE     14.000000  0.400000  5.000000  1.430000  0.107123  -0.025122  -0.128355
&VALUE     16.000000  0.400000  5.000000  1.430000  0.093812  -0.029072  -0.119400
&VALUE     18.000000  0.400000  5.000000  1.430000  0.076403  -0.032738  -0.109488
&VALUE     20.000000  0.400000  5.000000  1.430000  0.029026  -0.035246  -0.080852
&VALUE     22.000000  0.400000  5.000000  1.430000  -0.088549  -0.033232  -0.012856
&VALUE     24.000000  0.400000  5.000000  1.430000  -0.072472  -0.024949  0.010237
&VALUE     26.000000  0.400000  5.000000  1.430000  -0.070283  -0.020959  0.070179
&VALUE     28.000000  0.400000  5.000000  1.430000  -0.076753  -0.017551  0.175273
&VALUE     30.000000  0.400000  5.000000  1.430000  -0.075815  -0.015477  0.272552
*
&VALUE     -4.000000  0.500000  5.000000  1.430000  -0.023526  -0.000002  0.009262
&VALUE     -2.000000  0.500000  5.000000  1.430000  0.055687  -0.000436  -0.041778
&VALUE      0.000000  0.500000  5.000000  1.430000  0.103708  -0.001574  -0.079607
&VALUE      2.000000  0.500000  5.000000  1.430000  0.130495  -0.003371  -0.107369
&VALUE      4.000000  0.500000  5.000000  1.430000  0.175007  -0.005755  -0.140275
&VALUE      6.000000  0.500000  5.000000  1.430000  0.157768  -0.009698  -0.145138
&VALUE      8.000000  0.500000  5.000000  1.430000  0.141740  -0.013321  -0.144693
&VALUE     10.000000  0.500000  5.000000  1.430000  0.128517  -0.017221  -0.139419
&VALUE     12.000000  0.500000  5.000000  1.430000  0.117183  -0.021243  -0.135307
&VALUE     14.000000  0.500000  5.000000  1.430000  0.104214  -0.025233  -0.126252
&VALUE     16.000000  0.500000  5.000000  1.430000  0.091391  -0.029035  -0.117583
&VALUE     18.000000  0.500000  5.000000  1.430000  0.071382  -0.032509  -0.106201
&VALUE     20.000000  0.500000  5.000000  1.430000  -0.011399  -0.034482  -0.059699
&VALUE     22.000000  0.500000  5.000000  1.430000  -0.062532  -0.029389  -0.018962
&VALUE     24.000000  0.500000  5.000000  1.430000  -0.051292  -0.024029  0.004318
&VALUE     26.000000  0.500000  5.000000  1.430000  -0.038371  -0.020467  0.059045
&VALUE     28.000000  0.500000  5.000000  1.430000  -0.067592  -0.018508  0.176206
&VALUE     30.000000  0.500000  5.000000  1.430000  -0.098323  -0.016552  0.290458
*
&END

```

- GRD_4845.inp (ground effect = 4.845 m)

```

&ARG01 C PROTOCOL 0 GRD+X.XXX
&ARG02 C TEST_CONDITION 0 TEST0001.CND
&ARG03 C REPORT_CODE 0 00-01
&ARG04 X FLAP_SET 9 REF. BELOW
&ARG05 X STABILZR 5 0.0
&ARG06 X ELEVATOR 3 0.0
&ARG07 X RUDDER 10 0.0
&ARG08 X AILERON 4 0.0
&ARG09 X SIDESLIP 11 0.0
&ARG10 X AOA 1 REF. BELOW
&ARG11 X MACH 2 REF. BELOW
&ARG12 X ALTITUDE 20 REF. BELOW
*
&SNAME &ARG10 &ARG11 &ARG04 &ARG13 &FUN01 &FUN02 &FUN03
&UNAME AOA MACH FLAP_SET HGE CLGR CDGR CMGR
&UCODE 1 2 9 20 0 0 0
&FORMAT XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*GROUND EFFECT
*
&VALUE -4.000000 0.100000 1.000000 4.845000 -0.002302 0.000000 0.000564
&VALUE -2.000000 0.100000 1.000000 4.845000 0.007476 -0.000149 -0.009012
&VALUE 0.000000 0.100000 1.000000 4.845000 0.015070 -0.000555 -0.017883
&VALUE 2.000000 0.100000 1.000000 4.845000 0.020378 -0.001212 -0.025567
&VALUE 4.000000 0.100000 1.000000 4.845000 0.027143 -0.002101 -0.032850
&VALUE 6.000000 0.100000 1.000000 4.845000 0.025542 -0.003606 -0.036961
&VALUE 8.000000 0.100000 1.000000 4.845000 0.023874 -0.005025 -0.040727
&VALUE 10.000000 0.100000 1.000000 4.845000 0.020834 -0.006588 -0.039373
&VALUE 12.000000 0.100000 1.000000 4.845000 0.018373 -0.008245 -0.040030
&VALUE 14.000000 0.100000 1.000000 4.845000 0.015121 -0.009940 -0.038699
&VALUE 16.000000 0.100000 1.000000 4.845000 0.011343 -0.011614 -0.035596
&VALUE 18.000000 0.100000 1.000000 4.845000 0.008021 -0.013211 -0.033742
&VALUE 20.000000 0.100000 1.000000 4.845000 0.005835 -0.014676 -0.035009
&VALUE 22.000000 0.100000 1.000000 4.845000 0.005909 -0.015319 -0.033626
&VALUE 24.000000 0.100000 1.000000 4.845000 0.010715 -0.013526 -0.032759
&VALUE 26.000000 0.100000 1.000000 4.845000 -0.005191 -0.008917 -0.010513
&VALUE 28.000000 0.100000 1.000000 4.845000 -0.018569 -0.006610 0.025494
&VALUE 30.000000 0.100000 1.000000 4.845000 -0.028968 -0.004774 0.055011
*
&VALUE -4.000000 0.200000 1.000000 4.845000 -0.002324 0.000000 0.000574
&VALUE -2.000000 0.200000 1.000000 4.845000 0.007531 -0.000149 -0.009035
&VALUE 0.000000 0.200000 1.000000 4.845000 0.015161 -0.000558 -0.017919
&VALUE 2.000000 0.200000 1.000000 4.845000 0.020471 -0.001218 -0.025601
&VALUE 4.000000 0.200000 1.000000 4.845000 0.027245 -0.002109 -0.032893
&VALUE 6.000000 0.200000 1.000000 4.845000 0.025594 -0.003616 -0.036988
&VALUE 8.000000 0.200000 1.000000 4.845000 0.023900 -0.005032 -0.040754
&VALUE 10.000000 0.200000 1.000000 4.845000 0.020866 -0.006587 -0.039436
&VALUE 12.000000 0.200000 1.000000 4.845000 0.018403 -0.008231 -0.040117
&VALUE 14.000000 0.200000 1.000000 4.845000 0.015161 -0.009909 -0.038817
&VALUE 16.000000 0.200000 1.000000 4.845000 0.011389 -0.011563 -0.035698
&VALUE 18.000000 0.200000 1.000000 4.845000 0.008113 -0.013136 -0.033975
&VALUE 20.000000 0.200000 1.000000 4.845000 0.006024 -0.014576 -0.035475
&VALUE 22.000000 0.200000 1.000000 4.845000 0.006307 -0.015151 -0.034179
&VALUE 24.000000 0.200000 1.000000 4.845000 0.010736 -0.013150 -0.032666
&VALUE 26.000000 0.200000 1.000000 4.845000 -0.004906 -0.008786 -0.012539
&VALUE 28.000000 0.200000 1.000000 4.845000 -0.016446 -0.006713 0.023289
&VALUE 30.000000 0.200000 1.000000 4.845000 -0.026696 -0.005007 0.053734
*
&VALUE -4.000000 0.300000 1.000000 4.845000 -0.002352 0.000000 0.000584
&VALUE -2.000000 0.300000 1.000000 4.845000 0.007591 -0.000152 -0.009025
&VALUE 0.000000 0.300000 1.000000 4.845000 0.015205 -0.000566 -0.017880
&VALUE 2.000000 0.300000 1.000000 4.845000 0.020432 -0.001230 -0.025492
&VALUE 4.000000 0.300000 1.000000 4.845000 0.027134 -0.002120 -0.032666
&VALUE 6.000000 0.300000 1.000000 4.845000 0.025393 -0.003622 -0.036633
&VALUE 8.000000 0.300000 1.000000 4.845000 0.023685 -0.005016 -0.040267
&VALUE 10.000000 0.300000 1.000000 4.845000 0.020685 -0.006537 -0.038810
&VALUE 12.000000 0.300000 1.000000 4.845000 0.018319 -0.008130 -0.039340
&VALUE 14.000000 0.300000 1.000000 4.845000 0.015235 -0.009740 -0.037896
&VALUE 16.000000 0.300000 1.000000 4.845000 0.011725 -0.011309 -0.034830
&VALUE 18.000000 0.300000 1.000000 4.845000 0.008762 -0.012783 -0.032967
&VALUE 20.000000 0.300000 1.000000 4.845000 0.007297 -0.014071 -0.035071
&VALUE 22.000000 0.300000 1.000000 4.845000 0.007662 -0.014332 -0.032814
&VALUE 24.000000 0.300000 1.000000 4.845000 0.004399 -0.010992 -0.024243
&VALUE 26.000000 0.300000 1.000000 4.845000 -0.003792 -0.008246 -0.010930

```

eVALUE	28.000000	0.300000	1.000000	4.845000	-0.013661	-0.006424	0.027405
eVALUE	30.000000	0.300000	1.000000	4.845000	-0.022624	-0.005376	0.063144
*							
eVALUE	-4.000000	0.400000	1.000000	4.845000	-0.002398	0.000000	0.000604
eVALUE	-2.000000	0.400000	1.000000	4.845000	0.007703	-0.000157	-0.009042
eVALUE	0.000000	0.400000	1.000000	4.845000	0.015334	-0.000581	-0.017881
eVALUE	2.000000	0.400000	1.000000	4.845000	0.020485	-0.001257	-0.025425
eVALUE	4.000000	0.400000	1.000000	4.845000	0.027131	-0.002158	-0.032515
eVALUE	6.000000	0.400000	1.000000	4.845000	0.025264	-0.003671	-0.036358
eVALUE	8.000000	0.400000	1.000000	4.845000	0.023516	-0.005061	-0.039887
eVALUE	10.000000	0.400000	1.000000	4.845000	0.020555	-0.006563	-0.038364
eVALUE	12.000000	0.400000	1.000000	4.845000	0.018270	-0.008123	-0.038802
eVALUE	14.000000	0.400000	1.000000	4.845000	0.015331	-0.009683	-0.037281
eVALUE	16.000000	0.400000	1.000000	4.845000	0.012083	-0.011185	-0.034385
eVALUE	18.000000	0.400000	1.000000	4.845000	0.009603	-0.012575	-0.033159
eVALUE	20.000000	0.400000	1.000000	4.845000	0.009080	-0.013524	-0.035602
eVALUE	22.000000	0.400000	1.000000	4.845000	0.008951	-0.012762	-0.030020
eVALUE	24.000000	0.400000	1.000000	4.845000	0.001706	-0.009617	-0.018676
eVALUE	26.000000	0.400000	1.000000	4.845000	-0.000359	-0.008094	-0.012554
eVALUE	28.000000	0.400000	1.000000	4.845000	-0.011145	-0.006790	0.028112
eVALUE	30.000000	0.400000	1.000000	4.845000	-0.022840	-0.005993	0.069044
*							
eVALUE	-4.000000	0.500000	1.000000	4.845000	-0.002467	0.000000	0.000636
eVALUE	-2.000000	0.500000	1.000000	4.845000	0.007876	-0.000164	-0.009082
eVALUE	0.000000	0.500000	1.000000	4.845000	0.015562	-0.000605	-0.017915
eVALUE	2.000000	0.500000	1.000000	4.845000	0.020641	-0.001303	-0.025385
eVALUE	4.000000	0.500000	1.000000	4.845000	0.027249	-0.002225	-0.032414
eVALUE	6.000000	0.500000	1.000000	4.845000	0.025207	-0.003768	-0.036123
eVALUE	8.000000	0.500000	1.000000	4.845000	0.023381	-0.005168	-0.039555
eVALUE	10.000000	0.500000	1.000000	4.845000	0.020464	-0.006668	-0.038039
eVALUE	12.000000	0.500000	1.000000	4.845000	0.018244	-0.008209	-0.038430
eVALUE	14.000000	0.500000	1.000000	4.845000	0.015436	-0.009732	-0.036890
eVALUE	16.000000	0.500000	1.000000	4.845000	0.012393	-0.011180	-0.034077
eVALUE	18.000000	0.500000	1.000000	4.845000	0.010306	-0.012499	-0.033553
eVALUE	20.000000	0.500000	1.000000	4.845000	0.010154	-0.013246	-0.035964
eVALUE	22.000000	0.500000	1.000000	4.845000	0.005622	-0.011314	-0.025590
eVALUE	24.000000	0.500000	1.000000	4.845000	0.001429	-0.009273	-0.016530
eVALUE	26.000000	0.500000	1.000000	4.845000	0.002191	-0.007912	-0.013410
eVALUE	28.000000	0.500000	1.000000	4.845000	-0.009418	-0.007162	0.026569
eVALUE	30.000000	0.500000	1.000000	4.845000	-0.022495	-0.006411	0.068067
*							
eVALUE	-4.000000	0.100000	2.000000	4.845000	-0.002302	0.000000	0.000564
eVALUE	-2.000000	0.100000	2.000000	4.845000	0.007476	-0.000149	-0.009012
eVALUE	0.000000	0.100000	2.000000	4.845000	0.015070	-0.000555	-0.017883
eVALUE	2.000000	0.100000	2.000000	4.845000	0.020378	-0.001212	-0.025567
eVALUE	4.000000	0.100000	2.000000	4.845000	0.027143	-0.002101	-0.032850
eVALUE	6.000000	0.100000	2.000000	4.845000	0.025542	-0.003606	-0.036961
eVALUE	8.000000	0.100000	2.000000	4.845000	0.023874	-0.005025	-0.040727
eVALUE	10.000000	0.100000	2.000000	4.845000	0.020834	-0.006588	-0.039373
eVALUE	12.000000	0.100000	2.000000	4.845000	0.018373	-0.008245	-0.040030
eVALUE	14.000000	0.100000	2.000000	4.845000	0.015121	-0.009940	-0.038699
eVALUE	16.000000	0.100000	2.000000	4.845000	0.011343	-0.011614	-0.035596
eVALUE	18.000000	0.100000	2.000000	4.845000	0.008021	-0.013211	-0.033742
eVALUE	20.000000	0.100000	2.000000	4.845000	0.005835	-0.014676	-0.035009
eVALUE	22.000000	0.100000	2.000000	4.845000	0.005909	-0.015319	-0.033626
eVALUE	24.000000	0.100000	2.000000	4.845000	0.010715	-0.013526	-0.032759
eVALUE	26.000000	0.100000	2.000000	4.845000	-0.005191	-0.008917	-0.010513
eVALUE	28.000000	0.100000	2.000000	4.845000	-0.018569	-0.006610	0.025494
eVALUE	30.000000	0.100000	2.000000	4.845000	-0.028968	-0.004774	0.055011
*							
eVALUE	-4.000000	0.200000	2.000000	4.845000	-0.002324	0.000000	0.000574
eVALUE	-2.000000	0.200000	2.000000	4.845000	0.007531	-0.000149	-0.009035
eVALUE	0.000000	0.200000	2.000000	4.845000	0.015161	-0.000558	-0.017919
eVALUE	2.000000	0.200000	2.000000	4.845000	0.020471	-0.001218	-0.025601
eVALUE	4.000000	0.200000	2.000000	4.845000	0.027245	-0.002109	-0.032893
eVALUE	6.000000	0.200000	2.000000	4.845000	0.025594	-0.003616	-0.036988
eVALUE	8.000000	0.200000	2.000000	4.845000	0.023900	-0.005032	-0.040754
eVALUE	10.000000	0.200000	2.000000	4.845000	0.020866	-0.006587	-0.039436
eVALUE	12.000000	0.200000	2.000000	4.845000	0.018403	-0.008231	-0.040117
eVALUE	14.000000	0.200000	2.000000	4.845000	0.015161	-0.009909	-0.038817
eVALUE	16.000000	0.200000	2.000000	4.845000	0.011389	-0.011563	-0.035698
eVALUE	18.000000	0.200000	2.000000	4.845000	0.008113	-0.013136	-0.033975
eVALUE	20.000000	0.200000	2.000000	4.845000	0.006024	-0.014576	-0.035475
eVALUE	22.000000	0.200000	2.000000	4.845000	0.006307	-0.015151	-0.034179

eVALUE	24.000000	0.200000	2.000000	4.845000	0.010736	-0.013150	-0.032666
eVALUE	26.000000	0.200000	2.000000	4.845000	-0.004006	-0.008786	-0.012539
eVALUE	28.000000	0.200000	2.000000	4.845000	-0.016446	-0.006713	0.023289
eVALUE	30.000000	0.200000	2.000000	4.845000	-0.026696	-0.005007	0.053734
*							
eVALUE	-4.000000	0.300000	2.000000	4.845000	-0.002352	0.000000	0.000584
eVALUE	-2.000000	0.300000	2.000000	4.845000	0.007591	-0.000152	-0.009025
eVALUE	0.000000	0.300000	2.000000	4.845000	0.015205	-0.000566	-0.017880
eVALUE	2.000000	0.300000	2.000000	4.845000	0.020432	-0.001230	-0.025492
eVALUE	4.000000	0.300000	2.000000	4.845000	0.027134	-0.002120	-0.032666
eVALUE	6.000000	0.300000	2.000000	4.845000	0.025393	-0.003622	-0.036633
eVALUE	8.000000	0.300000	2.000000	4.845000	0.023685	-0.005016	-0.040267
eVALUE	10.000000	0.300000	2.000000	4.845000	0.020685	-0.006537	-0.038810
eVALUE	12.000000	0.300000	2.000000	4.845000	0.018319	-0.008130	-0.039340
eVALUE	14.000000	0.300000	2.000000	4.845000	0.015235	-0.009740	-0.037896
eVALUE	16.000000	0.300000	2.000000	4.845000	0.011725	-0.011309	-0.034830
eVALUE	18.000000	0.300000	2.000000	4.845000	0.008762	-0.012783	-0.032967
eVALUE	20.000000	0.300000	2.000000	4.845000	0.007297	-0.014071	-0.035071
eVALUE	22.000000	0.300000	2.000000	4.845000	0.007662	-0.014332	-0.032814
eVALUE	24.000000	0.300000	2.000000	4.845000	0.004399	-0.010992	-0.024243
eVALUE	26.000000	0.300000	2.000000	4.845000	-0.003792	-0.008246	-0.010930
eVALUE	28.000000	0.300000	2.000000	4.845000	-0.013661	-0.006424	0.027405
eVALUE	30.000000	0.300000	2.000000	4.845000	-0.022624	-0.005376	0.063144
*							
eVALUE	-4.000000	0.400000	2.000000	4.845000	-0.002398	0.000000	0.000604
eVALUE	-2.000000	0.400000	2.000000	4.845000	0.007703	-0.000157	-0.009042
eVALUE	0.000000	0.400000	2.000000	4.845000	0.015334	-0.000581	-0.017881
eVALUE	2.000000	0.400000	2.000000	4.845000	0.020485	-0.001257	-0.025425
eVALUE	4.000000	0.400000	2.000000	4.845000	0.027131	-0.002158	-0.032515
eVALUE	6.000000	0.400000	2.000000	4.845000	0.025264	-0.003671	-0.036358
eVALUE	8.000000	0.400000	2.000000	4.845000	0.023516	-0.005061	-0.039887
eVALUE	10.000000	0.400000	2.000000	4.845000	0.020555	-0.006563	-0.038364
eVALUE	12.000000	0.400000	2.000000	4.845000	0.018270	-0.008123	-0.038802
eVALUE	14.000000	0.400000	2.000000	4.845000	0.015331	-0.009683	-0.037281
eVALUE	16.000000	0.400000	2.000000	4.845000	0.012083	-0.011185	-0.034385
eVALUE	18.000000	0.400000	2.000000	4.845000	0.009603	-0.012575	-0.033159
eVALUE	20.000000	0.400000	2.000000	4.845000	0.009080	-0.013524	-0.035602
eVALUE	22.000000	0.400000	2.000000	4.845000	0.008951	-0.012762	-0.030020
eVALUE	24.000000	0.400000	2.000000	4.845000	0.001706	-0.009617	-0.018676
eVALUE	26.000000	0.400000	2.000000	4.845000	-0.000359	-0.008094	-0.012554
eVALUE	28.000000	0.400000	2.000000	4.845000	-0.011145	-0.006790	0.028112
eVALUE	30.000000	0.400000	2.000000	4.845000	-0.022840	-0.005993	0.069044
*							
eVALUE	-4.000000	0.500000	2.000000	4.845000	-0.002467	0.000000	0.000636
eVALUE	-2.000000	0.500000	2.000000	4.845000	0.007876	-0.000164	-0.009082
eVALUE	0.000000	0.500000	2.000000	4.845000	0.015562	-0.000605	-0.017915
eVALUE	2.000000	0.500000	2.000000	4.845000	0.020641	-0.001303	-0.025385
eVALUE	4.000000	0.500000	2.000000	4.845000	0.027249	-0.002225	-0.032414
eVALUE	6.000000	0.500000	2.000000	4.845000	0.025207	-0.003768	-0.036123
eVALUE	8.000000	0.500000	2.000000	4.845000	0.023381	-0.005168	-0.039555
eVALUE	10.000000	0.500000	2.000000	4.845000	0.020464	-0.006668	-0.038039
eVALUE	12.000000	0.500000	2.000000	4.845000	0.018244	-0.008209	-0.038430
eVALUE	14.000000	0.500000	2.000000	4.845000	0.015436	-0.009732	-0.036890
eVALUE	16.000000	0.500000	2.000000	4.845000	0.012393	-0.011180	-0.034077
eVALUE	18.000000	0.500000	2.000000	4.845000	0.010306	-0.012499	-0.033553
eVALUE	20.000000	0.500000	2.000000	4.845000	0.010154	-0.013246	-0.035964
eVALUE	22.000000	0.500000	2.000000	4.845000	0.005622	-0.011314	-0.025590
eVALUE	24.000000	0.500000	2.000000	4.845000	0.001429	-0.009273	-0.016530
eVALUE	26.000000	0.500000	2.000000	4.845000	0.002191	-0.007912	-0.013410
eVALUE	28.000000	0.500000	2.000000	4.845000	-0.009418	-0.007162	0.026569
eVALUE	30.000000	0.500000	2.000000	4.845000	-0.022495	-0.006411	0.068067
*							
eVALUE	-4.000000	0.100000	3.000000	4.845000	-0.002302	0.000000	0.000585
eVALUE	-2.000000	0.100000	3.000000	4.845000	0.007476	-0.000149	-0.009058
eVALUE	0.000000	0.100000	3.000000	4.845000	0.015070	-0.000555	-0.017977
eVALUE	2.000000	0.100000	3.000000	4.845000	0.020378	-0.001212	-0.025691
eVALUE	4.000000	0.100000	3.000000	4.845000	0.027143	-0.002101	-0.033018
eVALUE	6.000000	0.100000	3.000000	4.845000	0.025542	-0.003606	-0.037102
eVALUE	8.000000	0.100000	3.000000	4.845000	0.023874	-0.005025	-0.040841
eVALUE	10.000000	0.100000	3.000000	4.845000	0.020834	-0.006588	-0.039461
eVALUE	12.000000	0.100000	3.000000	4.845000	0.018373	-0.008245	-0.040092
eVALUE	14.000000	0.100000	3.000000	4.845000	0.015121	-0.009940	-0.038733
eVALUE	16.000000	0.100000	3.000000	4.845000	0.011343	-0.011614	-0.035602
eVALUE	18.000000	0.100000	3.000000	4.845000	0.008021	-0.013211	-0.033722

eVALUE	20.000000	0.100000	3.000000	4.845000	0.005835	-0.014676	-0.034963
eVALUE	22.000000	0.100000	3.000000	4.845000	0.005909	-0.015319	-0.033586
eVALUE	24.000000	0.100000	3.000000	4.845000	0.010715	-0.013526	-0.032768
eVALUE	26.000000	0.100000	3.000000	4.845000	-0.005191	-0.008917	-0.010432
eVALUE	28.000000	0.100000	3.000000	4.845000	-0.018569	-0.006610	0.025600
eVALUE	30.000000	0.100000	3.000000	4.845000	-0.028968	-0.004774	0.055129
*							
eVALUE	-4.000000	0.200000	3.000000	4.845000	-0.002324	0.000000	0.000596
eVALUE	-2.000000	0.200000	3.000000	4.845000	0.007531	-0.000149	-0.009085
eVALUE	0.000000	0.200000	3.000000	4.845000	0.015161	-0.000558	-0.018021
eVALUE	2.000000	0.200000	3.000000	4.845000	0.020471	-0.001218	-0.025733
eVALUE	4.000000	0.200000	3.000000	4.845000	0.027245	-0.002109	-0.033073
eVALUE	6.000000	0.200000	3.000000	4.845000	0.025594	-0.003616	-0.037138
eVALUE	8.000000	0.200000	3.000000	4.845000	0.023900	-0.005032	-0.040875
eVALUE	10.000000	0.200000	3.000000	4.845000	0.020866	-0.006587	-0.039530
eVALUE	12.000000	0.200000	3.000000	4.845000	0.018403	-0.008231	-0.040183
eVALUE	14.000000	0.200000	3.000000	4.845000	0.015161	-0.009909	-0.038853
eVALUE	16.000000	0.200000	3.000000	4.845000	0.011389	-0.011563	-0.035705
eVALUE	18.000000	0.200000	3.000000	4.845000	0.008113	-0.013136	-0.033953
eVALUE	20.000000	0.200000	3.000000	4.845000	0.006024	-0.014576	-0.035427
eVALUE	22.000000	0.200000	3.000000	4.845000	0.006307	-0.015151	-0.034138
eVALUE	24.000000	0.200000	3.000000	4.845000	0.010736	-0.013150	-0.032675
eVALUE	26.000000	0.200000	3.000000	4.845000	-0.004006	-0.008786	-0.012458
eVALUE	28.000000	0.200000	3.000000	4.845000	-0.016446	-0.006713	0.023388
eVALUE	30.000000	0.200000	3.000000	4.845000	-0.026696	-0.005007	0.053840
*							
eVALUE	-4.000000	0.300000	3.000000	4.845000	-0.002352	0.000000	0.000616
eVALUE	-2.000000	0.300000	3.000000	4.845000	0.007591	-0.000152	-0.009098
eVALUE	0.000000	0.300000	3.000000	4.845000	0.015205	-0.000566	-0.018026
eVALUE	2.000000	0.300000	3.000000	4.845000	0.020432	-0.001230	-0.025682
eVALUE	4.000000	0.300000	3.000000	4.845000	0.027134	-0.002120	-0.032924
eVALUE	6.000000	0.300000	3.000000	4.845000	0.025393	-0.003622	-0.036848
eVALUE	8.000000	0.300000	3.000000	4.845000	0.023685	-0.005016	-0.040440
eVALUE	10.000000	0.300000	3.000000	4.845000	0.020685	-0.006537	-0.038944
eVALUE	12.000000	0.300000	3.000000	4.845000	0.018319	-0.008130	-0.039437
eVALUE	14.000000	0.300000	3.000000	4.845000	0.015235	-0.009740	-0.037953
eVALUE	16.000000	0.300000	3.000000	4.845000	0.011725	-0.011309	-0.034849
eVALUE	18.000000	0.300000	3.000000	4.845000	0.008762	-0.012783	-0.032950
eVALUE	20.000000	0.300000	3.000000	4.845000	0.007297	-0.014071	-0.035023
eVALUE	22.000000	0.300000	3.000000	4.845000	0.007662	-0.014332	-0.032782
eVALUE	24.000000	0.300000	3.000000	4.845000	0.004399	-0.010992	-0.024200
eVALUE	26.000000	0.300000	3.000000	4.845000	-0.003792	-0.008246	-0.010824
eVALUE	28.000000	0.300000	3.000000	4.845000	-0.013661	-0.006424	0.027485
eVALUE	30.000000	0.300000	3.000000	4.845000	-0.022624	-0.005376	0.063190
*							
eVALUE	-4.000000	0.400000	3.000000	4.845000	-0.002398	0.000000	0.000648
eVALUE	-2.000000	0.400000	3.000000	4.845000	0.007703	-0.000157	-0.009142
eVALUE	0.000000	0.400000	3.000000	4.845000	0.015334	-0.000581	-0.018082
eVALUE	2.000000	0.400000	3.000000	4.845000	0.020485	-0.001257	-0.025684
eVALUE	4.000000	0.400000	3.000000	4.845000	0.027131	-0.002158	-0.032864
eVALUE	6.000000	0.400000	3.000000	4.845000	0.025264	-0.003671	-0.036647
eVALUE	8.000000	0.400000	3.000000	4.845000	0.023516	-0.005061	-0.040119
eVALUE	10.000000	0.400000	3.000000	4.845000	0.020555	-0.006563	-0.038546
eVALUE	12.000000	0.400000	3.000000	4.845000	0.018270	-0.008123	-0.038936
eVALUE	14.000000	0.400000	3.000000	4.845000	0.015331	-0.009683	-0.037364
eVALUE	16.000000	0.400000	3.000000	4.845000	0.012083	-0.011185	-0.034420
eVALUE	18.000000	0.400000	3.000000	4.845000	0.009603	-0.012575	-0.033152
eVALUE	20.000000	0.400000	3.000000	4.845000	0.009080	-0.013524	-0.035570
eVALUE	22.000000	0.400000	3.000000	4.845000	0.008951	-0.012762	-0.030018
eVALUE	24.000000	0.400000	3.000000	4.845000	0.001706	-0.009617	-0.018598
eVALUE	26.000000	0.400000	3.000000	4.845000	-0.000359	-0.008094	-0.012471
eVALUE	28.000000	0.400000	3.000000	4.845000	-0.011145	-0.006790	0.028166
eVALUE	30.000000	0.400000	3.000000	4.845000	-0.022840	-0.005993	0.069071
*							
eVALUE	-4.000000	0.500000	3.000000	4.845000	-0.002467	0.000000	0.000696
eVALUE	-2.000000	0.500000	3.000000	4.845000	0.007876	-0.000164	-0.009217
eVALUE	0.000000	0.500000	3.000000	4.845000	0.015562	-0.000605	-0.018182
eVALUE	2.000000	0.500000	3.000000	4.845000	0.020641	-0.001303	-0.025726
eVALUE	4.000000	0.500000	3.000000	4.845000	0.027249	-0.002225	-0.032874
eVALUE	6.000000	0.500000	3.000000	4.845000	0.025207	-0.003768	-0.036500
eVALUE	8.000000	0.500000	3.000000	4.845000	0.023381	-0.005168	-0.039857
eVALUE	10.000000	0.500000	3.000000	4.845000	0.020464	-0.006668	-0.038276
eVALUE	12.000000	0.500000	3.000000	4.845000	0.018244	-0.008209	-0.038606
eVALUE	14.000000	0.500000	3.000000	4.845000	0.015436	-0.009732	-0.037004

eVALUE	16.000000	0.500000	3.000000	4.845000	0.012393	-0.011180	-0.034133
eVALUE	18.000000	0.500000	3.000000	4.845000	0.010306	-0.012499	-0.033559
eVALUE	20.000000	0.500000	3.000000	4.845000	0.010154	-0.013246	-0.035947
eVALUE	22.000000	0.500000	3.000000	4.845000	0.005622	-0.011314	-0.025536
eVALUE	24.000000	0.500000	3.000000	4.845000	0.001429	-0.009273	-0.016437
eVALUE	26.000000	0.500000	3.000000	4.845000	0.002191	-0.007912	-0.013362
eVALUE	28.000000	0.500000	3.000000	4.845000	-0.009418	-0.007162	0.026606
eVALUE	30.000000	0.500000	3.000000	4.845000	-0.022495	-0.006411	0.068099
*							
eVALUE	-4.000000	0.100000	4.000000	4.845000	-0.002302	0.000000	0.000585
eVALUE	-2.000000	0.100000	4.000000	4.845000	0.007476	-0.000149	-0.009058
eVALUE	0.000000	0.100000	4.000000	4.845000	0.015070	-0.000555	-0.017977
eVALUE	2.000000	0.100000	4.000000	4.845000	0.020378	-0.001212	-0.025691
eVALUE	4.000000	0.100000	4.000000	4.845000	0.027143	-0.002101	-0.033018
eVALUE	6.000000	0.100000	4.000000	4.845000	0.025542	-0.003606	-0.037102
eVALUE	8.000000	0.100000	4.000000	4.845000	0.023874	-0.005025	-0.040841
eVALUE	10.000000	0.100000	4.000000	4.845000	0.020834	-0.006588	-0.039461
eVALUE	12.000000	0.100000	4.000000	4.845000	0.018373	-0.008245	-0.040092
eVALUE	14.000000	0.100000	4.000000	4.845000	0.015121	-0.009940	-0.038733
eVALUE	16.000000	0.100000	4.000000	4.845000	0.011343	-0.011614	-0.035602
eVALUE	18.000000	0.100000	4.000000	4.845000	0.008021	-0.013211	-0.033722
eVALUE	20.000000	0.100000	4.000000	4.845000	0.005835	-0.014676	-0.034963
eVALUE	22.000000	0.100000	4.000000	4.845000	0.005909	-0.015319	-0.033586
eVALUE	24.000000	0.100000	4.000000	4.845000	0.010715	-0.013526	-0.032768
eVALUE	26.000000	0.100000	4.000000	4.845000	-0.005191	-0.008917	-0.010432
eVALUE	28.000000	0.100000	4.000000	4.845000	-0.018569	-0.006610	0.025600
eVALUE	30.000000	0.100000	4.000000	4.845000	-0.028968	-0.004774	0.055129
*							
eVALUE	-4.000000	0.200000	4.000000	4.845000	-0.002324	0.000000	0.000596
eVALUE	-2.000000	0.200000	4.000000	4.845000	0.007531	-0.000149	-0.009085
eVALUE	0.000000	0.200000	4.000000	4.845000	0.015161	-0.000558	-0.018021
eVALUE	2.000000	0.200000	4.000000	4.845000	0.020471	-0.001218	-0.025733
eVALUE	4.000000	0.200000	4.000000	4.845000	0.027245	-0.002109	-0.033073
eVALUE	6.000000	0.200000	4.000000	4.845000	0.025594	-0.003616	-0.037138
eVALUE	8.000000	0.200000	4.000000	4.845000	0.023900	-0.005032	-0.040875
eVALUE	10.000000	0.200000	4.000000	4.845000	0.020866	-0.006587	-0.039530
eVALUE	12.000000	0.200000	4.000000	4.845000	0.018403	-0.008231	-0.040183
eVALUE	14.000000	0.200000	4.000000	4.845000	0.015161	-0.009909	-0.038853
eVALUE	16.000000	0.200000	4.000000	4.845000	0.011389	-0.011563	-0.035705
eVALUE	18.000000	0.200000	4.000000	4.845000	0.008113	-0.013136	-0.033953
eVALUE	20.000000	0.200000	4.000000	4.845000	0.006024	-0.014576	-0.035427
eVALUE	22.000000	0.200000	4.000000	4.845000	0.006307	-0.015151	-0.034138
eVALUE	24.000000	0.200000	4.000000	4.845000	0.010736	-0.013150	-0.032675
eVALUE	26.000000	0.200000	4.000000	4.845000	-0.004006	-0.008786	-0.012458
eVALUE	28.000000	0.200000	4.000000	4.845000	-0.016446	-0.006713	0.023388
eVALUE	30.000000	0.200000	4.000000	4.845000	-0.026696	-0.005007	0.053840
*							
eVALUE	-4.000000	0.300000	4.000000	4.845000	-0.002352	0.000000	0.000616
eVALUE	-2.000000	0.300000	4.000000	4.845000	0.007591	-0.000152	-0.009098
eVALUE	0.000000	0.300000	4.000000	4.845000	0.015205	-0.000566	-0.018026
eVALUE	2.000000	0.300000	4.000000	4.845000	0.020432	-0.001230	-0.025682
eVALUE	4.000000	0.300000	4.000000	4.845000	0.027134	-0.002120	-0.032924
eVALUE	6.000000	0.300000	4.000000	4.845000	0.025393	-0.003622	-0.036848
eVALUE	8.000000	0.300000	4.000000	4.845000	0.023685	-0.005016	-0.040440
eVALUE	10.000000	0.300000	4.000000	4.845000	0.020685	-0.006537	-0.038944
eVALUE	12.000000	0.300000	4.000000	4.845000	0.018319	-0.008130	-0.039437
eVALUE	14.000000	0.300000	4.000000	4.845000	0.015235	-0.009740	-0.037953
eVALUE	16.000000	0.300000	4.000000	4.845000	0.011725	-0.011309	-0.034849
eVALUE	18.000000	0.300000	4.000000	4.845000	0.008762	-0.012783	-0.032950
eVALUE	20.000000	0.300000	4.000000	4.845000	0.007297	-0.014071	-0.035023
eVALUE	22.000000	0.300000	4.000000	4.845000	0.007662	-0.014332	-0.032782
eVALUE	24.000000	0.300000	4.000000	4.845000	0.004399	-0.010992	-0.024200
eVALUE	26.000000	0.300000	4.000000	4.845000	-0.003792	-0.008246	-0.010824
eVALUE	28.000000	0.300000	4.000000	4.845000	-0.013661	-0.006424	0.027485
eVALUE	30.000000	0.300000	4.000000	4.845000	-0.022624	-0.005376	0.063190
*							
eVALUE	-4.000000	0.400000	4.000000	4.845000	-0.002398	0.000000	0.000648
eVALUE	-2.000000	0.400000	4.000000	4.845000	0.007703	-0.000157	-0.009142
eVALUE	0.000000	0.400000	4.000000	4.845000	0.015334	-0.000581	-0.018082
eVALUE	2.000000	0.400000	4.000000	4.845000	0.020485	-0.001257	-0.025684
eVALUE	4.000000	0.400000	4.000000	4.845000	0.027131	-0.002158	-0.032864
eVALUE	6.000000	0.400000	4.000000	4.845000	0.025264	-0.003671	-0.036647
eVALUE	8.000000	0.400000	4.000000	4.845000	0.023516	-0.005061	-0.040119
eVALUE	10.000000	0.400000	4.000000	4.845000	0.020555	-0.006563	-0.038546

eVALUE	12.000000	0.400000	4.000000	4.845000	0.018270	-0.008123	-0.038936
eVALUE	14.000000	0.400000	4.000000	4.845000	0.015331	-0.009683	-0.037364
eVALUE	16.000000	0.400000	4.000000	4.845000	0.012083	-0.011185	-0.034420
eVALUE	18.000000	0.400000	4.000000	4.845000	0.009603	-0.012575	-0.033152
eVALUE	20.000000	0.400000	4.000000	4.845000	0.009080	-0.013524	-0.035570
eVALUE	22.000000	0.400000	4.000000	4.845000	0.008951	-0.012762	-0.030018
eVALUE	24.000000	0.400000	4.000000	4.845000	0.001706	-0.009617	-0.018598
eVALUE	26.000000	0.400000	4.000000	4.845000	-0.000359	-0.008094	-0.012471
eVALUE	28.000000	0.400000	4.000000	4.845000	-0.011145	-0.006790	0.028166
eVALUE	30.000000	0.400000	4.000000	4.845000	-0.022840	-0.005993	0.069071
*							
eVALUE	-4.000000	0.500000	4.000000	4.845000	-0.002467	0.000000	0.000696
eVALUE	-2.000000	0.500000	4.000000	4.845000	0.007876	-0.000164	-0.009217
eVALUE	0.000000	0.500000	4.000000	4.845000	0.015562	-0.000605	-0.018182
eVALUE	2.000000	0.500000	4.000000	4.845000	0.020641	-0.001303	-0.025726
eVALUE	4.000000	0.500000	4.000000	4.845000	0.027249	-0.002225	-0.032874
eVALUE	6.000000	0.500000	4.000000	4.845000	0.025207	-0.003768	-0.036500
eVALUE	8.000000	0.500000	4.000000	4.845000	0.023381	-0.005168	-0.039857
eVALUE	10.000000	0.500000	4.000000	4.845000	0.020464	-0.006668	-0.038276
eVALUE	12.000000	0.500000	4.000000	4.845000	0.018244	-0.008209	-0.038606
eVALUE	14.000000	0.500000	4.000000	4.845000	0.015436	-0.009732	-0.037004
eVALUE	16.000000	0.500000	4.000000	4.845000	0.012393	-0.011180	-0.034133
eVALUE	18.000000	0.500000	4.000000	4.845000	0.010306	-0.012499	-0.033559
eVALUE	20.000000	0.500000	4.000000	4.845000	0.010154	-0.013246	-0.035947
eVALUE	22.000000	0.500000	4.000000	4.845000	0.005622	-0.011314	-0.025536
eVALUE	24.000000	0.500000	4.000000	4.845000	0.001429	-0.009273	-0.016437
eVALUE	26.000000	0.500000	4.000000	4.845000	0.002191	-0.007912	-0.013362
eVALUE	28.000000	0.500000	4.000000	4.845000	-0.009418	-0.007162	0.026606
eVALUE	30.000000	0.500000	4.000000	4.845000	-0.022495	-0.006411	0.068099
*							
eVALUE	-4.000000	0.100000	5.000000	4.845000	-0.002302	0.000000	0.000585
eVALUE	-2.000000	0.100000	5.000000	4.845000	0.007476	-0.000149	-0.009058
eVALUE	0.000000	0.100000	5.000000	4.845000	0.015070	-0.000555	-0.017977
eVALUE	2.000000	0.100000	5.000000	4.845000	0.020378	-0.001212	-0.025691
eVALUE	4.000000	0.100000	5.000000	4.845000	0.027143	-0.002101	-0.033018
eVALUE	6.000000	0.100000	5.000000	4.845000	0.025542	-0.003606	-0.037102
eVALUE	8.000000	0.100000	5.000000	4.845000	0.023874	-0.005025	-0.040941
eVALUE	10.000000	0.100000	5.000000	4.845000	0.020834	-0.006588	-0.039461
eVALUE	12.000000	0.100000	5.000000	4.845000	0.018373	-0.008245	-0.040092
eVALUE	14.000000	0.100000	5.000000	4.845000	0.015121	-0.009940	-0.038733
eVALUE	16.000000	0.100000	5.000000	4.845000	0.011343	-0.011614	-0.035602
eVALUE	18.000000	0.100000	5.000000	4.845000	0.008021	-0.013211	-0.033722
eVALUE	20.000000	0.100000	5.000000	4.845000	0.005835	-0.014676	-0.034963
eVALUE	22.000000	0.100000	5.000000	4.845000	0.005909	-0.015319	-0.033586
eVALUE	24.000000	0.100000	5.000000	4.845000	0.010715	-0.013526	-0.032768
eVALUE	26.000000	0.100000	5.000000	4.845000	-0.005191	-0.008917	-0.010432
eVALUE	28.000000	0.100000	5.000000	4.845000	-0.018569	-0.006610	0.025600
eVALUE	30.000000	0.100000	5.000000	4.845000	-0.028968	-0.004774	0.055129
*							
eVALUE	-4.000000	0.200000	5.000000	4.845000	-0.002324	0.000000	0.000596
eVALUE	-2.000000	0.200000	5.000000	4.845000	0.007531	-0.000149	-0.009085
eVALUE	0.000000	0.200000	5.000000	4.845000	0.015161	-0.000558	-0.018021
eVALUE	2.000000	0.200000	5.000000	4.845000	0.020471	-0.001218	-0.025733
eVALUE	4.000000	0.200000	5.000000	4.845000	0.027245	-0.002109	-0.033073
eVALUE	6.000000	0.200000	5.000000	4.845000	0.025594	-0.003616	-0.037138
eVALUE	8.000000	0.200000	5.000000	4.845000	0.023900	-0.005032	-0.040875
eVALUE	10.000000	0.200000	5.000000	4.845000	0.020866	-0.006587	-0.039530
eVALUE	12.000000	0.200000	5.000000	4.845000	0.018403	-0.008231	-0.040183
eVALUE	14.000000	0.200000	5.000000	4.845000	0.015161	-0.009909	-0.038853
eVALUE	16.000000	0.200000	5.000000	4.845000	0.011389	-0.011563	-0.035705
eVALUE	18.000000	0.200000	5.000000	4.845000	0.008113	-0.013136	-0.033953
eVALUE	20.000000	0.200000	5.000000	4.845000	0.006024	-0.014576	-0.035427
eVALUE	22.000000	0.200000	5.000000	4.845000	0.006307	-0.015151	-0.034138
eVALUE	24.000000	0.200000	5.000000	4.845000	0.010736	-0.013150	-0.032675
eVALUE	26.000000	0.200000	5.000000	4.845000	-0.004006	-0.008786	-0.012458
eVALUE	28.000000	0.200000	5.000000	4.845000	-0.016446	-0.006713	0.023388
eVALUE	30.000000	0.200000	5.000000	4.845000	-0.026696	-0.005007	0.053840
*							
eVALUE	-4.000000	0.300000	5.000000	4.845000	-0.002352	0.000000	0.000616
eVALUE	-2.000000	0.300000	5.000000	4.845000	0.007591	-0.000152	-0.009098
eVALUE	0.000000	0.300000	5.000000	4.845000	0.015205	-0.000566	-0.018026
eVALUE	2.000000	0.300000	5.000000	4.845000	0.020432	-0.001230	-0.025682
eVALUE	4.000000	0.300000	5.000000	4.845000	0.027134	-0.002120	-0.032924
eVALUE	6.000000	0.300000	5.000000	4.845000	0.025393	-0.003622	-0.036848

```

&VALUE      8.000000  0.300000  5.000000  4.845000  0.023685  -0.005016  -0.040440
&VALUE     10.000000  0.300000  5.000000  4.845000  0.020685  -0.006537  -0.038944
&VALUE     12.000000  0.300000  5.000000  4.845000  0.018319  -0.008130  -0.039437
&VALUE     14.000000  0.300000  5.000000  4.845000  0.015235  -0.009740  -0.037953
&VALUE     16.000000  0.300000  5.000000  4.845000  0.011725  -0.011309  -0.034849
&VALUE     18.000000  0.300000  5.000000  4.845000  0.008762  -0.012783  -0.032950
&VALUE     20.000000  0.300000  5.000000  4.845000  0.007297  -0.014071  -0.035023
&VALUE     22.000000  0.300000  5.000000  4.845000  0.007662  -0.014332  -0.032782
&VALUE     24.000000  0.300000  5.000000  4.845000  0.004399  -0.010992  -0.024200
&VALUE     26.000000  0.300000  5.000000  4.845000  -0.003792  -0.008246  -0.010824
&VALUE     28.000000  0.300000  5.000000  4.845000  -0.013661  -0.006424  0.027485
&VALUE     30.000000  0.300000  5.000000  4.845000  -0.022624  -0.005376  0.063190
*
&VALUE     -4.000000  0.400000  5.000000  4.845000  -0.002398  0.000000  0.000648
&VALUE     -2.000000  0.400000  5.000000  4.845000  0.007703  -0.000157  -0.009142
&VALUE      0.000000  0.400000  5.000000  4.845000  0.015334  -0.000581  -0.018082
&VALUE      2.000000  0.400000  5.000000  4.845000  0.020485  -0.001257  -0.025684
&VALUE      4.000000  0.400000  5.000000  4.845000  0.027131  -0.002158  -0.032864
&VALUE      6.000000  0.400000  5.000000  4.845000  0.025264  -0.003671  -0.036647
&VALUE      8.000000  0.400000  5.000000  4.845000  0.023516  -0.005061  -0.040119
&VALUE     10.000000  0.400000  5.000000  4.845000  0.020555  -0.006563  -0.038546
&VALUE     12.000000  0.400000  5.000000  4.845000  0.018270  -0.008123  -0.038936
&VALUE     14.000000  0.400000  5.000000  4.845000  0.015331  -0.009683  -0.037364
&VALUE     16.000000  0.400000  5.000000  4.845000  0.012083  -0.011185  -0.034420
&VALUE     18.000000  0.400000  5.000000  4.845000  0.009603  -0.012575  -0.033152
&VALUE     20.000000  0.400000  5.000000  4.845000  0.009080  -0.013524  -0.035570
&VALUE     22.000000  0.400000  5.000000  4.845000  0.008951  -0.012762  -0.030018
&VALUE     24.000000  0.400000  5.000000  4.845000  0.001706  -0.009617  -0.018598
&VALUE     26.000000  0.400000  5.000000  4.845000  -0.000359  -0.008094  -0.012471
&VALUE     28.000000  0.400000  5.000000  4.845000  -0.011145  -0.006790  0.028166
&VALUE     30.000000  0.400000  5.000000  4.845000  -0.022840  -0.005993  0.069071
*
&VALUE     -4.000000  0.500000  5.000000  4.845000  -0.002467  0.000000  0.000696
&VALUE     -2.000000  0.500000  5.000000  4.845000  0.007876  -0.000164  -0.009217
&VALUE      0.000000  0.500000  5.000000  4.845000  0.015562  -0.000605  -0.018182
&VALUE      2.000000  0.500000  5.000000  4.845000  0.020641  -0.001303  -0.025726
&VALUE      4.000000  0.500000  5.000000  4.845000  0.027249  -0.002225  -0.032874
&VALUE      6.000000  0.500000  5.000000  4.845000  0.025207  -0.003768  -0.036500
&VALUE      8.000000  0.500000  5.000000  4.845000  0.023381  -0.005168  -0.039857
&VALUE     10.000000  0.500000  5.000000  4.845000  0.020464  -0.006668  -0.038276
&VALUE     12.000000  0.500000  5.000000  4.845000  0.018244  -0.008209  -0.038606
&VALUE     14.000000  0.500000  5.000000  4.845000  0.015436  -0.009732  -0.037004
&VALUE     16.000000  0.500000  5.000000  4.845000  0.012393  -0.011180  -0.034133
&VALUE     18.000000  0.500000  5.000000  4.845000  0.010306  -0.012499  -0.033559
&VALUE     20.000000  0.500000  5.000000  4.845000  0.010154  -0.013246  -0.035947
&VALUE     22.000000  0.500000  5.000000  4.845000  0.005622  -0.011314  -0.025536
&VALUE     24.000000  0.500000  5.000000  4.845000  0.001429  -0.009273  -0.016437
&VALUE     26.000000  0.500000  5.000000  4.845000  0.002191  -0.007912  -0.013362
&VALUE     28.000000  0.500000  5.000000  4.845000  -0.009418  -0.007162  0.026606
&VALUE     30.000000  0.500000  5.000000  4.845000  -0.022495  -0.006411  0.068099
*
&END

```

- GRD_9690.inp (ground effect = 9.690 m)

```

&ARG01      C      PROTOCOL      0      GRD+X.XXX
&ARG02      C      TEST_CONDITION  0      TEST0001.CND
&ARG03      C      REPORT_CODE    0      00-01
&ARG04      X      FLAP_SET       9      REF. BELOW
&ARG05      X      STABILIZER     5      0.0
&ARG06      X      ELEVATOR       3      0.0
&ARG07      X      RUDDER         10     0.0
&ARG08      X      AILERON        4      0.0
&ARG09      X      SIDESLIP       11     0.0
&ARG10      X      AOA            1      REF. BELOW
&ARG11      X      MACH           2      REF. BELOW
&ARG12      X      ALTITUDE       20     REF. BELOW
*
&SNAME      &ARG10      &ARG11      &ARG04      &ARG13      &FUN01      &FUN02      &FUN03
&UNAME      AOA        MACH        FLAP_SET    HGE        CLGR       CIDGR      CMGR
&UCODE      1         2          9          20         0          0          0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*GROUND EFFECT

```

*							
eVALUE	-4.000000	0.100000	1.000000	9.690000	-0.000589	0.000000	0.000100
eVALUE	-2.000000	0.100000	1.000000	9.690000	0.002108	-0.000053	-0.003024
eVALUE	0.000000	0.100000	1.000000	9.690000	0.004081	-0.000197	-0.005920
eVALUE	2.000000	0.100000	1.000000	9.690000	0.005309	-0.000431	-0.008413
eVALUE	4.000000	0.100000	1.000000	9.690000	0.006766	-0.000748	-0.010604
eVALUE	6.000000	0.100000	1.000000	9.690000	0.006336	-0.001285	-0.012139
eVALUE	8.000000	0.100000	1.000000	9.690000	0.005959	-0.001792	-0.013718
eVALUE	10.000000	0.100000	1.000000	9.690000	0.005028	-0.002349	-0.013288
eVALUE	12.000000	0.100000	1.000000	9.690000	0.004344	-0.002941	-0.013640
eVALUE	14.000000	0.100000	1.000000	9.690000	0.003371	-0.003545	-0.013239
eVALUE	16.000000	0.100000	1.000000	9.690000	0.002198	-0.004143	-0.012155
eVALUE	18.000000	0.100000	1.000000	9.690000	0.001252	-0.004713	-0.011668
eVALUE	20.000000	0.100000	1.000000	9.690000	0.000380	-0.005236	-0.012281
eVALUE	22.000000	0.100000	1.000000	9.690000	0.000991	-0.005465	-0.012312
eVALUE	24.000000	0.100000	1.000000	9.690000	0.004785	-0.004825	-0.013342
eVALUE	26.000000	0.100000	1.000000	9.690000	0.001901	-0.003180	-0.005816
eVALUE	28.000000	0.100000	1.000000	9.690000	-0.003748	-0.002357	0.008477
eVALUE	30.000000	0.100000	1.000000	9.690000	-0.007165	-0.001702	0.016913
*							
eVALUE	-4.000000	0.200000	1.000000	9.690000	-0.000596	0.000000	0.000103
eVALUE	-2.000000	0.200000	1.000000	9.690000	0.002124	-0.000053	-0.003030
eVALUE	0.000000	0.200000	1.000000	9.690000	0.004107	-0.000199	-0.005929
eVALUE	2.000000	0.200000	1.000000	9.690000	0.005335	-0.000434	-0.008420
eVALUE	4.000000	0.200000	1.000000	9.690000	0.006804	-0.000751	-0.010618
eVALUE	6.000000	0.200000	1.000000	9.690000	0.006364	-0.001290	-0.012150
eVALUE	8.000000	0.200000	1.000000	9.690000	0.005983	-0.001796	-0.013732
eVALUE	10.000000	0.200000	1.000000	9.690000	0.005061	-0.002351	-0.013319
eVALUE	12.000000	0.200000	1.000000	9.690000	0.004381	-0.002939	-0.013682
eVALUE	14.000000	0.200000	1.000000	9.690000	0.003417	-0.003538	-0.013295
eVALUE	16.000000	0.200000	1.000000	9.690000	0.002248	-0.004129	-0.012206
eVALUE	18.000000	0.200000	1.000000	9.690000	0.001292	-0.004691	-0.011758
eVALUE	20.000000	0.200000	1.000000	9.690000	0.000464	-0.005206	-0.012474
eVALUE	22.000000	0.200000	1.000000	9.690000	0.001200	-0.005412	-0.012570
eVALUE	24.000000	0.200000	1.000000	9.690000	0.004948	-0.004697	-0.013352
eVALUE	26.000000	0.200000	1.000000	9.690000	0.001916	-0.003137	-0.006398
eVALUE	28.000000	0.200000	1.000000	9.690000	-0.003362	-0.002396	0.007765
eVALUE	30.000000	0.200000	1.000000	9.690000	-0.006651	-0.001787	0.016360
*							
eVALUE	-4.000000	0.300000	1.000000	9.690000	-0.000605	0.000000	0.000107
eVALUE	-2.000000	0.300000	1.000000	9.690000	0.002142	-0.000054	-0.003025
eVALUE	0.000000	0.300000	1.000000	9.690000	0.004126	-0.000201	-0.005918
eVALUE	2.000000	0.300000	1.000000	9.690000	0.005340	-0.000438	-0.008393
eVALUE	4.000000	0.300000	1.000000	9.690000	0.006810	-0.000756	-0.010562
eVALUE	6.000000	0.300000	1.000000	9.690000	0.006358	-0.001292	-0.012058
eVALUE	8.000000	0.300000	1.000000	9.690000	0.005985	-0.001790	-0.013600
eVALUE	10.000000	0.300000	1.000000	9.690000	0.005083	-0.002334	-0.013140
eVALUE	12.000000	0.300000	1.000000	9.690000	0.004440	-0.002903	-0.013451
eVALUE	14.000000	0.300000	1.000000	9.690000	0.003538	-0.003479	-0.013014
eVALUE	16.000000	0.300000	1.000000	9.690000	0.002457	-0.004039	-0.011944
eVALUE	18.000000	0.300000	1.000000	9.690000	0.001647	-0.004566	-0.011466
eVALUE	20.000000	0.300000	1.000000	9.690000	0.001159	-0.005027	-0.012496
eVALUE	22.000000	0.300000	1.000000	9.690000	0.002048	-0.005120	-0.012272
eVALUE	24.000000	0.300000	1.000000	9.690000	0.004268	-0.003926	-0.010669
eVALUE	26.000000	0.300000	1.000000	9.690000	0.001241	-0.002944	-0.005376
eVALUE	28.000000	0.300000	1.000000	9.690000	-0.003615	-0.002293	0.009760
eVALUE	30.000000	0.300000	1.000000	9.690000	-0.006593	-0.001919	0.019589
*							
eVALUE	-4.000000	0.400000	1.000000	9.690000	-0.000620	0.000000	0.000113
eVALUE	-2.000000	0.400000	1.000000	9.690000	0.002176	-0.000056	-0.003028
eVALUE	0.000000	0.400000	1.000000	9.690000	0.004168	-0.000207	-0.005917
eVALUE	2.000000	0.400000	1.000000	9.690000	0.005370	-0.000448	-0.008374
eVALUE	4.000000	0.400000	1.000000	9.690000	0.006852	-0.000769	-0.010528
eVALUE	6.000000	0.400000	1.000000	9.690000	0.006380	-0.001310	-0.011992
eVALUE	8.000000	0.400000	1.000000	9.690000	0.006009	-0.001806	-0.013505
eVALUE	10.000000	0.400000	1.000000	9.690000	0.005135	-0.002343	-0.013028
eVALUE	12.000000	0.400000	1.000000	9.690000	0.004527	-0.002901	-0.013309
eVALUE	14.000000	0.400000	1.000000	9.690000	0.003687	-0.003458	-0.012850
eVALUE	16.000000	0.400000	1.000000	9.690000	0.002699	-0.003995	-0.011849
eVALUE	18.000000	0.400000	1.000000	9.690000	0.002050	-0.004492	-0.011644
eVALUE	20.000000	0.400000	1.000000	9.690000	0.002197	-0.004832	-0.013002
eVALUE	22.000000	0.400000	1.000000	9.690000	0.003323	-0.004559	-0.011526
eVALUE	24.000000	0.400000	1.000000	9.690000	0.002601	-0.003435	-0.008101
eVALUE	26.000000	0.400000	1.000000	9.690000	0.001292	-0.002890	-0.005385

eVALUE	28.000000	0.400000	1.000000	9.690000	-0.003411	-0.002424	0.010226
eVALUE	30.000000	0.400000	1.000000	9.690000	-0.006766	-0.002140	0.021002
*							
eVALUE	-4.000000	0.500000	1.000000	9.690000	-0.000642	0.000000	0.000124
eVALUE	-2.000000	0.500000	1.000000	9.690000	0.002227	-0.000058	-0.003035
eVALUE	0.000000	0.500000	1.000000	9.690000	0.004239	-0.000215	-0.005921
eVALUE	2.000000	0.500000	1.000000	9.690000	0.005428	-0.000464	-0.008357
eVALUE	4.000000	0.500000	1.000000	9.690000	0.006937	-0.000793	-0.010506
eVALUE	6.000000	0.500000	1.000000	9.690000	0.006431	-0.001345	-0.011935
eVALUE	8.000000	0.500000	1.000000	9.690000	0.006053	-0.001845	-0.013426
eVALUE	10.000000	0.500000	1.000000	9.690000	0.005214	-0.002381	-0.012961
eVALUE	12.000000	0.500000	1.000000	9.690000	0.004639	-0.002932	-0.013231
eVALUE	14.000000	0.500000	1.000000	9.690000	0.003860	-0.003476	-0.012774
eVALUE	16.000000	0.500000	1.000000	9.690000	0.002947	-0.003994	-0.011807
eVALUE	18.000000	0.500000	1.000000	9.690000	0.002460	-0.004465	-0.011913
eVALUE	20.000000	0.500000	1.000000	9.690000	0.002838	-0.004733	-0.013359
eVALUE	22.000000	0.500000	1.000000	9.690000	0.003415	-0.004042	-0.010336
eVALUE	24.000000	0.500000	1.000000	9.690000	0.001952	-0.003312	-0.006988
eVALUE	26.000000	0.500000	1.000000	9.690000	0.001391	-0.002825	-0.005294
eVALUE	28.000000	0.500000	1.000000	9.690000	-0.003093	-0.002557	0.009677
eVALUE	30.000000	0.500000	1.000000	9.690000	-0.006550	-0.002289	0.020349
*							
eVALUE	-4.000000	0.100000	2.000000	9.690000	-0.000589	0.000000	0.000100
eVALUE	-2.000000	0.100000	2.000000	9.690000	0.002108	-0.000053	-0.003024
eVALUE	0.000000	0.100000	2.000000	9.690000	0.004081	-0.000197	-0.005920
eVALUE	2.000000	0.100000	2.000000	9.690000	0.005309	-0.000431	-0.008413
eVALUE	4.000000	0.100000	2.000000	9.690000	0.006766	-0.000748	-0.010604
eVALUE	6.000000	0.100000	2.000000	9.690000	0.006336	-0.001285	-0.012139
eVALUE	8.000000	0.100000	2.000000	9.690000	0.005959	-0.001792	-0.013718
eVALUE	10.000000	0.100000	2.000000	9.690000	0.005028	-0.002349	-0.013288
eVALUE	12.000000	0.100000	2.000000	9.690000	0.004344	-0.002941	-0.013640
eVALUE	14.000000	0.100000	2.000000	9.690000	0.003371	-0.003545	-0.013239
eVALUE	16.000000	0.100000	2.000000	9.690000	0.002198	-0.004143	-0.012155
eVALUE	18.000000	0.100000	2.000000	9.690000	0.001252	-0.004713	-0.011668
eVALUE	20.000000	0.100000	2.000000	9.690000	0.000380	-0.005236	-0.012281
eVALUE	22.000000	0.100000	2.000000	9.690000	0.000991	-0.005465	-0.012312
eVALUE	24.000000	0.100000	2.000000	9.690000	0.004785	-0.004825	-0.013342
eVALUE	26.000000	0.100000	2.000000	9.690000	0.001901	-0.003180	-0.005816
eVALUE	28.000000	0.100000	2.000000	9.690000	-0.003748	-0.002357	0.008477
eVALUE	30.000000	0.100000	2.000000	9.690000	-0.007165	-0.001702	0.016913
*							
eVALUE	-4.000000	0.200000	2.000000	9.690000	-0.000596	0.000000	0.000103
eVALUE	-2.000000	0.200000	2.000000	9.690000	0.002124	-0.000053	-0.003030
eVALUE	0.000000	0.200000	2.000000	9.690000	0.004107	-0.000199	-0.005929
eVALUE	2.000000	0.200000	2.000000	9.690000	0.005335	-0.000434	-0.008420
eVALUE	4.000000	0.200000	2.000000	9.690000	0.006804	-0.000751	-0.010618
eVALUE	6.000000	0.200000	2.000000	9.690000	0.006364	-0.001290	-0.012150
eVALUE	8.000000	0.200000	2.000000	9.690000	0.005983	-0.001796	-0.013732
eVALUE	10.000000	0.200000	2.000000	9.690000	0.005061	-0.002351	-0.013319
eVALUE	12.000000	0.200000	2.000000	9.690000	0.004381	-0.002939	-0.013682
eVALUE	14.000000	0.200000	2.000000	9.690000	0.003417	-0.003538	-0.013295
eVALUE	16.000000	0.200000	2.000000	9.690000	0.002248	-0.004129	-0.012206
eVALUE	18.000000	0.200000	2.000000	9.690000	0.001292	-0.004691	-0.011758
eVALUE	20.000000	0.200000	2.000000	9.690000	0.000464	-0.005206	-0.012474
eVALUE	22.000000	0.200000	2.000000	9.690000	0.001200	-0.005412	-0.012570
eVALUE	24.000000	0.200000	2.000000	9.690000	0.004948	-0.004697	-0.013352
eVALUE	26.000000	0.200000	2.000000	9.690000	0.001916	-0.003137	-0.006398
eVALUE	28.000000	0.200000	2.000000	9.690000	-0.003362	-0.002396	0.007765
eVALUE	30.000000	0.200000	2.000000	9.690000	-0.006651	-0.001787	0.016360
*							
eVALUE	-4.000000	0.300000	2.000000	9.690000	-0.000605	0.000000	0.000107
eVALUE	-2.000000	0.300000	2.000000	9.690000	0.002142	-0.000054	-0.003025
eVALUE	0.000000	0.300000	2.000000	9.690000	0.004126	-0.000201	-0.005918
eVALUE	2.000000	0.300000	2.000000	9.690000	0.005340	-0.000438	-0.008393
eVALUE	4.000000	0.300000	2.000000	9.690000	0.006810	-0.000756	-0.010562
eVALUE	6.000000	0.300000	2.000000	9.690000	0.006358	-0.001292	-0.012058
eVALUE	8.000000	0.300000	2.000000	9.690000	0.005985	-0.001790	-0.013600
eVALUE	10.000000	0.300000	2.000000	9.690000	0.005083	-0.002334	-0.013140
eVALUE	12.000000	0.300000	2.000000	9.690000	0.004440	-0.002903	-0.013451
eVALUE	14.000000	0.300000	2.000000	9.690000	0.003538	-0.003479	-0.013014
eVALUE	16.000000	0.300000	2.000000	9.690000	0.002457	-0.004039	-0.011944
eVALUE	18.000000	0.300000	2.000000	9.690000	0.001647	-0.004566	-0.011466
eVALUE	20.000000	0.300000	2.000000	9.690000	0.001159	-0.005027	-0.012496
eVALUE	22.000000	0.300000	2.000000	9.690000	0.002048	-0.005120	-0.012272

eVALUE	24.000000	0.300000	2.000000	9.690000	0.004269	-0.003926	-0.010669
eVALUE	26.000000	0.300000	2.000000	9.690000	0.001241	-0.002944	-0.005376
eVALUE	28.000000	0.300000	2.000000	9.690000	-0.003615	-0.002293	0.009760
eVALUE	30.000000	0.300000	2.000000	9.690000	-0.006593	-0.001919	0.019589
*							
eVALUE	-4.000000	0.400000	2.000000	9.690000	-0.000620	0.000000	0.000113
eVALUE	-2.000000	0.400000	2.000000	9.690000	0.002176	-0.000056	-0.003028
eVALUE	0.000000	0.400000	2.000000	9.690000	0.004168	-0.000207	-0.005917
eVALUE	2.000000	0.400000	2.000000	9.690000	0.005370	-0.000448	-0.008374
eVALUE	4.000000	0.400000	2.000000	9.690000	0.006852	-0.000769	-0.010528
eVALUE	6.000000	0.400000	2.000000	9.690000	0.006380	-0.001310	-0.011992
eVALUE	8.000000	0.400000	2.000000	9.690000	0.006009	-0.001806	-0.013505
eVALUE	10.000000	0.400000	2.000000	9.690000	0.005135	-0.002343	-0.013028
eVALUE	12.000000	0.400000	2.000000	9.690000	0.004527	-0.002901	-0.013309
eVALUE	14.000000	0.400000	2.000000	9.690000	0.003687	-0.003458	-0.012850
eVALUE	16.000000	0.400000	2.000000	9.690000	0.002699	-0.003995	-0.011849
eVALUE	18.000000	0.400000	2.000000	9.690000	0.002050	-0.004492	-0.011644
eVALUE	20.000000	0.400000	2.000000	9.690000	0.002197	-0.004832	-0.013002
eVALUE	22.000000	0.400000	2.000000	9.690000	0.003323	-0.004559	-0.011526
eVALUE	24.000000	0.400000	2.000000	9.690000	0.002601	-0.003435	-0.008101
eVALUE	26.000000	0.400000	2.000000	9.690000	0.001292	-0.002890	-0.005385
eVALUE	28.000000	0.400000	2.000000	9.690000	-0.003411	-0.002424	0.010226
eVALUE	30.000000	0.400000	2.000000	9.690000	-0.006766	-0.002140	0.021002
*							
eVALUE	-4.000000	0.500000	2.000000	9.690000	-0.000642	0.000000	0.000124
eVALUE	-2.000000	0.500000	2.000000	9.690000	0.002227	-0.000058	-0.003035
eVALUE	0.000000	0.500000	2.000000	9.690000	0.004239	-0.000215	-0.005921
eVALUE	2.000000	0.500000	2.000000	9.690000	0.005428	-0.000464	-0.008357
eVALUE	4.000000	0.500000	2.000000	9.690000	0.006937	-0.000793	-0.010506
eVALUE	6.000000	0.500000	2.000000	9.690000	0.006431	-0.001345	-0.011935
eVALUE	8.000000	0.500000	2.000000	9.690000	0.006053	-0.001845	-0.013426
eVALUE	10.000000	0.500000	2.000000	9.690000	0.005214	-0.002381	-0.012961
eVALUE	12.000000	0.500000	2.000000	9.690000	0.004639	-0.002932	-0.013231
eVALUE	14.000000	0.500000	2.000000	9.690000	0.003860	-0.003476	-0.012774
eVALUE	16.000000	0.500000	2.000000	9.690000	0.002947	-0.003994	-0.011807
eVALUE	18.000000	0.500000	2.000000	9.690000	0.002460	-0.004465	-0.011913
eVALUE	20.000000	0.500000	2.000000	9.690000	0.002838	-0.004733	-0.013259
eVALUE	22.000000	0.500000	2.000000	9.690000	0.003415	-0.004042	-0.010336
eVALUE	24.000000	0.500000	2.000000	9.690000	0.001952	-0.003312	-0.006988
eVALUE	26.000000	0.500000	2.000000	9.690000	0.001391	-0.002825	-0.005294
eVALUE	28.000000	0.500000	2.000000	9.690000	-0.003093	-0.002557	0.009677
eVALUE	30.000000	0.500000	2.000000	9.690000	-0.006550	-0.002289	0.020349
*							
eVALUE	-4.000000	0.100000	3.000000	9.690000	-0.000589	0.000000	0.000105
eVALUE	-2.000000	0.100000	3.000000	9.690000	0.002108	-0.000053	-0.003036
eVALUE	0.000000	0.100000	3.000000	9.690000	0.004081	-0.000197	-0.005942
eVALUE	2.000000	0.100000	3.000000	9.690000	0.005309	-0.000431	-0.008440
eVALUE	4.000000	0.100000	3.000000	9.690000	0.006766	-0.000748	-0.010639
eVALUE	6.000000	0.100000	3.000000	9.690000	0.006336	-0.001285	-0.012165
eVALUE	8.000000	0.100000	3.000000	9.690000	0.005959	-0.001792	-0.013736
eVALUE	10.000000	0.100000	3.000000	9.690000	0.005028	-0.002349	-0.013298
eVALUE	12.000000	0.100000	3.000000	9.690000	0.004344	-0.002941	-0.013643
eVALUE	14.000000	0.100000	3.000000	9.690000	0.003371	-0.003545	-0.013234
eVALUE	16.000000	0.100000	3.000000	9.690000	0.002198	-0.004143	-0.012141
eVALUE	18.000000	0.100000	3.000000	9.690000	0.001252	-0.004713	-0.011646
eVALUE	20.000000	0.100000	3.000000	9.690000	0.000380	-0.005236	-0.012249
eVALUE	22.000000	0.100000	3.000000	9.690000	0.000991	-0.005465	-0.012285
eVALUE	24.000000	0.100000	3.000000	9.690000	0.004785	-0.004825	-0.013349
eVALUE	26.000000	0.100000	3.000000	9.690000	0.001901	-0.003180	-0.005818
eVALUE	28.000000	0.100000	3.000000	9.690000	-0.003748	-0.002357	0.008488
eVALUE	30.000000	0.100000	3.000000	9.690000	-0.007165	-0.001702	0.016932
*							
eVALUE	-4.000000	0.200000	3.000000	9.690000	-0.000596	0.000000	0.000109
eVALUE	-2.000000	0.200000	3.000000	9.690000	0.002124	-0.000053	-0.003043
eVALUE	0.000000	0.200000	3.000000	9.690000	0.004107	-0.000199	-0.005953
eVALUE	2.000000	0.200000	3.000000	9.690000	0.005335	-0.000434	-0.008449
eVALUE	4.000000	0.200000	3.000000	9.690000	0.006804	-0.000751	-0.010656
eVALUE	6.000000	0.200000	3.000000	9.690000	0.006364	-0.001290	-0.012178
eVALUE	8.000000	0.200000	3.000000	9.690000	0.005983	-0.001796	-0.013752
eVALUE	10.000000	0.200000	3.000000	9.690000	0.005061	-0.002351	-0.013330
eVALUE	12.000000	0.200000	3.000000	9.690000	0.004381	-0.002939	-0.013685
eVALUE	14.000000	0.200000	3.000000	9.690000	0.003417	-0.003538	-0.013289
eVALUE	16.000000	0.200000	3.000000	9.690000	0.002248	-0.004129	-0.012191
eVALUE	18.000000	0.200000	3.000000	9.690000	0.001292	-0.004691	-0.011735

&VALUE	20.000000	0.200000	3.000000	9.690000	0.000464	-0.005206	-0.012440
&VALUE	22.000000	0.200000	3.000000	9.690000	0.001200	-0.005412	-0.012543
&VALUE	24.000000	0.200000	3.000000	9.690000	0.004948	-0.004697	-0.013362
&VALUE	26.000000	0.200000	3.000000	9.690000	0.001916	-0.003137	-0.006398
&VALUE	28.000000	0.200000	3.000000	9.690000	-0.003362	-0.002396	0.007776
&VALUE	30.000000	0.200000	3.000000	9.690000	-0.006651	-0.001787	0.016377
*							
&VALUE	-4.000000	0.300000	3.000000	9.690000	-0.000605	0.000000	0.000115
&VALUE	-2.000000	0.300000	3.000000	9.690000	0.002142	-0.000054	-0.003044
&VALUE	0.000000	0.300000	3.000000	9.690000	0.004126	-0.000201	-0.005953
&VALUE	2.000000	0.300000	3.000000	9.690000	0.005340	-0.000438	-0.008435
&VALUE	4.000000	0.300000	3.000000	9.690000	0.006810	-0.000756	-0.010616
&VALUE	6.000000	0.300000	3.000000	9.690000	0.006358	-0.001292	-0.012099
&VALUE	8.000000	0.300000	3.000000	9.690000	0.005985	-0.001790	-0.013629
&VALUE	10.000000	0.300000	3.000000	9.690000	0.005083	-0.002334	-0.013157
&VALUE	12.000000	0.300000	3.000000	9.690000	0.004440	-0.002903	-0.013457
&VALUE	14.000000	0.300000	3.000000	9.690000	0.003538	-0.003479	-0.013009
&VALUE	16.000000	0.300000	3.000000	9.690000	0.002457	-0.004039	-0.011928
&VALUE	18.000000	0.300000	3.000000	9.690000	0.001647	-0.004566	-0.011440
&VALUE	20.000000	0.300000	3.000000	9.690000	0.001159	-0.005027	-0.012457
&VALUE	22.000000	0.300000	3.000000	9.690000	0.002048	-0.005120	-0.012248
&VALUE	24.000000	0.300000	3.000000	9.690000	0.004268	-0.003926	-0.010685
&VALUE	26.000000	0.300000	3.000000	9.690000	0.001241	-0.002944	-0.005370
&VALUE	28.000000	0.300000	3.000000	9.690000	-0.003615	-0.002293	0.009770
&VALUE	30.000000	0.300000	3.000000	9.690000	-0.006593	-0.001919	0.019597
*							
&VALUE	-4.000000	0.400000	3.000000	9.690000	-0.000620	0.000000	0.000125
&VALUE	-2.000000	0.400000	3.000000	9.690000	0.002176	-0.000056	-0.003053
&VALUE	0.000000	0.400000	3.000000	9.690000	0.004168	-0.000207	-0.005965
&VALUE	2.000000	0.400000	3.000000	9.690000	0.005370	-0.000448	-0.008432
&VALUE	4.000000	0.400000	3.000000	9.690000	0.006852	-0.000769	-0.010602
&VALUE	6.000000	0.400000	3.000000	9.690000	0.006380	-0.001310	-0.012048
&VALUE	8.000000	0.400000	3.000000	9.690000	0.006009	-0.001806	-0.013544
&VALUE	10.000000	0.400000	3.000000	9.690000	0.005135	-0.002343	-0.013053
&VALUE	12.000000	0.400000	3.000000	9.690000	0.004527	-0.002901	-0.013320
&VALUE	14.000000	0.400000	3.000000	9.690000	0.003687	-0.003458	-0.012847
&VALUE	16.000000	0.400000	3.000000	9.690000	0.002699	-0.003995	-0.011831
&VALUE	18.000000	0.400000	3.000000	9.690000	0.002050	-0.004492	-0.011615
&VALUE	20.000000	0.400000	3.000000	9.690000	0.002197	-0.004832	-0.012967
&VALUE	22.000000	0.400000	3.000000	9.690000	0.003323	-0.004559	-0.011523
&VALUE	24.000000	0.400000	3.000000	9.690000	0.002601	-0.003435	-0.008104
&VALUE	26.000000	0.400000	3.000000	9.690000	0.001292	-0.002890	-0.005378
&VALUE	28.000000	0.400000	3.000000	9.690000	-0.003411	-0.002424	0.010233
&VALUE	30.000000	0.400000	3.000000	9.690000	-0.006766	-0.002140	0.021007
*							
&VALUE	-4.000000	0.500000	3.000000	9.690000	-0.000642	0.000000	0.000140
&VALUE	-2.000000	0.500000	3.000000	9.690000	0.002227	-0.000058	-0.003070
&VALUE	0.000000	0.500000	3.000000	9.690000	0.004239	-0.000215	-0.005986
&VALUE	2.000000	0.500000	3.000000	9.690000	0.005428	-0.000464	-0.008434
&VALUE	4.000000	0.500000	3.000000	9.690000	0.006937	-0.000793	-0.010606
&VALUE	6.000000	0.500000	3.000000	9.690000	0.006431	-0.001345	-0.012010
&VALUE	8.000000	0.500000	3.000000	9.690000	0.006053	-0.001845	-0.013479
&VALUE	10.000000	0.500000	3.000000	9.690000	0.005214	-0.002381	-0.012996
&VALUE	12.000000	0.500000	3.000000	9.690000	0.004639	-0.002932	-0.013249
&VALUE	14.000000	0.500000	3.000000	9.690000	0.003860	-0.003476	-0.012774
&VALUE	16.000000	0.500000	3.000000	9.690000	0.002947	-0.003994	-0.011791
&VALUE	18.000000	0.500000	3.000000	9.690000	0.002460	-0.004465	-0.011884
&VALUE	20.000000	0.500000	3.000000	9.690000	0.002838	-0.004733	-0.013328
&VALUE	22.000000	0.500000	3.000000	9.690000	0.003415	-0.004042	-0.010344
&VALUE	24.000000	0.500000	3.000000	9.690000	0.001952	-0.003312	-0.006984
&VALUE	26.000000	0.500000	3.000000	9.690000	0.001391	-0.002825	-0.005289
&VALUE	28.000000	0.500000	3.000000	9.690000	-0.003093	-0.002557	0.009682
&VALUE	30.000000	0.500000	3.000000	9.690000	-0.006550	-0.002289	0.020354
*							
&VALUE	-4.000000	0.100000	4.000000	9.690000	-0.000589	0.000000	0.000105
&VALUE	-2.000000	0.100000	4.000000	9.690000	0.002108	-0.000053	-0.003036
&VALUE	0.000000	0.100000	4.000000	9.690000	0.004081	-0.000197	-0.005942
&VALUE	2.000000	0.100000	4.000000	9.690000	0.005309	-0.000431	-0.008440
&VALUE	4.000000	0.100000	4.000000	9.690000	0.006766	-0.000748	-0.010639
&VALUE	6.000000	0.100000	4.000000	9.690000	0.006336	-0.001285	-0.012165
&VALUE	8.000000	0.100000	4.000000	9.690000	0.005959	-0.001792	-0.013736
&VALUE	10.000000	0.100000	4.000000	9.690000	0.005028	-0.002349	-0.013298
&VALUE	12.000000	0.100000	4.000000	9.690000	0.004344	-0.002941	-0.013643
&VALUE	14.000000	0.100000	4.000000	9.690000	0.003371	-0.003545	-0.013234

&VALUE	16.000000	0.100000	4.000000	9.690000	0.002198	-0.004143	-0.012141
&VALUE	18.000000	0.100000	4.000000	9.690000	0.001252	-0.004713	-0.011646
&VALUE	20.000000	0.100000	4.000000	9.690000	0.000380	-0.005236	-0.012249
&VALUE	22.000000	0.100000	4.000000	9.690000	0.000991	-0.005465	-0.012285
&VALUE	24.000000	0.100000	4.000000	9.690000	0.004785	-0.004825	-0.013349
&VALUE	26.000000	0.100000	4.000000	9.690000	0.001901	-0.003180	-0.005818
&VALUE	28.000000	0.100000	4.000000	9.690000	-0.003748	-0.002357	0.008488
&VALUE	30.000000	0.100000	4.000000	9.690000	-0.007165	-0.001702	0.016932
*							
&VALUE	-4.000000	0.200000	4.000000	9.690000	-0.000596	0.000000	0.000109
&VALUE	-2.000000	0.200000	4.000000	9.690000	0.002124	-0.000053	-0.003043
&VALUE	0.000000	0.200000	4.000000	9.690000	0.004107	-0.000199	-0.005953
&VALUE	2.000000	0.200000	4.000000	9.690000	0.005335	-0.000434	-0.008449
&VALUE	4.000000	0.200000	4.000000	9.690000	0.006804	-0.000751	-0.010656
&VALUE	6.000000	0.200000	4.000000	9.690000	0.006364	-0.001290	-0.012178
&VALUE	8.000000	0.200000	4.000000	9.690000	0.005983	-0.001796	-0.013752
&VALUE	10.000000	0.200000	4.000000	9.690000	0.005061	-0.002351	-0.013330
&VALUE	12.000000	0.200000	4.000000	9.690000	0.004381	-0.002939	-0.013685
&VALUE	14.000000	0.200000	4.000000	9.690000	0.003417	-0.003538	-0.013289
&VALUE	16.000000	0.200000	4.000000	9.690000	0.002248	-0.004129	-0.012191
&VALUE	18.000000	0.200000	4.000000	9.690000	0.001292	-0.004691	-0.011735
&VALUE	20.000000	0.200000	4.000000	9.690000	0.000464	-0.005206	-0.012440
&VALUE	22.000000	0.200000	4.000000	9.690000	0.001200	-0.005412	-0.012543
&VALUE	24.000000	0.200000	4.000000	9.690000	0.004948	-0.004697	-0.013362
&VALUE	26.000000	0.200000	4.000000	9.690000	0.001916	-0.003137	-0.006398
&VALUE	28.000000	0.200000	4.000000	9.690000	-0.003362	-0.002396	0.007776
&VALUE	30.000000	0.200000	4.000000	9.690000	-0.006651	-0.001787	0.016377
*							
&VALUE	-4.000000	0.300000	4.000000	9.690000	-0.000605	0.000000	0.000115
&VALUE	-2.000000	0.300000	4.000000	9.690000	0.002142	-0.000054	-0.003044
&VALUE	0.000000	0.300000	4.000000	9.690000	0.004126	-0.000201	-0.005953
&VALUE	2.000000	0.300000	4.000000	9.690000	0.005340	-0.000438	-0.008435
&VALUE	4.000000	0.300000	4.000000	9.690000	0.006810	-0.000756	-0.010616
&VALUE	6.000000	0.300000	4.000000	9.690000	0.006358	-0.001292	-0.012099
&VALUE	8.000000	0.300000	4.000000	9.690000	0.005985	-0.001790	-0.013629
&VALUE	10.000000	0.300000	4.000000	9.690000	0.005083	-0.002334	-0.013157
&VALUE	12.000000	0.300000	4.000000	9.690000	0.004440	-0.002903	-0.013457
&VALUE	14.000000	0.300000	4.000000	9.690000	0.003538	-0.003479	-0.013009
&VALUE	16.000000	0.300000	4.000000	9.690000	0.002457	-0.004039	-0.011928
&VALUE	18.000000	0.300000	4.000000	9.690000	0.001647	-0.004566	-0.011440
&VALUE	20.000000	0.300000	4.000000	9.690000	0.001159	-0.005027	-0.012457
&VALUE	22.000000	0.300000	4.000000	9.690000	0.002048	-0.005120	-0.012248
&VALUE	24.000000	0.300000	4.000000	9.690000	0.004268	-0.003926	-0.010685
&VALUE	26.000000	0.300000	4.000000	9.690000	0.001241	-0.002944	-0.005370
&VALUE	28.000000	0.300000	4.000000	9.690000	-0.003615	-0.002293	0.009770
&VALUE	30.000000	0.300000	4.000000	9.690000	-0.006593	-0.001919	0.019597
*							
&VALUE	-4.000000	0.400000	4.000000	9.690000	-0.000620	0.000000	0.000125
&VALUE	-2.000000	0.400000	4.000000	9.690000	0.002176	-0.000056	-0.003053
&VALUE	0.000000	0.400000	4.000000	9.690000	0.004168	-0.000207	-0.005965
&VALUE	2.000000	0.400000	4.000000	9.690000	0.005370	-0.000448	-0.008432
&VALUE	4.000000	0.400000	4.000000	9.690000	0.006852	-0.000769	-0.010602
&VALUE	6.000000	0.400000	4.000000	9.690000	0.006380	-0.001310	-0.012048
&VALUE	8.000000	0.400000	4.000000	9.690000	0.006009	-0.001806	-0.013544
&VALUE	10.000000	0.400000	4.000000	9.690000	0.005135	-0.002343	-0.013053
&VALUE	12.000000	0.400000	4.000000	9.690000	0.004527	-0.002901	-0.013320
&VALUE	14.000000	0.400000	4.000000	9.690000	0.003687	-0.003458	-0.012847
&VALUE	16.000000	0.400000	4.000000	9.690000	0.002699	-0.003995	-0.011831
&VALUE	18.000000	0.400000	4.000000	9.690000	0.002050	-0.004492	-0.011615
&VALUE	20.000000	0.400000	4.000000	9.690000	0.002197	-0.004832	-0.012967
&VALUE	22.000000	0.400000	4.000000	9.690000	0.003323	-0.004559	-0.011523
&VALUE	24.000000	0.400000	4.000000	9.690000	0.002601	-0.003435	-0.008104
&VALUE	26.000000	0.400000	4.000000	9.690000	0.001292	-0.002890	-0.005378
&VALUE	28.000000	0.400000	4.000000	9.690000	-0.003411	-0.002424	0.010233
&VALUE	30.000000	0.400000	4.000000	9.690000	-0.006766	-0.002140	0.021007
*							
&VALUE	-4.000000	0.500000	4.000000	9.690000	-0.000642	0.000000	0.000140
&VALUE	-2.000000	0.500000	4.000000	9.690000	0.002227	-0.000058	-0.003070
&VALUE	0.000000	0.500000	4.000000	9.690000	0.004239	-0.000215	-0.005986
&VALUE	2.000000	0.500000	4.000000	9.690000	0.005428	-0.000464	-0.008434
&VALUE	4.000000	0.500000	4.000000	9.690000	0.006937	-0.000793	-0.010606
&VALUE	6.000000	0.500000	4.000000	9.690000	0.006431	-0.001345	-0.012010
&VALUE	8.000000	0.500000	4.000000	9.690000	0.006053	-0.001845	-0.013479
&VALUE	10.000000	0.500000	4.000000	9.690000	0.005214	-0.002381	-0.012996

&VALUE	12.000000	0.500000	4.000000	9.690000	0.004639	-0.002932	-0.013249
&VALUE	14.000000	0.500000	4.000000	9.690000	0.003860	-0.003476	-0.012774
&VALUE	16.000000	0.500000	4.000000	9.690000	0.002947	-0.003994	-0.011791
&VALUE	18.000000	0.500000	4.000000	9.690000	0.002460	-0.004465	-0.011884
&VALUE	20.000000	0.500000	4.000000	9.690000	0.002838	-0.004733	-0.013328
&VALUE	22.000000	0.500000	4.000000	9.690000	0.003415	-0.004042	-0.010344
&VALUE	24.000000	0.500000	4.000000	9.690000	0.001952	-0.003312	-0.006984
&VALUE	26.000000	0.500000	4.000000	9.690000	0.001391	-0.002825	-0.005289
&VALUE	28.000000	0.500000	4.000000	9.690000	-0.003093	-0.002557	0.009682
&VALUE	30.000000	0.500000	4.000000	9.690000	-0.006550	-0.002289	0.020354
*							
&VALUE	-4.000000	0.100000	5.000000	9.690000	-0.000589	0.000000	0.000105
&VALUE	-2.000000	0.100000	5.000000	9.690000	0.002108	-0.000053	-0.003036
&VALUE	0.000000	0.100000	5.000000	9.690000	0.004081	-0.000197	-0.005942
&VALUE	2.000000	0.100000	5.000000	9.690000	0.005309	-0.000431	-0.008440
&VALUE	4.000000	0.100000	5.000000	9.690000	0.006766	-0.000748	-0.010639
&VALUE	6.000000	0.100000	5.000000	9.690000	0.006336	-0.001285	-0.012165
&VALUE	8.000000	0.100000	5.000000	9.690000	0.005959	-0.001792	-0.013736
&VALUE	10.000000	0.100000	5.000000	9.690000	0.005028	-0.002349	-0.013298
&VALUE	12.000000	0.100000	5.000000	9.690000	0.004344	-0.002941	-0.013643
&VALUE	14.000000	0.100000	5.000000	9.690000	0.003371	-0.003545	-0.013234
&VALUE	16.000000	0.100000	5.000000	9.690000	0.002198	-0.004143	-0.012141
&VALUE	18.000000	0.100000	5.000000	9.690000	0.001252	-0.004713	-0.011646
&VALUE	20.000000	0.100000	5.000000	9.690000	0.000380	-0.005236	-0.012249
&VALUE	22.000000	0.100000	5.000000	9.690000	0.000991	-0.005465	-0.012285
&VALUE	24.000000	0.100000	5.000000	9.690000	0.004785	-0.004825	-0.013349
&VALUE	26.000000	0.100000	5.000000	9.690000	0.001901	-0.003180	-0.005818
&VALUE	28.000000	0.100000	5.000000	9.690000	-0.003748	-0.002357	0.008488
&VALUE	30.000000	0.100000	5.000000	9.690000	-0.007165	-0.001702	0.016932
*							
&VALUE	-4.000000	0.200000	5.000000	9.690000	-0.000596	0.000000	0.000109
&VALUE	-2.000000	0.200000	5.000000	9.690000	0.002124	-0.000053	-0.003043
&VALUE	0.000000	0.200000	5.000000	9.690000	0.004107	-0.000199	-0.005953
&VALUE	2.000000	0.200000	5.000000	9.690000	0.005335	-0.000434	-0.008449
&VALUE	4.000000	0.200000	5.000000	9.690000	0.006804	-0.000751	-0.010656
&VALUE	6.000000	0.200000	5.000000	9.690000	0.006364	-0.001290	-0.012178
&VALUE	8.000000	0.200000	5.000000	9.690000	0.005983	-0.001796	-0.013752
&VALUE	10.000000	0.200000	5.000000	9.690000	0.005061	-0.002351	-0.013300
&VALUE	12.000000	0.200000	5.000000	9.690000	0.004381	-0.002939	-0.013685
&VALUE	14.000000	0.200000	5.000000	9.690000	0.003417	-0.003538	-0.013289
&VALUE	16.000000	0.200000	5.000000	9.690000	0.002248	-0.004129	-0.012191
&VALUE	18.000000	0.200000	5.000000	9.690000	0.001292	-0.004691	-0.011735
&VALUE	20.000000	0.200000	5.000000	9.690000	0.000464	-0.005206	-0.012440
&VALUE	22.000000	0.200000	5.000000	9.690000	0.001200	-0.005412	-0.012543
&VALUE	24.000000	0.200000	5.000000	9.690000	0.004948	-0.004697	-0.013362
&VALUE	26.000000	0.200000	5.000000	9.690000	0.001916	-0.003137	-0.006398
&VALUE	28.000000	0.200000	5.000000	9.690000	-0.003362	-0.002396	0.007776
&VALUE	30.000000	0.200000	5.000000	9.690000	-0.006651	-0.001787	0.016377
*							
&VALUE	-4.000000	0.300000	5.000000	9.690000	-0.000605	0.000000	0.000115
&VALUE	-2.000000	0.300000	5.000000	9.690000	0.002142	-0.000054	-0.003044
&VALUE	0.000000	0.300000	5.000000	9.690000	0.004126	-0.000201	-0.005953
&VALUE	2.000000	0.300000	5.000000	9.690000	0.005340	-0.000438	-0.008435
&VALUE	4.000000	0.300000	5.000000	9.690000	0.006810	-0.000756	-0.010616
&VALUE	6.000000	0.300000	5.000000	9.690000	0.006358	-0.001292	-0.012099
&VALUE	8.000000	0.300000	5.000000	9.690000	0.005985	-0.001790	-0.013629
&VALUE	10.000000	0.300000	5.000000	9.690000	0.005083	-0.002334	-0.013157
&VALUE	12.000000	0.300000	5.000000	9.690000	0.004440	-0.002903	-0.013457
&VALUE	14.000000	0.300000	5.000000	9.690000	0.003538	-0.003479	-0.013009
&VALUE	16.000000	0.300000	5.000000	9.690000	0.002457	-0.004039	-0.011928
&VALUE	18.000000	0.300000	5.000000	9.690000	0.001647	-0.004566	-0.011440
&VALUE	20.000000	0.300000	5.000000	9.690000	0.001159	-0.005027	-0.012457
&VALUE	22.000000	0.300000	5.000000	9.690000	0.002048	-0.005120	-0.012248
&VALUE	24.000000	0.300000	5.000000	9.690000	0.004268	-0.003926	-0.010685
&VALUE	26.000000	0.300000	5.000000	9.690000	0.001241	-0.002944	-0.005370
&VALUE	28.000000	0.300000	5.000000	9.690000	-0.003615	-0.002293	0.009770
&VALUE	30.000000	0.300000	5.000000	9.690000	-0.006593	-0.001919	0.019597
*							
&VALUE	-4.000000	0.400000	5.000000	9.690000	-0.000620	0.000000	0.000125
&VALUE	-2.000000	0.400000	5.000000	9.690000	0.002176	-0.000056	-0.003053
&VALUE	0.000000	0.400000	5.000000	9.690000	0.004168	-0.000207	-0.005965
&VALUE	2.000000	0.400000	5.000000	9.690000	0.005370	-0.000448	-0.008432
&VALUE	4.000000	0.400000	5.000000	9.690000	0.006852	-0.000769	-0.010602
&VALUE	6.000000	0.400000	5.000000	9.690000	0.006380	-0.001310	-0.012048

&VALUE	8.000000	0.400000	5.000000	9.690000	0.006009	-0.001806	-0.013544
&VALUE	10.000000	0.400000	5.000000	9.690000	0.005135	-0.002343	-0.013053
&VALUE	12.000000	0.400000	5.000000	9.690000	0.004527	-0.002901	-0.013320
&VALUE	14.000000	0.400000	5.000000	9.690000	0.003687	-0.003458	-0.012847
&VALUE	16.000000	0.400000	5.000000	9.690000	0.002699	-0.003995	-0.011831
&VALUE	18.000000	0.400000	5.000000	9.690000	0.002050	-0.004492	-0.011615
&VALUE	20.000000	0.400000	5.000000	9.690000	0.002197	-0.004832	-0.012967
&VALUE	22.000000	0.400000	5.000000	9.690000	0.003323	-0.004559	-0.011523
&VALUE	24.000000	0.400000	5.000000	9.690000	0.002601	-0.003435	-0.008104
&VALUE	26.000000	0.400000	5.000000	9.690000	0.001292	-0.002890	-0.005378
&VALUE	28.000000	0.400000	5.000000	9.690000	-0.003411	-0.002424	0.010233
&VALUE	30.000000	0.400000	5.000000	9.690000	-0.006766	-0.002140	0.021007
*							
&VALUE	-4.000000	0.500000	5.000000	9.690000	-0.000642	0.000000	0.000140
&VALUE	-2.000000	0.500000	5.000000	9.690000	0.002227	-0.000058	-0.003070
&VALUE	0.000000	0.500000	5.000000	9.690000	0.004239	-0.000215	-0.005986
&VALUE	2.000000	0.500000	5.000000	9.690000	0.005428	-0.000464	-0.008434
&VALUE	4.000000	0.500000	5.000000	9.690000	0.006937	-0.000793	-0.010606
&VALUE	6.000000	0.500000	5.000000	9.690000	0.006431	-0.001345	-0.012010
&VALUE	8.000000	0.500000	5.000000	9.690000	0.006053	-0.001845	-0.013479
&VALUE	10.000000	0.500000	5.000000	9.690000	0.005214	-0.002381	-0.012996
&VALUE	12.000000	0.500000	5.000000	9.690000	0.004639	-0.002932	-0.013249
&VALUE	14.000000	0.500000	5.000000	9.690000	0.003860	-0.003476	-0.012774
&VALUE	16.000000	0.500000	5.000000	9.690000	0.002947	-0.003994	-0.011791
&VALUE	18.000000	0.500000	5.000000	9.690000	0.002460	-0.004465	-0.011884
&VALUE	20.000000	0.500000	5.000000	9.690000	0.002838	-0.004733	-0.013328
&VALUE	22.000000	0.500000	5.000000	9.690000	0.003415	-0.004042	-0.010344
&VALUE	24.000000	0.500000	5.000000	9.690000	0.001952	-0.003312	-0.006984
&VALUE	26.000000	0.500000	5.000000	9.690000	0.001391	-0.002825	-0.005289
&VALUE	28.000000	0.500000	5.000000	9.690000	-0.003093	-0.002557	0.009682
&VALUE	30.000000	0.500000	5.000000	9.690000	-0.006550	-0.002289	0.020354
*							
&END							

APPENDIX F

PROPULSION MODEL FOR CITATION X
IN VATES DATA STANDARD

There is 1 file that comprises the propulsion definition for the Citation X in the VATES data standard. It is constructed with the design optimization tool PrADO. There descriptions and contents follow: PROMAP.INP.

```

&ARG01      C      PROTOCOL      0      PROMAP
&ARG02      C      TEST_CONDITION 0      TEST0001.CND
&ARG03      C      REPORT_CODE    0      18-11
&ARG04      X      AOA            1      REF. BELOW
&ARG05      X      MACH           2      REF. BELOW
&ARG06      X      ALTITUDE       9      REF. BELOW
&ARG07      X      THROTTLE       5      0.0
&ARG08      X      TMAX           3      0.0
&ARG09      X      SFC            10     0.0
&ARG10      X      MOMENT         4      0.0
&ARG11      X      ANGLE          11     0.0
*
&SNAME      &ARG04      &ARG05      &ARG06      &FUN01      &FUN02      &FUN03      &FUN04
&UNAME      MACH      ALTITUDE  THROTTLE  TMAX      SFC      MOMENT      ANGLE
&UCODE      1          2          9          0          0          0          0
&FORMAT     XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX XXX.XXXXXX
*
&VALUE      0.000      0.000      0.000      0.000      0.000      -0.635      2.600
&VALUE      0.050      0.000      0.000      0.000      0.000      -0.580      2.600
&VALUE      0.100      0.000      0.000      0.000      0.000      -0.531      2.600
&VALUE      0.150      0.000      0.000      0.000      0.000      -0.486      2.600
&VALUE      0.200      0.000      0.000      0.000      0.000      -0.446      2.600
&VALUE      0.250      0.000      0.000      0.000      0.000      -0.410      2.600
&VALUE      0.300      0.000      0.000      0.000      0.000      -0.377      2.600
&VALUE      0.350      0.000      0.000      0.000      0.000      -0.347      2.600
&VALUE      0.400      0.000      0.000      0.000      0.000      -0.320      2.600
&VALUE      0.450      0.000      0.000      0.000      0.000      -0.294      2.600
&VALUE      0.500      0.000      0.000      0.000      0.000      -0.271      2.600
&VALUE      0.550      0.000      0.000      0.000      0.000      -0.249      2.600
&VALUE      0.600      0.000      0.000      0.000      0.000      -0.228      2.600
&VALUE      0.650      0.000      0.000      0.000      0.000      -0.207      2.600
&VALUE      0.700      0.000      0.000      0.000      0.044      -1.143      2.600
&VALUE      0.750      0.000      0.000      0.000      0.051      -1.002      2.600
&VALUE      0.800      0.000      0.000      0.000      0.060      -0.866      2.600
&VALUE      0.850      0.000      0.000      0.000      0.072      -0.733      2.600
&VALUE      0.875      0.000      0.000      0.000      0.079      -0.667      2.600
&VALUE      0.900      0.000      0.000      0.000      0.088      -0.602      2.600
*
&VALUE      0.000      2.222      0.000      0.000      0.000      -0.484      2.600
&VALUE      0.050      2.222      0.000      0.000      0.000      -0.443      2.600
&VALUE      0.100      2.222      0.000      0.000      0.000      -0.405      2.600
&VALUE      0.150      2.222      0.000      0.000      0.000      -0.371      2.600
&VALUE      0.200      2.222      0.000      0.000      0.000      -0.340      2.600
&VALUE      0.250      2.222      0.000      0.000      0.000      -0.313      2.600
&VALUE      0.300      2.222      0.000      0.000      0.000      -0.288      2.600
&VALUE      0.350      2.222      0.000      0.000      0.000      -0.265      2.600
&VALUE      0.400      2.222      0.000      0.000      0.000      -0.244      2.600
&VALUE      0.450      2.222      0.000      0.000      0.000      -0.225      2.600
&VALUE      0.500      2.222      0.000      0.000      0.000      -0.207      2.600
&VALUE      0.550      2.222      0.000      0.000      0.000      -0.190      2.600
&VALUE      0.600      2.222      0.000      0.000      0.036      -1.197      2.600
&VALUE      0.650      2.222      0.000      0.000      0.041      -1.070      2.600
&VALUE      0.700      2.222      0.000      0.000      0.047      -0.949      2.600
&VALUE      0.750      2.222      0.000      0.000      0.054      -0.832      2.600
&VALUE      0.800      2.222      0.000      0.000      0.063      -0.719      2.600
&VALUE      0.850      2.222      0.000      0.000      0.075      -0.609      2.600
&VALUE      0.875      2.222      0.000      0.000      0.167      -1.227      2.600
&VALUE      0.900      2.222      0.000      0.000      0.186      -1.107      2.600
*
&VALUE      0.000      4.444      0.000      0.000      0.000      -0.364      2.600
&VALUE      0.050      4.444      0.000      0.000      0.000      -0.333      2.600
&VALUE      0.100      4.444      0.000      0.000      0.000      -0.305      2.600
&VALUE      0.150      4.444      0.000      0.000      0.000      -0.279      2.600
&VALUE      0.200      4.444      0.000      0.000      0.000      -0.256      2.600

```

&VALUE	0.250	4.444	0.000	0.000	0.000	-0.235	2.600
&VALUE	0.300	4.444	0.000	0.000	0.000	-0.216	2.600
&VALUE	0.350	4.444	0.000	0.000	0.000	-0.199	2.600
&VALUE	0.400	4.444	0.000	0.000	0.000	-0.183	2.600
&VALUE	0.450	4.444	0.000	0.000	0.000	-0.169	2.600
&VALUE	0.500	4.444	0.000	0.000	0.030	-1.208	2.600
&VALUE	0.550	4.444	0.000	0.000	0.034	-1.092	2.600
&VALUE	0.600	4.444	0.000	0.000	0.038	-0.983	2.600
&VALUE	0.650	4.444	0.000	0.000	0.043	-0.879	2.600
&VALUE	0.700	4.444	0.000	0.000	0.049	-0.780	2.600
&VALUE	0.750	4.444	0.000	0.000	0.057	-0.684	2.600
&VALUE	0.800	4.444	0.000	0.000	0.067	-0.591	2.600
&VALUE	0.850	4.444	0.000	0.000	0.160	-1.111	2.600
&VALUE	0.875	4.444	0.000	0.000	0.176	-1.011	2.600
&VALUE	0.900	4.444	0.000	0.000	0.197	-0.912	2.600
*							
&VALUE	0.000	6.667	0.000	0.000	0.000	-0.270	2.600
&VALUE	0.050	6.667	0.000	0.000	0.000	-0.246	2.600
&VALUE	0.100	6.667	0.000	0.000	0.000	-0.225	2.600
&VALUE	0.150	6.667	0.000	0.000	0.000	-0.206	2.600
&VALUE	0.200	6.667	0.000	0.000	0.000	-0.189	2.600
&VALUE	0.250	6.667	0.000	0.000	0.000	-0.174	2.600
&VALUE	0.300	6.667	0.000	0.000	0.000	-0.160	2.600
&VALUE	0.350	6.667	0.000	0.000	0.000	-0.147	2.600
&VALUE	0.400	6.667	0.000	0.000	0.026	-1.187	2.600
&VALUE	0.450	6.667	0.000	0.000	0.029	-1.080	2.600
&VALUE	0.500	6.667	0.000	0.000	0.032	-0.979	2.600
&VALUE	0.550	6.667	0.000	0.000	0.036	-0.885	2.600
&VALUE	0.600	6.667	0.000	0.000	0.040	-0.797	2.600
&VALUE	0.650	6.667	0.000	0.000	0.045	-0.713	2.600
&VALUE	0.700	6.667	0.000	0.000	0.052	-0.632	2.600
&VALUE	0.750	6.667	0.000	0.000	0.120	-1.229	2.600
&VALUE	0.800	6.667	0.000	0.000	0.141	-1.063	2.600
&VALUE	0.850	6.667	0.000	0.000	0.169	-0.901	2.600
&VALUE	0.875	6.667	0.000	0.000	0.280	-1.261	2.600
&VALUE	0.900	6.667	0.000	0.000	0.313	-1.140	2.600
*							
&VALUE	0.000	8.889	0.000	0.000	0.000	-0.196	2.600
&VALUE	0.050	8.889	0.000	0.000	0.000	-0.179	2.600
&VALUE	0.100	8.889	0.000	0.000	0.000	-0.164	2.600
&VALUE	0.150	8.889	0.000	0.000	0.000	-0.150	2.600
&VALUE	0.200	8.889	0.000	0.000	0.000	-0.138	2.600
&VALUE	0.250	8.889	0.000	0.000	0.020	-1.252	2.600
&VALUE	0.300	8.889	0.000	0.000	0.022	-1.142	2.600
&VALUE	0.350	8.889	0.000	0.000	0.025	-1.041	2.600
&VALUE	0.400	8.889	0.000	0.000	0.027	-0.948	2.600
&VALUE	0.450	8.889	0.000	0.000	0.030	-0.862	2.600
&VALUE	0.500	8.889	0.000	0.000	0.034	-0.782	2.600
&VALUE	0.550	8.889	0.000	0.000	0.038	-0.707	2.600
&VALUE	0.600	8.889	0.000	0.000	0.042	-0.637	2.600
&VALUE	0.650	8.889	0.000	0.000	0.096	-1.253	2.600
&VALUE	0.700	8.889	0.000	0.000	0.110	-1.113	2.600
&VALUE	0.750	8.889	0.000	0.000	0.127	-0.979	2.600
&VALUE	0.800	8.889	0.000	0.000	0.224	-1.279	2.600
&VALUE	0.850	8.889	0.000	0.000	0.268	-1.089	2.600
&VALUE	0.875	8.889	0.000	0.000	0.297	-0.994	2.600
&VALUE	0.900	8.889	0.000	0.000	0.331	-0.900	2.600
*							
&VALUE	0.000	11.111	0.000	0.000	0.000	-0.139	2.600
&VALUE	0.050	11.111	0.000	0.000	0.000	-0.127	2.600
&VALUE	0.100	11.111	0.000	0.000	0.000	-0.116	2.600
&VALUE	0.150	11.111	0.000	0.000	0.018	-1.174	2.600
&VALUE	0.200	11.111	0.000	0.000	0.019	-1.071	2.600
&VALUE	0.250	11.111	0.000	0.000	0.021	-0.978	2.600
&VALUE	0.300	11.111	0.000	0.000	0.024	-0.892	2.600
&VALUE	0.350	11.111	0.000	0.000	0.026	-0.813	2.600
&VALUE	0.400	11.111	0.000	0.000	0.029	-0.741	2.600
&VALUE	0.450	11.111	0.000	0.000	0.032	-0.674	2.600
&VALUE	0.500	11.111	0.000	0.000	0.036	-0.612	2.600
&VALUE	0.550	11.111	0.000	0.000	0.080	-1.201	2.600
&VALUE	0.600	11.111	0.000	0.000	0.090	-1.084	2.600
&VALUE	0.650	11.111	0.000	0.000	0.102	-0.972	2.600
&VALUE	0.700	11.111	0.000	0.000	0.174	-1.278	2.600
&VALUE	0.750	11.111	0.000	0.000	0.202	-1.128	2.600

&VALUE	0.800	11.111	0.000	0.000	0.157	-0.660	2.600
&VALUE	0.850	11.111	0.000	0.000	0.188	-0.560	2.600
&VALUE	0.875	11.111	0.000	0.000	0.208	-0.511	2.600
&VALUE	0.900	11.111	0.000	0.000	0.233	-0.462	2.600
*							
&VALUE	0.000	13.333	0.000	0.000	0.013	-1.087	2.600
&VALUE	0.050	13.333	0.000	0.000	0.015	-0.992	2.600
&VALUE	0.100	13.333	0.000	0.000	0.016	-0.906	2.600
&VALUE	0.150	13.333	0.000	0.000	0.018	-0.827	2.600
&VALUE	0.200	13.333	0.000	0.000	0.019	-0.755	2.600
&VALUE	0.250	13.333	0.000	0.000	0.021	-0.689	2.600
&VALUE	0.300	13.333	0.000	0.000	0.024	-0.628	2.600
&VALUE	0.350	13.333	0.000	0.000	0.026	-0.573	2.600
&VALUE	0.400	13.333	0.000	0.000	0.029	-0.522	2.600
&VALUE	0.450	13.333	0.000	0.000	0.032	-0.475	2.600
&VALUE	0.500	13.333	0.000	0.000	0.036	-0.431	2.600
&VALUE	0.550	13.333	0.000	0.000	0.120	-1.239	2.600
&VALUE	0.600	13.333	0.000	0.000	0.135	-1.121	2.600
&VALUE	0.650	13.333	0.000	0.000	0.153	-1.009	2.600
&VALUE	0.700	13.333	0.000	0.000	0.174	-0.900	2.600
&VALUE	0.750	13.333	0.000	0.000	0.202	-0.795	2.600
&VALUE	0.800	13.333	0.000	0.000	0.157	-0.465	2.600
&VALUE	0.850	13.333	0.000	0.000	0.188	-0.395	2.600
&VALUE	0.875	13.333	0.000	0.000	0.208	-0.360	2.600
&VALUE	0.900	13.333	0.000	0.000	0.233	-0.325	2.600
*							
&VALUE	0.000	15.556	0.000	0.000	0.013	-0.766	2.600
&VALUE	0.050	15.556	0.000	0.000	0.015	-0.699	2.600
&VALUE	0.100	15.556	0.000	0.000	0.016	-0.638	2.600
&VALUE	0.150	15.556	0.000	0.000	0.018	-0.582	2.600
&VALUE	0.200	15.556	0.000	0.000	0.019	-0.532	2.600
&VALUE	0.250	15.556	0.000	0.000	0.021	-0.485	2.600
&VALUE	0.300	15.556	0.000	0.000	0.024	-0.443	2.600
&VALUE	0.350	15.556	0.000	0.000	0.029	-1.263	2.600
&VALUE	0.400	15.556	0.000	0.000	0.087	-1.155	2.600
&VALUE	0.450	15.556	0.000	0.000	0.096	-1.054	2.600
&VALUE	0.500	15.556	0.000	0.000	0.107	-0.961	2.600
&VALUE	0.550	15.556	0.000	0.000	0.120	-0.873	2.600
&VALUE	0.600	15.556	0.000	0.000	0.135	-0.790	2.600
&VALUE	0.650	15.556	0.000	0.000	0.153	-0.710	2.600
&VALUE	0.700	15.556	0.000	0.000	0.174	-0.634	2.600
&VALUE	0.750	15.556	0.000	0.000	0.202	-0.560	2.600
&VALUE	0.800	15.556	0.000	0.000	0.157	-0.327	2.600
&VALUE	0.850	15.556	0.000	0.000	0.188	-0.278	2.600
&VALUE	0.875	15.556	0.000	0.000	0.208	-0.253	2.600
&VALUE	0.900	15.556	0.000	0.000	0.233	-0.229	2.600
*							
&VALUE	0.000	17.778	0.000	0.000	0.000	-0.049	2.600
&VALUE	0.050	17.778	0.000	0.000	0.000	-0.044	2.600
&VALUE	0.100	17.778	0.000	0.000	0.000	-0.041	2.600
&VALUE	0.150	17.778	0.000	0.000	0.053	-1.273	2.600
&VALUE	0.200	17.778	0.000	0.000	0.058	-1.163	2.600
&VALUE	0.250	17.778	0.000	0.000	0.064	-1.064	2.600
&VALUE	0.300	17.778	0.000	0.000	0.071	-0.973	2.600
&VALUE	0.350	17.778	0.000	0.000	0.079	-0.890	2.600
&VALUE	0.400	17.778	0.000	0.000	0.087	-0.814	2.600
&VALUE	0.450	17.778	0.000	0.000	0.096	-0.743	2.600
&VALUE	0.500	17.778	0.000	0.000	0.107	-0.677	2.600
&VALUE	0.550	17.778	0.000	0.000	0.120	-0.615	2.600
&VALUE	0.600	17.778	0.000	0.000	0.135	-0.556	2.600
&VALUE	0.650	17.778	0.000	0.000	0.153	-0.500	2.600
&VALUE	0.700	17.778	0.000	0.000	0.174	-0.447	2.600
&VALUE	0.750	17.778	0.000	0.000	0.202	-0.394	2.600
&VALUE	0.800	17.778	0.000	0.000	0.157	-0.231	2.600
&VALUE	0.850	17.778	0.000	0.000	0.188	-0.196	2.600
&VALUE	0.875	17.778	0.000	0.000	0.208	-0.179	2.600
&VALUE	0.900	17.778	0.000	0.000	0.233	-0.161	2.600
*							
&VALUE	0.000	20.000	0.000	0.000	0.040	-1.176	2.600
&VALUE	0.050	20.000	0.000	0.000	0.044	-1.074	2.600
&VALUE	0.100	20.000	0.000	0.000	0.048	-0.981	2.600
&VALUE	0.150	20.000	0.000	0.000	0.053	-0.896	2.600
&VALUE	0.200	20.000	0.000	0.000	0.058	-0.819	2.600
&VALUE	0.250	20.000	0.000	0.000	0.064	-0.749	2.600

&VALUE	0.300	20.000	0.000	0.000	0.071	-0.695	2.600
&VALUE	0.350	20.000	0.000	0.000	0.079	-0.627	2.600
&VALUE	0.400	20.000	0.000	0.000	0.087	-0.573	2.600
&VALUE	0.450	20.000	0.000	0.000	0.096	-0.523	2.600
&VALUE	0.500	20.000	0.000	0.000	0.107	-0.477	2.600
&VALUE	0.550	20.000	0.000	0.000	0.120	-0.433	2.600
&VALUE	0.600	20.000	0.000	0.000	0.135	-0.392	2.600
&VALUE	0.650	20.000	0.000	0.000	0.153	-0.352	2.600
&VALUE	0.700	20.000	0.000	0.000	0.174	-0.315	2.600
&VALUE	0.750	20.000	0.000	0.000	0.202	-0.278	2.600
&VALUE	0.800	20.000	0.000	0.000	0.157	-0.162	2.600
&VALUE	0.850	20.000	0.000	0.000	0.188	-0.138	2.600
&VALUE	0.875	20.000	0.000	0.000	0.208	-0.126	2.600
&VALUE	0.900	20.000	0.000	0.000	0.233	-0.114	2.600
*							
&VALUE	0.000	0.000	5.000	1504.385	0.049	-1932.617	2.600
&VALUE	0.050	0.000	5.000	1424.292	0.054	-1831.193	2.600
&VALUE	0.100	0.000	5.000	1350.376	0.058	-1735.859	2.600
&VALUE	0.150	0.000	5.000	1282.366	0.063	-1647.605	2.600
&VALUE	0.200	0.000	5.000	1219.953	0.069	-1567.699	2.600
&VALUE	0.250	0.000	5.000	1162.803	0.074	-1494.373	2.600
&VALUE	0.300	0.000	5.000	1110.565	0.081	-1425.910	2.600
&VALUE	0.350	0.000	5.000	1062.888	0.087	-1366.370	2.600
&VALUE	0.400	0.000	5.000	1019.431	0.094	-1309.903	2.600
&VALUE	0.450	0.000	5.000	979.880	0.101	-1259.612	2.600
&VALUE	0.500	0.000	5.000	943.952	0.109	-1213.077	2.600
&VALUE	0.550	0.000	5.000	911.405	0.118	-1172.081	2.600
&VALUE	0.600	0.000	5.000	882.046	0.127	-1132.784	2.600
&VALUE	0.650	0.000	5.000	855.735	0.136	-1100.178	2.600
&VALUE	0.700	0.000	5.000	832.389	0.147	-1069.515	2.600
&VALUE	0.750	0.000	5.000	811.980	0.158	-1042.690	2.600
&VALUE	0.800	0.000	5.000	794.541	0.170	-1021.106	2.600
&VALUE	0.850	0.000	5.000	780.155	0.184	-1001.726	2.600
&VALUE	0.875	0.000	5.000	774.143	0.191	-994.041	2.600
&VALUE	0.900	0.000	5.000	768.941	0.198	-988.171	2.600
*							
&VALUE	0.000	2.222	5.000	1335.646	0.048	-1716.066	2.600
&VALUE	0.050	2.222	5.000	1267.311	0.052	-1627.659	2.600
&VALUE	0.100	2.222	5.000	1204.189	0.056	-1546.309	2.600
&VALUE	0.150	2.222	5.000	1146.045	0.061	-1472.439	2.600
&VALUE	0.200	2.222	5.000	1092.604	0.066	-1404.138	2.600
&VALUE	0.250	2.222	5.000	1043.564	0.071	-1340.782	2.600
&VALUE	0.300	2.222	5.000	998.603	0.077	-1282.709	2.600
&VALUE	0.350	2.222	5.000	957.396	0.083	-1229.996	2.600
&VALUE	0.400	2.222	5.000	919.620	0.090	-1181.834	2.600
&VALUE	0.450	2.222	5.000	884.968	0.096	-1137.087	2.600
&VALUE	0.500	2.222	5.000	853.155	0.104	-1096.125	2.600
&VALUE	0.550	2.222	5.000	823.926	0.111	-1059.002	2.600
&VALUE	0.600	2.222	5.000	797.061	0.120	-1023.177	2.600
&VALUE	0.650	2.222	5.000	772.378	0.128	-992.669	2.600
&VALUE	0.700	2.222	5.000	749.740	0.138	-964.014	2.600
&VALUE	0.750	2.222	5.000	729.058	0.148	-936.831	2.600
&VALUE	0.800	2.222	5.000	710.293	0.159	-912.766	2.600
&VALUE	0.850	2.222	5.000	693.459	0.171	-889.860	2.600
&VALUE	0.875	2.222	5.000	685.788	0.177	-879.885	2.600
&VALUE	0.900	2.222	5.000	678.632	0.184	-871.338	2.600
*							
&VALUE	0.000	4.444	5.000	1177.072	0.046	-1512.379	2.600
&VALUE	0.050	4.444	5.000	1119.279	0.050	-1438.300	2.600
&VALUE	0.100	4.444	5.000	1065.972	0.054	-1370.480	2.600
&VALUE	0.150	4.444	5.000	1016.937	0.059	-1306.042	2.600
&VALUE	0.200	4.444	5.000	971.923	0.063	-1249.390	2.600
&VALUE	0.250	4.444	5.000	930.657	0.068	-1195.148	2.600
&VALUE	0.300	4.444	5.000	892.845	0.074	-1146.656	2.600
&VALUE	0.350	4.444	5.000	858.190	0.079	-1102.453	2.600
&VALUE	0.400	4.444	5.000	826.390	0.085	-1062.238	2.600
&VALUE	0.450	4.444	5.000	797.158	0.092	-1025.361	2.600
&VALUE	0.500	4.444	5.000	770.217	0.098	-988.911	2.600
&VALUE	0.550	4.444	5.000	745.312	0.105	-958.784	2.600
&VALUE	0.600	4.444	5.000	722.214	0.113	-927.915	2.600
&VALUE	0.650	4.444	5.000	700.719	0.120	-901.568	2.600
&VALUE	0.700	4.444	5.000	680.655	0.129	-874.082	2.600
&VALUE	0.750	4.444	5.000	661.883	0.138	-850.259	2.600
&VALUE	0.800	4.444	5.000	644.299	0.147	-826.906	2.600

&VALUE	0.850	4.444	5.000	627.836	0.157	-806.841	2.600
&VALUE	0.875	4.444	5.000	620.017	0.163	-796.617	2.600
&VALUE	0.900	4.444	5.000	612.471	0.168	-787.551	2.600
*							
&VALUE	0.000	6.667	5.000	1023.054	0.044	-1313.691	2.600
&VALUE	0.050	6.667	5.000	974.887	0.048	-1252.489	2.600
&VALUE	0.100	6.667	5.000	930.606	0.052	-1196.977	2.600
&VALUE	0.150	6.667	5.000	890.014	0.056	-1143.558	2.600
&VALUE	0.200	6.667	5.000	852.886	0.061	-1097.091	2.600
&VALUE	0.250	6.667	5.000	818.974	0.065	-1052.509	2.600
&VALUE	0.300	6.667	5.000	788.019	0.070	-1012.461	2.600
&VALUE	0.350	6.667	5.000	759.751	0.076	-975.114	2.600
&VALUE	0.400	6.667	5.000	733.902	0.081	-942.518	2.600
&VALUE	0.450	6.667	5.000	710.208	0.087	-912.337	2.600
&VALUE	0.500	6.667	5.000	688.417	0.093	-884.298	2.600
&VALUE	0.550	6.667	5.000	668.289	0.099	-858.090	2.600
&VALUE	0.600	6.667	5.000	649.602	0.106	-833.445	2.600
&VALUE	0.650	6.667	5.000	632.154	0.113	-811.426	2.600
&VALUE	0.700	6.667	5.000	615.760	0.120	-791.680	2.600
&VALUE	0.750	6.667	5.000	600.262	0.127	-771.812	2.600
&VALUE	0.800	6.667	5.000	585.522	0.136	-752.152	2.600
&VALUE	0.850	6.667	5.000	571.430	0.144	-733.054	2.600
&VALUE	0.875	6.667	5.000	564.599	0.149	-724.413	2.600
&VALUE	0.900	6.667	5.000	557.901	0.153	-716.696	2.600
*							
&VALUE	0.000	8.889	5.000	872.004	0.042	-1120.766	2.600
&VALUE	0.050	8.889	5.000	832.652	0.046	-1070.825	2.600
&VALUE	0.100	8.889	5.000	796.649	0.050	-1023.693	2.600
&VALUE	0.150	8.889	5.000	763.815	0.054	-982.647	2.600
&VALUE	0.200	8.889	5.000	733.952	0.058	-943.472	2.600
&VALUE	0.250	8.889	5.000	706.841	0.063	-907.968	2.600
&VALUE	0.300	8.889	5.000	682.257	0.067	-876.869	2.600
&VALUE	0.350	8.889	5.000	659.966	0.072	-847.411	2.600
&VALUE	0.400	8.889	5.000	639.736	0.077	-822.636	2.600
&VALUE	0.450	8.889	5.000	621.338	0.082	-799.609	2.600
&VALUE	0.500	8.889	5.000	604.549	0.088	-776.083	2.600
&VALUE	0.550	8.889	5.000	589.159	0.093	-756.600	2.600
&VALUE	0.600	8.889	5.000	574.965	0.099	-738.642	2.600
&VALUE	0.650	8.889	5.000	561.780	0.105	-722.132	2.600
&VALUE	0.700	8.889	5.000	549.430	0.111	-705.333	2.600
&VALUE	0.750	8.889	5.000	537.756	0.118	-691.771	2.600
&VALUE	0.800	8.889	5.000	526.612	0.124	-676.680	2.600
&VALUE	0.850	8.889	5.000	515.871	0.131	-663.539	2.600
&VALUE	0.875	8.889	5.000	510.616	0.135	-655.553	2.600
&VALUE	0.900	8.889	5.000	505.422	0.139	-649.751	2.600
*							
&VALUE	0.000	11.111	5.000	719.959	0.041	-924.007	2.600
&VALUE	0.050	11.111	5.000	688.762	0.044	-884.090	2.600
&VALUE	0.100	11.111	5.000	660.380	0.048	-848.774	2.600
&VALUE	0.150	11.111	5.000	634.656	0.052	-815.453	2.600
&VALUE	0.200	11.111	5.000	611.419	0.056	-784.595	2.600
&VALUE	0.250	11.111	5.000	590.487	0.060	-758.510	2.600
&VALUE	0.300	11.111	5.000	571.671	0.064	-734.099	2.600
&VALUE	0.350	11.111	5.000	554.778	0.069	-713.913	2.600
&VALUE	0.400	11.111	5.000	539.615	0.073	-694.054	2.600
&VALUE	0.450	11.111	5.000	525.994	0.078	-674.972	2.600
&VALUE	0.500	11.111	5.000	513.729	0.083	-660.046	2.600
&VALUE	0.550	11.111	5.000	502.644	0.088	-645.834	2.600
&VALUE	0.600	11.111	5.000	492.569	0.093	-632.467	2.600
&VALUE	0.650	11.111	5.000	483.343	0.098	-620.041	2.600
&VALUE	0.700	11.111	5.000	474.813	0.103	-609.870	2.600
&VALUE	0.750	11.111	5.000	466.836	0.109	-600.710	2.600
&VALUE	0.800	11.111	5.000	459.278	0.114	-589.403	2.600
&VALUE	0.850	11.111	5.000	452.015	0.120	-581.832	2.600
&VALUE	0.875	11.111	5.000	448.457	0.123	-575.485	2.600
&VALUE	0.900	11.111	5.000	444.932	0.126	-572.846	2.600
*							
&VALUE	0.000	13.333	5.000	509.536	0.041	-654.569	2.600
&VALUE	0.050	13.333	5.000	487.458	0.044	-626.151	2.600
&VALUE	0.100	13.333	5.000	467.364	0.048	-600.911	2.600
&VALUE	0.150	13.333	5.000	449.143	0.052	-578.043	2.600
&VALUE	0.200	13.333	5.000	432.673	0.056	-554.881	2.600
&VALUE	0.250	13.333	5.000	417.825	0.060	-537.741	2.600
&VALUE	0.300	13.333	5.000	404.465	0.064	-518.457	2.600

&VALUE	0.350	13.333	5.000	392.455	0.068	-505.214	2.600
&VALUE	0.400	13.333	5.000	381.656	0.073	-490.702	2.600
&VALUE	0.450	13.333	5.000	371.934	0.078	-479.138	2.600
&VALUE	0.500	13.333	5.000	363.155	0.082	-466.866	2.600
&VALUE	0.550	13.333	5.000	355.191	0.087	-455.275	2.600
&VALUE	0.600	13.333	5.000	347.918	0.092	-447.341	2.600
&VALUE	0.650	13.333	5.000	341.219	0.098	-438.017	2.600
&VALUE	0.700	13.333	5.000	334.980	0.103	-430.299	2.600
&VALUE	0.750	13.333	5.000	329.095	0.108	-423.302	2.600
&VALUE	0.800	13.333	5.000	323.462	0.114	-414.784	2.600
&VALUE	0.850	13.333	5.000	317.986	0.120	-408.905	2.600
&VALUE	0.875	13.333	5.000	315.279	0.123	-404.145	2.600
&VALUE	0.900	13.333	5.000	312.578	0.126	-402.009	2.600
*							
&VALUE	0.000	15.556	5.000	360.041	0.041	-463.030	2.600
&VALUE	0.050	15.556	5.000	344.440	0.044	-442.851	2.600
&VALUE	0.100	15.556	5.000	330.237	0.048	-424.881	2.600
&VALUE	0.150	15.556	5.000	317.353	0.051	-408.566	2.600
&VALUE	0.200	15.556	5.000	305.701	0.055	-392.032	2.600
&VALUE	0.250	15.556	5.000	295.191	0.060	-379.742	2.600
&VALUE	0.300	15.556	5.000	285.727	0.064	-368.081	2.600
&VALUE	0.350	15.556	5.000	277.210	0.068	-356.398	2.600
&VALUE	0.400	15.556	5.000	269.544	0.073	-345.963	2.600
&VALUE	0.450	15.556	5.000	262.630	0.078	-337.613	2.600
&VALUE	0.500	15.556	5.000	256.373	0.082	-328.763	2.600
&VALUE	0.550	15.556	5.000	250.682	0.087	-321.858	2.600
&VALUE	0.600	15.556	5.000	245.468	0.092	-314.607	2.600
&VALUE	0.650	15.556	5.000	240.644	0.098	-309.129	2.600
&VALUE	0.700	15.556	5.000	236.129	0.103	-302.196	2.600
&VALUE	0.750	15.556	5.000	231.844	0.108	-298.220	2.600
&VALUE	0.800	15.556	5.000	227.715	0.114	-291.944	2.600
&VALUE	0.850	15.556	5.000	223.670	0.120	-287.531	2.600
&VALUE	0.875	15.556	5.000	221.658	0.123	-284.035	2.600
&VALUE	0.900	15.556	5.000	219.643	0.126	-282.392	2.600
*							
&VALUE	0.000	17.778	5.000	254.147	0.041	-327.647	2.600
&VALUE	0.050	17.778	5.000	243.135	0.044	-313.300	2.600
&VALUE	0.100	17.778	5.000	233.107	0.048	-299.398	2.600
&VALUE	0.150	17.778	5.000	224.007	0.051	-287.868	2.600
&VALUE	0.200	17.778	5.000	215.775	0.055	-277.983	2.600
&VALUE	0.250	17.778	5.000	208.346	0.060	-267.454	2.600
&VALUE	0.300	17.778	5.000	201.652	0.064	-259.177	2.600
&VALUE	0.350	17.778	5.000	195.625	0.068	-250.877	2.600
&VALUE	0.400	17.778	5.000	190.194	0.073	-243.454	2.600
&VALUE	0.450	17.778	5.000	185.291	0.077	-237.499	2.600
&VALUE	0.500	17.778	5.000	180.847	0.082	-232.294	2.600
&VALUE	0.550	17.778	5.000	176.796	0.087	-227.280	2.600
&VALUE	0.600	17.778	5.000	173.076	0.092	-222.028	2.600
&VALUE	0.650	17.778	5.000	169.625	0.097	-218.031	2.600
&VALUE	0.700	17.778	5.000	166.382	0.103	-213.009	2.600
&VALUE	0.750	17.778	5.000	163.293	0.108	-210.076	2.600
&VALUE	0.800	17.778	5.000	160.302	0.114	-207.077	2.600
&VALUE	0.850	17.778	5.000	157.357	0.120	-202.275	2.600
&VALUE	0.875	17.778	5.000	155.886	0.123	-201.197	2.600
&VALUE	0.900	17.778	5.000	154.409	0.126	-198.515	2.600
*							
&VALUE	0.000	20.000	5.000	179.278	0.041	-230.279	2.600
&VALUE	0.050	20.000	5.000	171.510	0.044	-220.233	2.600
&VALUE	0.100	20.000	5.000	164.435	0.048	-212.036	2.600
&VALUE	0.150	20.000	5.000	158.013	0.051	-202.384	2.600
&VALUE	0.200	20.000	5.000	152.202	0.055	-196.712	2.600
&VALUE	0.250	20.000	5.000	146.956	0.059	-189.189	2.600
&VALUE	0.300	20.000	5.000	142.228	0.064	-182.191	2.600
&VALUE	0.350	20.000	5.000	137.968	0.068	-177.316	2.600
&VALUE	0.400	20.000	5.000	134.128	0.073	-171.999	2.600
&VALUE	0.450	20.000	5.000	130.657	0.077	-167.721	2.600
&VALUE	0.500	20.000	5.000	127.508	0.082	-163.977	2.600
&VALUE	0.550	20.000	5.000	124.634	0.087	-160.371	2.600
&VALUE	0.600	20.000	5.000	121.989	0.092	-157.964	2.600
&VALUE	0.650	20.000	5.000	119.531	0.097	-153.716	2.600
&VALUE	0.700	20.000	5.000	117.216	0.103	-150.110	2.600
&VALUE	0.750	20.000	5.000	115.003	0.108	-146.822	2.600
&VALUE	0.800	20.000	5.000	112.855	0.114	-145.800	2.600
&VALUE	0.850	20.000	5.000	110.732	0.120	-142.348	2.600

&VALUE	0.875	20.000	5.000	109.669	0.123	-141.556	2.600
&VALUE	0.900	20.000	5.000	108.599	0.126	-140.636	2.600
*							
&VALUE	0.000	0.000	20.000	6017.540	0.041	-7732.951	2.600
&VALUE	0.050	0.000	20.000	5697.167	0.044	-7320.624	2.600
&VALUE	0.100	0.000	20.000	5401.502	0.047	-6941.005	2.600
&VALUE	0.150	0.000	20.000	5129.462	0.051	-6591.572	2.600
&VALUE	0.200	0.000	20.000	4879.814	0.054	-6269.282	2.600
&VALUE	0.250	0.000	20.000	4651.213	0.058	-5975.589	2.600
&VALUE	0.300	0.000	20.000	4442.261	0.062	-5708.986	2.600
&VALUE	0.350	0.000	20.000	4251.550	0.067	-5461.868	2.600
&VALUE	0.400	0.000	20.000	4077.725	0.071	-5238.192	2.600
&VALUE	0.450	0.000	20.000	3919.520	0.075	-5035.503	2.600
&VALUE	0.500	0.000	20.000	3775.806	0.080	-4851.496	2.600
&VALUE	0.550	0.000	20.000	3645.618	0.085	-4684.128	2.600
&VALUE	0.600	0.000	20.000	3528.184	0.090	-4533.718	2.600
&VALUE	0.650	0.000	20.000	3422.941	0.095	-4398.600	2.600
&VALUE	0.700	0.000	20.000	3329.555	0.100	-4277.562	2.600
&VALUE	0.750	0.000	20.000	3247.920	0.105	-4173.287	2.600
&VALUE	0.800	0.000	20.000	3178.164	0.111	-4083.298	2.600
&VALUE	0.850	0.000	20.000	3120.618	0.116	-4009.052	2.600
&VALUE	0.875	0.000	20.000	3096.572	0.119	-3978.894	2.600
&VALUE	0.900	0.000	20.000	3075.764	0.122	-3952.147	2.600
*							
&VALUE	0.000	2.222	20.000	5342.583	0.039	-6865.683	2.600
&VALUE	0.050	2.222	20.000	5069.244	0.042	-6514.460	2.600
&VALUE	0.100	2.222	20.000	4816.758	0.045	-6189.121	2.600
&VALUE	0.150	2.222	20.000	4584.181	0.048	-5891.090	2.600
&VALUE	0.200	2.222	20.000	4370.417	0.052	-5615.128	2.600
&VALUE	0.250	2.222	20.000	4174.255	0.056	-5363.801	2.600
&VALUE	0.300	2.222	20.000	3994.412	0.059	-5131.273	2.600
&VALUE	0.350	2.222	20.000	3829.583	0.063	-4920.941	2.600
&VALUE	0.400	2.222	20.000	3678.479	0.067	-4726.707	2.600
&VALUE	0.450	2.222	20.000	3539.872	0.071	-4549.021	2.600
&VALUE	0.500	2.222	20.000	3412.621	0.075	-4384.276	2.600
&VALUE	0.550	2.222	20.000	3295.705	0.080	-4234.438	2.600
&VALUE	0.600	2.222	20.000	3188.242	0.084	-4097.711	2.600
&VALUE	0.650	2.222	20.000	3089.510	0.088	-3969.525	2.600
&VALUE	0.700	2.222	20.000	2998.960	0.093	-3852.023	2.600
&VALUE	0.750	2.222	20.000	2916.232	0.097	-3747.079	2.600
&VALUE	0.800	2.222	20.000	2841.171	0.102	-3651.054	2.600
&VALUE	0.850	2.222	20.000	2773.838	0.107	-3563.686	2.600
&VALUE	0.875	2.222	20.000	2743.153	0.109	-3525.845	2.600
&VALUE	0.900	2.222	20.000	2714.530	0.112	-3487.481	2.600
*							
&VALUE	0.000	4.444	20.000	4708.286	0.038	-6050.793	2.600
&VALUE	0.050	4.444	20.000	4477.117	0.040	-5752.810	2.600
&VALUE	0.100	4.444	20.000	4263.890	0.043	-5477.854	2.600
&VALUE	0.150	4.444	20.000	4067.746	0.046	-5226.868	2.600
&VALUE	0.200	4.444	20.000	3887.692	0.050	-4995.848	2.600
&VALUE	0.250	4.444	20.000	3722.626	0.053	-4782.887	2.600
&VALUE	0.300	4.444	20.000	3571.382	0.056	-4587.552	2.600
&VALUE	0.350	4.444	20.000	3432.758	0.060	-4410.475	2.600
&VALUE	0.400	4.444	20.000	3305.562	0.064	-4247.082	2.600
&VALUE	0.450	4.444	20.000	3188.631	0.067	-4097.618	2.600
&VALUE	0.500	4.444	20.000	3080.866	0.071	-3959.231	2.600
&VALUE	0.550	4.444	20.000	2981.248	0.075	-3830.657	2.600
&VALUE	0.600	4.444	20.000	2888.855	0.079	-3711.940	2.600
&VALUE	0.650	4.444	20.000	2802.876	0.082	-3600.663	2.600
&VALUE	0.700	4.444	20.000	2722.621	0.086	-3499.336	2.600
&VALUE	0.750	4.444	20.000	2647.532	0.090	-3401.358	2.600
&VALUE	0.800	4.444	20.000	2577.195	0.094	-3311.733	2.600
&VALUE	0.850	4.444	20.000	2511.346	0.099	-3226.727	2.600
&VALUE	0.875	4.444	20.000	2480.066	0.101	-3186.347	2.600
&VALUE	0.900	4.444	20.000	2449.885	0.103	-3147.199	2.600
*							
&VALUE	0.000	6.667	20.000	4092.217	0.036	-5258.083	2.600
&VALUE	0.050	6.667	20.000	3899.547	0.039	-5009.180	2.600
&VALUE	0.100	6.667	20.000	3722.423	0.042	-4781.912	2.600
&VALUE	0.150	6.667	20.000	3560.055	0.045	-4573.082	2.600
&VALUE	0.200	6.667	20.000	3411.542	0.048	-4383.357	2.600
&VALUE	0.250	6.667	20.000	3275.898	0.051	-4209.097	2.600
&VALUE	0.300	6.667	20.000	3152.076	0.054	-4050.973	2.600
&VALUE	0.350	6.667	20.000	3039.004	0.057	-3904.560	2.600

&VALUE	0.400	6.667	20.000	2935.607	0.060	-3772.561	2.600
&VALUE	0.450	6.667	20.000	2840.832	0.064	-3650.482	2.600
&VALUE	0.500	6.667	20.000	2753.667	0.067	-3538.395	2.600
&VALUE	0.550	6.667	20.000	2673.156	0.070	-3434.224	2.600
&VALUE	0.600	6.667	20.000	2598.410	0.074	-3339.777	2.600
&VALUE	0.650	6.667	20.000	2528.615	0.077	-3249.395	2.600
&VALUE	0.700	6.667	20.000	2463.042	0.081	-3165.045	2.600
&VALUE	0.750	6.667	20.000	2401.049	0.084	-3085.104	2.600
&VALUE	0.800	6.667	20.000	2342.090	0.088	-3008.184	2.600
&VALUE	0.850	6.667	20.000	2285.721	0.091	-2936.259	2.600
&VALUE	0.875	6.667	20.000	2258.398	0.093	-2901.782	2.600
&VALUE	0.900	6.667	20.000	2231.605	0.095	-2868.118	2.600
*							
&VALUE	0.000	8.889	20.000	3488.016	0.035	-4482.733	2.600
&VALUE	0.050	8.889	20.000	3330.608	0.038	-4278.349	2.600
&VALUE	0.100	8.889	20.000	3186.595	0.040	-4095.254	2.600
&VALUE	0.150	8.889	20.000	3055.262	0.043	-3925.795	2.600
&VALUE	0.200	8.889	20.000	2935.807	0.046	-3771.550	2.600
&VALUE	0.250	8.889	20.000	2827.366	0.049	-3633.264	2.600
&VALUE	0.300	8.889	20.000	2729.028	0.052	-3505.826	2.600
&VALUE	0.350	8.889	20.000	2639.865	0.055	-3393.118	2.600
&VALUE	0.400	8.889	20.000	2558.944	0.058	-3288.451	2.600
&VALUE	0.450	8.889	20.000	2485.351	0.061	-3193.622	2.600
&VALUE	0.500	8.889	20.000	2418.197	0.064	-3106.999	2.600
&VALUE	0.550	8.889	20.000	2356.634	0.067	-3027.040	2.600
&VALUE	0.600	8.889	20.000	2299.859	0.070	-2954.984	2.600
&VALUE	0.650	8.889	20.000	2247.121	0.073	-2886.642	2.600
&VALUE	0.700	8.889	20.000	2197.721	0.076	-2823.335	2.600
&VALUE	0.750	8.889	20.000	2151.023	0.079	-2763.767	2.600
&VALUE	0.800	8.889	20.000	2106.448	0.082	-2706.789	2.600
&VALUE	0.850	8.889	20.000	2063.485	0.085	-2651.390	2.600
&VALUE	0.875	8.889	20.000	2042.466	0.086	-2624.873	2.600
&VALUE	0.900	8.889	20.000	2021.689	0.087	-2596.689	2.600
*							
&VALUE	0.000	11.111	20.000	2879.837	0.034	-3699.358	2.600
&VALUE	0.050	11.111	20.000	2755.050	0.037	-3541.132	2.600
&VALUE	0.100	11.111	20.000	2641.521	0.039	-3394.861	2.600
&VALUE	0.150	11.111	20.000	2538.624	0.042	-3262.240	2.600
&VALUE	0.200	11.111	20.000	2445.677	0.045	-3142.729	2.600
&VALUE	0.250	11.111	20.000	2361.949	0.047	-3035.442	2.600
&VALUE	0.300	11.111	20.000	2286.684	0.050	-2939.362	2.600
&VALUE	0.350	11.111	20.000	2219.112	0.053	-2851.092	2.600
&VALUE	0.400	11.111	20.000	2158.461	0.056	-2774.191	2.600
&VALUE	0.450	11.111	20.000	2103.975	0.058	-2702.983	2.600
&VALUE	0.500	11.111	20.000	2054.917	0.061	-2640.609	2.600
&VALUE	0.550	11.111	20.000	2010.577	0.064	-2583.772	2.600
&VALUE	0.600	11.111	20.000	1970.276	0.067	-2531.410	2.600
&VALUE	0.650	11.111	20.000	1933.371	0.069	-2484.357	2.600
&VALUE	0.700	11.111	20.000	1899.251	0.072	-2439.735	2.600
&VALUE	0.750	11.111	20.000	1867.344	0.074	-2398.432	2.600
&VALUE	0.800	11.111	20.000	1837.112	0.077	-2361.254	2.600
&VALUE	0.850	11.111	20.000	1808.059	0.079	-2323.914	2.600
&VALUE	0.875	11.111	20.000	1793.829	0.081	-2304.560	2.600
&VALUE	0.900	11.111	20.000	1779.726	0.082	-2285.763	2.600
*							
&VALUE	0.000	13.333	20.000	2038.144	0.034	-2618.274	2.600
&VALUE	0.050	13.333	20.000	1949.834	0.037	-2504.813	2.600
&VALUE	0.100	13.333	20.000	1869.457	0.039	-2401.366	2.600
&VALUE	0.150	13.333	20.000	1796.571	0.042	-2307.604	2.600
&VALUE	0.200	13.333	20.000	1730.692	0.044	-2223.040	2.600
&VALUE	0.250	13.333	20.000	1671.301	0.047	-2147.059	2.600
&VALUE	0.300	13.333	20.000	1617.860	0.050	-2078.948	2.600
&VALUE	0.350	13.333	20.000	1569.818	0.053	-2017.933	2.600
&VALUE	0.400	13.333	20.000	1526.625	0.055	-1962.709	2.600
&VALUE	0.450	13.333	20.000	1487.736	0.058	-1910.973	2.600
&VALUE	0.500	13.333	20.000	1452.620	0.061	-1866.493	2.600
&VALUE	0.550	13.333	20.000	1420.764	0.064	-1825.869	2.600
&VALUE	0.600	13.333	20.000	1391.673	0.066	-1788.344	2.600
&VALUE	0.650	13.333	20.000	1364.875	0.069	-1753.199	2.600
&VALUE	0.700	13.333	20.000	1339.920	0.071	-1722.301	2.600
&VALUE	0.750	13.333	20.000	1316.379	0.074	-1692.352	2.600
&VALUE	0.800	13.333	20.000	1293.848	0.077	-1662.778	2.600
&VALUE	0.850	13.333	20.000	1271.945	0.079	-1633.042	2.600
&VALUE	0.875	13.333	20.000	1261.116	0.080	-1621.238	2.600

&VALUE	0.900	13.333	20.000	1250.312	0.082	-1607.387	2.600
*							
&VALUE	0.000	15.556	20.000	1440.162	0.034	-1849.319	2.600
&VALUE	0.050	15.556	20.000	1377.762	0.037	-1769.297	2.600
&VALUE	0.100	15.556	20.000	1320.949	0.039	-1696.292	2.600
&VALUE	0.150	15.556	20.000	1269.411	0.042	-1630.084	2.600
&VALUE	0.200	15.556	20.000	1222.805	0.044	-1570.335	2.600
&VALUE	0.250	15.556	20.000	1180.765	0.047	-1516.616	2.600
&VALUE	0.300	15.556	20.000	1142.907	0.050	-1468.426	2.600
&VALUE	0.350	15.556	20.000	1108.842	0.053	-1425.223	2.600
&VALUE	0.400	15.556	20.000	1078.175	0.055	-1386.436	2.600
&VALUE	0.450	15.556	20.000	1050.519	0.058	-1349.376	2.600
&VALUE	0.500	15.556	20.000	1025.493	0.061	-1317.771	2.600
&VALUE	0.550	15.556	20.000	1002.729	0.063	-1288.859	2.600
&VALUE	0.600	15.556	20.000	981.871	0.066	-1262.103	2.600
&VALUE	0.650	15.556	20.000	962.575	0.069	-1236.989	2.600
&VALUE	0.700	15.556	20.000	944.514	0.071	-1213.030	2.600
&VALUE	0.750	15.556	20.000	927.375	0.074	-1191.538	2.600
&VALUE	0.800	15.556	20.000	910.858	0.076	-1170.248	2.600
&VALUE	0.850	15.556	20.000	894.680	0.079	-1150.479	2.600
&VALUE	0.875	15.556	20.000	886.632	0.080	-1140.180	2.600
&VALUE	0.900	15.556	20.000	878.570	0.081	-1130.115	2.600
*							
&VALUE	0.000	17.778	20.000	1016.588	0.034	-1305.065	2.600
&VALUE	0.050	17.778	20.000	972.540	0.037	-1248.652	2.600
&VALUE	0.100	17.778	20.000	932.426	0.039	-1197.164	2.600
&VALUE	0.150	17.778	20.000	896.027	0.042	-1150.449	2.600
&VALUE	0.200	17.778	20.000	863.099	0.044	-1108.274	2.600
&VALUE	0.250	17.778	20.000	833.384	0.047	-1070.337	2.600
&VALUE	0.300	17.778	20.000	806.610	0.050	-1036.288	2.600
&VALUE	0.350	17.778	20.000	782.501	0.053	-1005.745	2.600
&VALUE	0.400	17.778	20.000	760.777	0.055	-978.305	2.600
&VALUE	0.450	17.778	20.000	741.163	0.058	-952.068	2.600
&VALUE	0.500	17.778	20.000	723.387	0.061	-929.668	2.600
&VALUE	0.550	17.778	20.000	707.186	0.063	-907.766	2.600
&VALUE	0.600	17.778	20.000	692.305	0.066	-888.798	2.600
&VALUE	0.650	17.778	20.000	678.498	0.069	-872.274	2.600
&VALUE	0.700	17.778	20.000	665.529	0.071	-855.197	2.600
&VALUE	0.750	17.778	20.000	653.171	0.074	-839.839	2.600
&VALUE	0.800	17.778	20.000	641.206	0.076	-823.365	2.600
&VALUE	0.850	17.778	20.000	629.427	0.079	-807.975	2.600
&VALUE	0.875	17.778	20.000	623.544	0.080	-800.586	2.600
&VALUE	0.900	17.778	20.000	617.634	0.081	-793.351	2.600
*							
&VALUE	0.000	20.000	20.000	717.113	0.034	-920.452	2.600
&VALUE	0.050	20.000	20.000	686.041	0.036	-882.360	2.600
&VALUE	0.100	20.000	20.000	657.738	0.039	-845.946	2.600
&VALUE	0.150	20.000	20.000	632.051	0.042	-811.451	2.600
&VALUE	0.200	20.000	20.000	608.808	0.044	-781.700	2.600
&VALUE	0.250	20.000	20.000	587.826	0.047	-756.210	2.600
&VALUE	0.300	20.000	20.000	568.913	0.050	-732.106	2.600
&VALUE	0.350	20.000	20.000	551.874	0.052	-709.325	2.600
&VALUE	0.400	20.000	20.000	536.510	0.055	-689.938	2.600
&VALUE	0.450	20.000	20.000	522.627	0.058	-671.391	2.600
&VALUE	0.500	20.000	20.000	510.031	0.061	-655.545	2.600
&VALUE	0.550	20.000	20.000	498.535	0.063	-640.040	2.600
&VALUE	0.600	20.000	20.000	487.958	0.066	-626.598	2.600
&VALUE	0.650	20.000	20.000	478.123	0.069	-614.871	2.600
&VALUE	0.700	20.000	20.000	468.863	0.071	-602.741	2.600
&VALUE	0.750	20.000	20.000	460.013	0.074	-591.813	2.600
&VALUE	0.800	20.000	20.000	451.418	0.076	-580.081	2.600
&VALUE	0.850	20.000	20.000	442.927	0.079	-569.099	2.600
&VALUE	0.875	20.000	20.000	438.675	0.080	-563.817	2.600
&VALUE	0.900	20.000	20.000	434.396	0.081	-558.640	2.600
*							
&VALUE	0.000	0.000	40.000	12035.080	0.036	-15462.331	2.600
&VALUE	0.050	0.000	40.000	11394.335	0.039	-14641.466	2.600
&VALUE	0.100	0.000	40.000	10803.004	0.042	-13879.849	2.600
&VALUE	0.150	0.000	40.000	10258.924	0.044	-13180.605	2.600
&VALUE	0.200	0.000	40.000	9759.627	0.047	-12540.221	2.600
&VALUE	0.250	0.000	40.000	9302.427	0.050	-11952.073	2.600
&VALUE	0.300	0.000	40.000	8884.521	0.054	-11414.450	2.600
&VALUE	0.350	0.000	40.000	8503.100	0.057	-10924.934	2.600
&VALUE	0.400	0.000	40.000	8155.449	0.060	-10478.627	2.600

&VALUE	0.450	0.000	40.000	7839.040	0.064	-10072.902	2.600
&VALUE	0.500	0.000	40.000	7551.612	0.067	-9703.257	2.600
&VALUE	0.550	0.000	40.000	7291.237	0.070	-9367.535	2.600
&VALUE	0.600	0.000	40.000	7056.368	0.074	-9065.593	2.600
&VALUE	0.650	0.000	40.000	6845.883	0.078	-8795.698	2.600
&VALUE	0.700	0.000	40.000	6659.109	0.081	-8554.985	2.600
&VALUE	0.750	0.000	40.000	6495.841	0.085	-8347.453	2.600
&VALUE	0.800	0.000	40.000	6356.328	0.089	-8168.034	2.600
&VALUE	0.850	0.000	40.000	6241.236	0.092	-8018.509	2.600
&VALUE	0.875	0.000	40.000	6193.143	0.094	-7957.466	2.600
&VALUE	0.900	0.000	40.000	6151.529	0.096	-7903.557	2.600
*							
&VALUE	0.000	2.222	40.000	10685.165	0.035	-13730.009	2.600
&VALUE	0.050	2.222	40.000	10138.488	0.038	-13027.289	2.600
&VALUE	0.100	2.222	40.000	9633.515	0.040	-12377.819	2.600
&VALUE	0.150	2.222	40.000	9168.362	0.043	-11779.744	2.600
&VALUE	0.200	2.222	40.000	8740.835	0.046	-11230.474	2.600
&VALUE	0.250	2.222	40.000	8348.510	0.048	-10727.773	2.600
&VALUE	0.300	2.222	40.000	7988.825	0.051	-10263.423	2.600
&VALUE	0.350	2.222	40.000	7659.166	0.054	-9841.808	2.600
&VALUE	0.400	2.222	40.000	7356.959	0.057	-9452.699	2.600
&VALUE	0.450	2.222	40.000	7079.743	0.060	-9095.604	2.600
&VALUE	0.500	2.222	40.000	6825.241	0.063	-8769.656	2.600
&VALUE	0.550	2.222	40.000	6591.409	0.067	-8468.100	2.600
&VALUE	0.600	2.222	40.000	6376.485	0.070	-8193.321	2.600
&VALUE	0.650	2.222	40.000	6179.021	0.073	-7939.351	2.600
&VALUE	0.700	2.222	40.000	5997.920	0.076	-7706.264	2.600
&VALUE	0.750	2.222	40.000	5832.464	0.079	-7494.303	2.600
&VALUE	0.800	2.222	40.000	5682.341	0.083	-7301.534	2.600
&VALUE	0.850	2.222	40.000	5547.676	0.086	-7128.927	2.600
&VALUE	0.875	2.222	40.000	5486.306	0.087	-7048.697	2.600
&VALUE	0.900	2.222	40.000	5429.060	0.089	-6975.472	2.600
*							
&VALUE	0.000	4.444	40.000	9416.572	0.034	-12100.082	2.600
&VALUE	0.050	4.444	40.000	8954.234	0.037	-11504.063	2.600
&VALUE	0.100	4.444	40.000	8527.779	0.039	-10956.402	2.600
&VALUE	0.150	4.444	40.000	8135.492	0.042	-10452.423	2.600
&VALUE	0.200	4.444	40.000	7775.384	0.044	-9990.113	2.600
&VALUE	0.250	4.444	40.000	7445.253	0.047	-9566.904	2.600
&VALUE	0.300	4.444	40.000	7142.763	0.050	-9177.167	2.600
&VALUE	0.350	4.444	40.000	6865.517	0.052	-8820.562	2.600
&VALUE	0.400	4.444	40.000	6611.123	0.055	-8493.694	2.600
&VALUE	0.450	4.444	40.000	6377.262	0.058	-8193.169	2.600
&VALUE	0.500	4.444	40.000	6161.732	0.061	-7917.941	2.600
&VALUE	0.550	4.444	40.000	5962.496	0.063	-7660.316	2.600
&VALUE	0.600	4.444	40.000	5777.710	0.066	-7423.940	2.600
&VALUE	0.650	4.444	40.000	5605.751	0.069	-7201.731	2.600
&VALUE	0.700	4.444	40.000	5445.241	0.072	-6995.368	2.600
&VALUE	0.750	4.444	40.000	5295.065	0.075	-6802.561	2.600
&VALUE	0.800	4.444	40.000	5154.390	0.077	-6623.283	2.600
&VALUE	0.850	4.444	40.000	5022.692	0.080	-6454.027	2.600
&VALUE	0.875	4.444	40.000	4960.133	0.082	-6373.241	2.600
&VALUE	0.900	4.444	40.000	4899.770	0.083	-6295.452	2.600
*							
&VALUE	0.000	6.667	40.000	8184.435	0.034	-10514.886	2.600
&VALUE	0.050	6.667	40.000	7799.095	0.036	-10021.084	2.600
&VALUE	0.100	6.667	40.000	7444.845	0.039	-9566.828	2.600
&VALUE	0.150	6.667	40.000	7120.110	0.041	-9149.570	2.600
&VALUE	0.200	6.667	40.000	6823.085	0.043	-8766.927	2.600
&VALUE	0.250	6.667	40.000	6551.796	0.046	-8417.223	2.600
&VALUE	0.300	6.667	40.000	6304.153	0.048	-8101.275	2.600
&VALUE	0.350	6.667	40.000	6078.008	0.051	-7810.543	2.600
&VALUE	0.400	6.667	40.000	5871.214	0.054	-7544.387	2.600
&VALUE	0.450	6.667	40.000	5681.664	0.056	-7300.602	2.600
&VALUE	0.500	6.667	40.000	5507.334	0.059	-7076.404	2.600
&VALUE	0.550	6.667	40.000	5346.312	0.061	-6869.111	2.600
&VALUE	0.600	6.667	40.000	5196.820	0.064	-6676.182	2.600
&VALUE	0.650	6.667	40.000	5057.231	0.066	-6498.269	2.600
&VALUE	0.700	6.667	40.000	4926.084	0.069	-6330.054	2.600
&VALUE	0.750	6.667	40.000	4802.097	0.071	-6169.603	2.600
&VALUE	0.800	6.667	40.000	4684.180	0.073	-6018.032	2.600
&VALUE	0.850	6.667	40.000	4571.441	0.076	-5873.704	2.600
&VALUE	0.875	6.667	40.000	4516.796	0.077	-5802.757	2.600
&VALUE	0.900	6.667	40.000	4463.211	0.078	-5735.241	2.600

*							
&VALUE	0.000	8.889	40.000	6976.033	0.034	-8962.427	2.600
&VALUE	0.050	8.889	40.000	6661.216	0.036	-8557.912	2.600
&VALUE	0.100	8.889	40.000	6373.191	0.038	-8187.749	2.600
&VALUE	0.150	8.889	40.000	6110.524	0.041	-7850.748	2.600
&VALUE	0.200	8.889	40.000	5871.615	0.043	-7543.397	2.600
&VALUE	0.250	8.889	40.000	5654.731	0.046	-7266.400	2.600
&VALUE	0.300	8.889	40.000	5458.056	0.048	-7012.319	2.600
&VALUE	0.350	8.889	40.000	5279.729	0.050	-6784.406	2.600
&VALUE	0.400	8.889	40.000	5117.889	0.053	-6575.304	2.600
&VALUE	0.450	8.889	40.000	4970.702	0.055	-6387.674	2.600
&VALUE	0.500	8.889	40.000	4836.395	0.057	-6215.066	2.600
&VALUE	0.550	8.889	40.000	4713.269	0.060	-6056.560	2.600
&VALUE	0.600	8.889	40.000	4599.719	0.062	-5909.961	2.600
&VALUE	0.650	8.889	40.000	4494.241	0.064	-5775.373	2.600
&VALUE	0.700	8.889	40.000	4395.443	0.066	-5648.464	2.600
&VALUE	0.750	8.889	40.000	4302.046	0.068	-5527.302	2.600
&VALUE	0.800	8.889	40.000	4212.897	0.071	-5412.330	2.600
&VALUE	0.850	8.889	40.000	4126.969	0.073	-5301.880	2.600
&VALUE	0.875	8.889	40.000	4084.931	0.074	-5249.557	2.600
&VALUE	0.900	8.889	40.000	4043.377	0.075	-5194.442	2.600
*							
&VALUE	0.000	11.111	40.000	5759.673	0.034	-7399.189	2.600
&VALUE	0.050	11.111	40.000	5510.099	0.037	-7078.533	2.600
&VALUE	0.100	11.111	40.000	5283.041	0.039	-6788.672	2.600
&VALUE	0.150	11.111	40.000	5077.249	0.041	-6522.370	2.600
&VALUE	0.200	11.111	40.000	4891.353	0.043	-6285.322	2.600
&VALUE	0.250	11.111	40.000	4723.898	0.046	-6069.083	2.600
&VALUE	0.300	11.111	40.000	4573.368	0.048	-5875.861	2.600
&VALUE	0.350	11.111	40.000	4438.223	0.050	-5703.184	2.600
&VALUE	0.400	11.111	40.000	4316.922	0.053	-5547.616	2.600
&VALUE	0.450	11.111	40.000	4207.950	0.055	-5405.602	2.600
&VALUE	0.500	11.111	40.000	4109.834	0.057	-5281.465	2.600
&VALUE	0.550	11.111	40.000	4021.154	0.059	-5165.633	2.600
&VALUE	0.600	11.111	40.000	3940.553	0.061	-5063.833	2.600
&VALUE	0.650	11.111	40.000	3866.742	0.063	-4969.244	2.600
&VALUE	0.700	11.111	40.000	3798.503	0.065	-4880.161	2.600
&VALUE	0.750	11.111	40.000	3734.687	0.067	-4799.815	2.600
&VALUE	0.800	11.111	40.000	3674.224	0.069	-4720.702	2.600
&VALUE	0.850	11.111	40.000	3616.117	0.071	-4646.208	2.600
&VALUE	0.875	11.111	40.000	3587.659	0.072	-4609.415	2.600
&VALUE	0.900	11.111	40.000	3559.452	0.072	-4573.918	2.600
*							
&VALUE	0.000	13.333	40.000	4076.288	0.034	-5237.256	2.600
&VALUE	0.050	13.333	40.000	3899.668	0.036	-5010.696	2.600
&VALUE	0.100	13.333	40.000	3738.913	0.039	-4803.526	2.600
&VALUE	0.150	13.333	40.000	3593.142	0.041	-4617.765	2.600
&VALUE	0.200	13.333	40.000	3461.383	0.043	-4448.204	2.600
&VALUE	0.250	13.333	40.000	3342.602	0.045	-4295.453	2.600
&VALUE	0.300	13.333	40.000	3235.720	0.048	-4158.390	2.600
&VALUE	0.350	13.333	40.000	3139.637	0.050	-4034.594	2.600
&VALUE	0.400	13.333	40.000	3053.250	0.052	-3923.998	2.600
&VALUE	0.450	13.333	40.000	2975.472	0.055	-3823.110	2.600
&VALUE	0.500	13.333	40.000	2905.241	0.057	-3733.202	2.600
&VALUE	0.550	13.333	40.000	2841.528	0.059	-3650.312	2.600
&VALUE	0.600	13.333	40.000	2783.346	0.061	-3575.685	2.600
&VALUE	0.650	13.333	40.000	2729.751	0.063	-3508.005	2.600
&VALUE	0.700	13.333	40.000	2679.840	0.065	-3443.443	2.600
&VALUE	0.750	13.333	40.000	2632.758	0.067	-3383.346	2.600
&VALUE	0.800	13.333	40.000	2587.696	0.068	-3323.978	2.600
&VALUE	0.850	13.333	40.000	2543.889	0.070	-3269.388	2.600
&VALUE	0.875	13.333	40.000	2522.231	0.071	-3239.673	2.600
&VALUE	0.900	13.333	40.000	2500.624	0.072	-3213.367	2.600
*							
&VALUE	0.000	15.556	40.000	2880.324	0.034	-3700.487	2.600
&VALUE	0.050	15.556	40.000	2755.524	0.036	-3539.602	2.600
&VALUE	0.100	15.556	40.000	2641.897	0.039	-3393.519	2.600
&VALUE	0.150	15.556	40.000	2538.821	0.041	-3261.815	2.600
&VALUE	0.200	15.556	40.000	2445.610	0.043	-3141.864	2.600
&VALUE	0.250	15.556	40.000	2361.529	0.045	-3035.362	2.600
&VALUE	0.300	15.556	40.000	2285.815	0.048	-2935.751	2.600
&VALUE	0.350	15.556	40.000	2217.683	0.050	-2848.706	2.600
&VALUE	0.400	15.556	40.000	2156.350	0.052	-2771.728	2.600
&VALUE	0.450	15.556	40.000	2101.038	0.054	-2698.494	2.600

&VALUE	0.500	15.556	40.000	2050.987	0.056	-2634.824	2.600
&VALUE	0.550	15.556	40.000	2005.459	0.059	-2576.028	2.600
&VALUE	0.600	15.556	40.000	1963.741	0.061	-2521.911	2.600
&VALUE	0.650	15.556	40.000	1925.150	0.063	-2472.931	2.600
&VALUE	0.700	15.556	40.000	1889.029	0.065	-2426.780	2.600
&VALUE	0.750	15.556	40.000	1854.751	0.066	-2382.610	2.600
&VALUE	0.800	15.556	40.000	1821.717	0.068	-2340.886	2.600
&VALUE	0.850	15.556	40.000	1789.359	0.070	-2299.492	2.600
&VALUE	0.875	15.556	40.000	1773.265	0.071	-2277.918	2.600
&VALUE	0.900	15.556	40.000	1757.140	0.072	-2256.863	2.600
*							
&VALUE	0.000	17.778	40.000	2033.177	0.034	-2611.470	2.600
&VALUE	0.050	17.778	40.000	1945.081	0.036	-2499.989	2.600
&VALUE	0.100	17.778	40.000	1864.853	0.038	-2396.949	2.600
&VALUE	0.150	17.778	40.000	1792.053	0.041	-2301.812	2.600
&VALUE	0.200	17.778	40.000	1726.198	0.043	-2217.240	2.600
&VALUE	0.250	17.778	40.000	1666.767	0.045	-2142.635	2.600
&VALUE	0.300	17.778	40.000	1613.220	0.048	-2071.855	2.600
&VALUE	0.350	17.778	40.000	1565.001	0.050	-2009.916	2.600
&VALUE	0.400	17.778	40.000	1521.554	0.052	-1956.067	2.600
&VALUE	0.450	17.778	40.000	1482.325	0.054	-1904.314	2.600
&VALUE	0.500	17.778	40.000	1446.774	0.056	-1859.283	2.600
&VALUE	0.550	17.778	40.000	1414.372	0.058	-1817.651	2.600
&VALUE	0.600	17.778	40.000	1384.610	0.060	-1778.748	2.600
&VALUE	0.650	17.778	40.000	1356.997	0.062	-1744.485	2.600
&VALUE	0.700	17.778	40.000	1331.059	0.064	-1709.052	2.600
&VALUE	0.750	17.778	40.000	1306.343	0.066	-1679.558	2.600
&VALUE	0.800	17.778	40.000	1282.413	0.068	-1647.649	2.600
&VALUE	0.850	17.778	40.000	1258.853	0.070	-1617.917	2.600
&VALUE	0.875	17.778	40.000	1247.088	0.071	-1602.393	2.600
&VALUE	0.900	17.778	40.000	1235.268	0.072	-1587.210	2.600
*							
&VALUE	0.000	20.000	40.000	1434.226	0.034	-1843.615	2.600
&VALUE	0.050	20.000	40.000	1372.081	0.036	-1764.209	2.600
&VALUE	0.100	20.000	40.000	1315.476	0.038	-1690.478	2.600
&VALUE	0.150	20.000	40.000	1264.102	0.041	-1623.428	2.600
&VALUE	0.200	20.000	40.000	1217.616	0.043	-1563.816	2.600
&VALUE	0.250	20.000	40.000	1175.652	0.045	-1511.223	2.600
&VALUE	0.300	20.000	40.000	1137.826	0.047	-1461.307	2.600
&VALUE	0.350	20.000	40.000	1103.748	0.050	-1417.616	2.600
&VALUE	0.400	20.000	40.000	1073.021	0.052	-1379.620	2.600
&VALUE	0.450	20.000	40.000	1045.253	0.054	-1343.081	2.600
&VALUE	0.500	20.000	40.000	1020.061	0.056	-1311.269	2.600
&VALUE	0.550	20.000	40.000	997.070	0.058	-1280.002	2.600
&VALUE	0.600	20.000	40.000	975.915	0.060	-1252.849	2.600
&VALUE	0.650	20.000	40.000	956.247	0.062	-1228.196	2.600
&VALUE	0.700	20.000	40.000	937.726	0.064	-1205.934	2.600
&VALUE	0.750	20.000	40.000	920.027	0.066	-1182.072	2.600
&VALUE	0.800	20.000	40.000	902.836	0.068	-1159.343	2.600
&VALUE	0.850	20.000	40.000	885.853	0.070	-1138.107	2.600
&VALUE	0.875	20.000	40.000	877.350	0.071	-1127.006	2.600
&VALUE	0.900	20.000	40.000	868.791	0.071	-1116.133	2.600
*							
&VALUE	0.000	0.000	50.000	15043.850	0.035	-19329.722	2.600
&VALUE	0.050	0.000	50.000	14242.918	0.038	-18300.455	2.600
&VALUE	0.100	0.000	50.000	13503.755	0.040	-17349.458	2.600
&VALUE	0.150	0.000	50.000	12823.655	0.043	-16476.291	2.600
&VALUE	0.200	0.000	50.000	12199.534	0.046	-15674.353	2.600
&VALUE	0.250	0.000	50.000	11628.033	0.049	-14941.490	2.600
&VALUE	0.300	0.000	50.000	11105.651	0.052	-14268.225	2.600
&VALUE	0.350	0.000	50.000	10628.875	0.055	-13657.997	2.600
&VALUE	0.400	0.000	50.000	10194.311	0.058	-13099.066	2.600
&VALUE	0.450	0.000	50.000	9798.800	0.061	-12590.360	2.600
&VALUE	0.500	0.000	50.000	9439.515	0.064	-12128.740	2.600
&VALUE	0.550	0.000	50.000	9114.046	0.067	-11711.318	2.600
&VALUE	0.600	0.000	50.000	8820.460	0.070	-11333.950	2.600
&VALUE	0.650	0.000	50.000	8557.353	0.073	-10994.795	2.600
&VALUE	0.700	0.000	50.000	8323.887	0.077	-10694.027	2.600
&VALUE	0.750	0.000	50.000	8119.801	0.080	-10432.125	2.600
&VALUE	0.800	0.000	50.000	7945.410	0.084	-10209.900	2.600
&VALUE	0.850	0.000	50.000	7801.545	0.087	-10023.056	2.600
&VALUE	0.875	0.000	50.000	7741.429	0.089	-9946.650	2.600
&VALUE	0.900	0.000	50.000	7689.411	0.090	-9878.725	2.600
*							

&VALUE	0.000	2.222	50.000	13356.457	0.035	-17162.296	2.600
&VALUE	0.050	2.222	50.000	12673.110	0.037	-16284.248	2.600
&VALUE	0.100	2.222	50.000	12041.894	0.039	-15471.344	2.600
&VALUE	0.150	2.222	50.000	11460.453	0.042	-14725.328	2.600
&VALUE	0.200	2.222	50.000	10926.044	0.044	-14039.049	2.600
&VALUE	0.250	2.222	50.000	10435.638	0.047	-13408.934	2.600
&VALUE	0.300	2.222	50.000	9986.031	0.050	-12830.905	2.600
&VALUE	0.350	2.222	50.000	9573.958	0.052	-12300.582	2.600
&VALUE	0.400	2.222	50.000	9196.198	0.055	-11816.484	2.600
&VALUE	0.450	2.222	50.000	8849.679	0.058	-11370.945	2.600
&VALUE	0.500	2.222	50.000	8531.551	0.061	-10962.548	2.600
&VALUE	0.550	2.222	50.000	8239.262	0.064	-10587.109	2.600
&VALUE	0.600	2.222	50.000	7970.606	0.067	-10240.883	2.600
&VALUE	0.650	2.222	50.000	7723.776	0.069	-9923.124	2.600
&VALUE	0.700	2.222	50.000	7497.400	0.072	-9633.307	2.600
&VALUE	0.750	2.222	50.000	7290.580	0.075	-9366.484	2.600
&VALUE	0.800	2.222	50.000	7102.926	0.078	-9125.480	2.600
&VALUE	0.850	2.222	50.000	6934.595	0.081	-8910.975	2.600
&VALUE	0.875	2.222	50.000	6857.882	0.083	-8810.269	2.600
&VALUE	0.900	2.222	50.000	6786.325	0.084	-8719.706	2.600
*							
&VALUE	0.000	4.444	50.000	11770.715	0.034	-15123.832	2.600
&VALUE	0.050	4.444	50.000	11192.793	0.036	-14382.629	2.600
&VALUE	0.100	4.444	50.000	10659.724	0.039	-13695.792	2.600
&VALUE	0.150	4.444	50.000	10169.366	0.041	-13067.408	2.600
&VALUE	0.200	4.444	50.000	9719.230	0.043	-12489.128	2.600
&VALUE	0.250	4.444	50.000	9306.566	0.046	-11958.093	2.600
&VALUE	0.300	4.444	50.000	8928.454	0.048	-11470.937	2.600
&VALUE	0.350	4.444	50.000	8581.896	0.051	-11026.276	2.600
&VALUE	0.400	4.444	50.000	8263.904	0.054	-10617.768	2.600
&VALUE	0.450	4.444	50.000	7971.577	0.056	-10243.705	2.600
&VALUE	0.500	4.444	50.000	7702.165	0.059	-9895.956	2.600
&VALUE	0.550	4.444	50.000	7453.120	0.061	-9577.201	2.600
&VALUE	0.600	4.444	50.000	7222.137	0.064	-9279.848	2.600
&VALUE	0.650	4.444	50.000	7007.189	0.066	-9002.813	2.600
&VALUE	0.700	4.444	50.000	6806.551	0.069	-8745.161	2.600
&VALUE	0.750	4.444	50.000	6618.831	0.071	-8504.351	2.600
&VALUE	0.800	4.444	50.000	6442.988	0.074	-8278.258	2.600
&VALUE	0.850	4.444	50.000	6278.365	0.076	-8066.935	2.600
&VALUE	0.875	4.444	50.000	6200.166	0.078	-7966.153	2.600
&VALUE	0.900	4.444	50.000	6124.713	0.079	-7869.020	2.600
*							
&VALUE	0.000	6.667	50.000	10230.544	0.034	-13144.663	2.600
&VALUE	0.050	6.667	50.000	9748.868	0.036	-12526.272	2.600
&VALUE	0.100	6.667	50.000	9306.057	0.039	-11958.365	2.600
&VALUE	0.150	6.667	50.000	8900.137	0.041	-11435.282	2.600
&VALUE	0.200	6.667	50.000	8528.856	0.043	-10958.859	2.600
&VALUE	0.250	6.667	50.000	8189.745	0.046	-10522.666	2.600
&VALUE	0.300	6.667	50.000	7880.191	0.048	-10123.885	2.600
&VALUE	0.350	6.667	50.000	7597.510	0.050	-9762.676	2.600
&VALUE	0.400	6.667	50.000	7339.017	0.053	-9429.117	2.600
&VALUE	0.450	6.667	50.000	7102.080	0.055	-9124.371	2.600
&VALUE	0.500	6.667	50.000	6884.168	0.057	-8845.740	2.600
&VALUE	0.550	6.667	50.000	6682.890	0.060	-8586.873	2.600
&VALUE	0.600	6.667	50.000	6496.025	0.062	-8347.709	2.600
&VALUE	0.650	6.667	50.000	6321.538	0.064	-8122.298	2.600
&VALUE	0.700	6.667	50.000	6157.605	0.066	-7910.916	2.600
&VALUE	0.750	6.667	50.000	6002.622	0.069	-7711.702	2.600
&VALUE	0.800	6.667	50.000	5855.224	0.071	-7523.398	2.600
&VALUE	0.850	6.667	50.000	5714.302	0.073	-7343.049	2.600
&VALUE	0.875	6.667	50.000	5645.995	0.074	-7254.362	2.600
&VALUE	0.900	6.667	50.000	5579.014	0.075	-7168.360	2.600
*							
&VALUE	0.000	8.889	50.000	8720.041	0.035	-11203.594	2.600
&VALUE	0.050	8.889	50.000	8326.520	0.037	-10697.955	2.600
&VALUE	0.100	8.889	50.000	7966.488	0.039	-10236.422	2.600
&VALUE	0.150	8.889	50.000	7638.155	0.041	-9814.636	2.600
&VALUE	0.200	8.889	50.000	7339.518	0.044	-9430.905	2.600
&VALUE	0.250	8.889	50.000	7068.414	0.046	-9083.083	2.600
&VALUE	0.300	8.889	50.000	6822.570	0.048	-8766.016	2.600
&VALUE	0.350	8.889	50.000	6599.662	0.050	-8479.745	2.600
&VALUE	0.400	8.889	50.000	6397.361	0.053	-8218.814	2.600
&VALUE	0.450	8.889	50.000	6213.378	0.055	-7982.925	2.600
&VALUE	0.500	8.889	50.000	6045.493	0.057	-7766.638	2.600

&VALUE	0.550	8.889	50.000	5891.586	0.059	-7569.638	2.600
&VALUE	0.600	8.889	50.000	5749.648	0.061	-7386.691	2.600
&VALUE	0.650	8.889	50.000	5617.802	0.063	-7217.658	2.600
&VALUE	0.700	8.889	50.000	5494.304	0.065	-7060.051	2.600
&VALUE	0.750	8.889	50.000	5377.558	0.067	-6909.108	2.600
&VALUE	0.800	8.889	50.000	5266.121	0.069	-6765.137	2.600
&VALUE	0.850	8.889	50.000	5158.712	0.071	-6628.617	2.600
&VALUE	0.875	8.889	50.000	5106.164	0.072	-6559.849	2.600
&VALUE	0.900	8.889	50.000	5054.221	0.073	-6492.912	2.600
*							
&VALUE	0.000	11.111	50.000	7199.592	0.036	-9251.433	2.600
&VALUE	0.050	11.111	50.000	6887.624	0.038	-8851.023	2.600
&VALUE	0.100	11.111	50.000	6603.802	0.040	-8485.362	2.600
&VALUE	0.150	11.111	50.000	6346.561	0.042	-8155.788	2.600
&VALUE	0.200	11.111	50.000	6114.192	0.044	-7855.776	2.600
&VALUE	0.250	11.111	50.000	5904.873	0.046	-7588.253	2.600
&VALUE	0.300	11.111	50.000	5716.711	0.048	-7345.810	2.600
&VALUE	0.350	11.111	50.000	5547.779	0.051	-7128.351	2.600
&VALUE	0.400	11.111	50.000	5396.153	0.053	-6934.221	2.600
&VALUE	0.450	11.111	50.000	5259.938	0.055	-6757.389	2.600
&VALUE	0.500	11.111	50.000	5137.292	0.057	-6601.609	2.600
&VALUE	0.550	11.111	50.000	5026.442	0.059	-6459.169	2.600
&VALUE	0.600	11.111	50.000	4925.691	0.061	-6327.871	2.600
&VALUE	0.650	11.111	50.000	4833.428	0.063	-6210.688	2.600
&VALUE	0.700	11.111	50.000	4748.128	0.064	-6099.556	2.600
&VALUE	0.750	11.111	50.000	4668.359	0.066	-5997.978	2.600
&VALUE	0.800	11.111	50.000	4592.780	0.068	-5902.095	2.600
&VALUE	0.850	11.111	50.000	4520.147	0.069	-5808.136	2.600
&VALUE	0.875	11.111	50.000	4484.573	0.070	-5761.595	2.600
&VALUE	0.900	11.111	50.000	4449.315	0.071	-5716.412	2.600
*							
&VALUE	0.000	13.333	50.000	5095.360	0.035	-6548.157	2.600
&VALUE	0.050	13.333	50.000	4874.585	0.037	-6262.177	2.600
&VALUE	0.100	13.333	50.000	4673.642	0.040	-6006.316	2.600
&VALUE	0.150	13.333	50.000	4491.427	0.042	-5771.097	2.600
&VALUE	0.200	13.333	50.000	4326.729	0.044	-5558.349	2.600
&VALUE	0.250	13.333	50.000	4178.253	0.046	-5369.789	2.600
&VALUE	0.300	13.333	50.000	4044.650	0.048	-5197.809	2.600
&VALUE	0.350	13.333	50.000	3924.546	0.050	-5043.376	2.600
&VALUE	0.400	13.333	50.000	3816.563	0.052	-4903.478	2.600
&VALUE	0.450	13.333	50.000	3719.340	0.055	-4777.782	2.600
&VALUE	0.500	13.333	50.000	3631.551	0.057	-4665.071	2.600
&VALUE	0.550	13.333	50.000	3551.910	0.059	-4563.642	2.600
&VALUE	0.600	13.333	50.000	3479.183	0.060	-4469.039	2.600
&VALUE	0.650	13.333	50.000	3412.188	0.062	-4385.282	2.600
&VALUE	0.700	13.333	50.000	3349.800	0.064	-4305.223	2.600
&VALUE	0.750	13.333	50.000	3290.948	0.066	-4227.383	2.600
&VALUE	0.800	13.333	50.000	3234.620	0.067	-4155.980	2.600
&VALUE	0.850	13.333	50.000	3179.861	0.069	-4086.885	2.600
&VALUE	0.875	13.333	50.000	3152.789	0.070	-4051.032	2.600
&VALUE	0.900	13.333	50.000	3125.780	0.071	-4015.999	2.600
*							
&VALUE	0.000	15.556	50.000	3600.405	0.035	-4625.385	2.600
&VALUE	0.050	15.556	50.000	3444.404	0.037	-4425.737	2.600
&VALUE	0.100	15.556	50.000	3302.371	0.039	-4242.027	2.600
&VALUE	0.150	15.556	50.000	3173.527	0.042	-4078.759	2.600
&VALUE	0.200	15.556	50.000	3057.012	0.044	-3927.042	2.600
&VALUE	0.250	15.556	50.000	2951.912	0.046	-3791.757	2.600
&VALUE	0.300	15.556	50.000	2857.268	0.048	-3672.413	2.600
&VALUE	0.350	15.556	50.000	2772.104	0.050	-3562.885	2.600
&VALUE	0.400	15.556	50.000	2695.437	0.052	-3464.281	2.600
&VALUE	0.450	15.556	50.000	2626.297	0.054	-3373.247	2.600
&VALUE	0.500	15.556	50.000	2563.734	0.056	-3293.344	2.600
&VALUE	0.550	15.556	50.000	2506.823	0.058	-3220.079	2.600
&VALUE	0.600	15.556	50.000	2454.677	0.060	-3153.984	2.600
&VALUE	0.650	15.556	50.000	2406.437	0.062	-3092.208	2.600
&VALUE	0.700	15.556	50.000	2361.286	0.064	-3032.883	2.600
&VALUE	0.750	15.556	50.000	2318.438	0.065	-2978.929	2.600
&VALUE	0.800	15.556	50.000	2277.146	0.067	-2925.335	2.600
&VALUE	0.850	15.556	50.000	2236.699	0.069	-2875.139	2.600
&VALUE	0.875	15.556	50.000	2216.581	0.069	-2849.015	2.600
&VALUE	0.900	15.556	50.000	2196.425	0.070	-2823.402	2.600
*							
&VALUE	0.000	17.778	50.000	2541.471	0.035	-3264.303	2.600

&VALUE	0.050	17.778	50.000	2431.351	0.037	-3123.556	2.600
&VALUE	0.100	17.778	50.000	2331.066	0.039	-2996.244	2.600
&VALUE	0.150	17.778	50.000	2240.066	0.042	-2879.386	2.600
&VALUE	0.200	17.778	50.000	2157.747	0.044	-2771.848	2.600
&VALUE	0.250	17.778	50.000	2083.459	0.046	-2676.389	2.600
&VALUE	0.300	17.778	50.000	2016.525	0.048	-2592.154	2.600
&VALUE	0.350	17.778	50.000	1956.252	0.050	-2512.392	2.600
&VALUE	0.400	17.778	50.000	1901.942	0.052	-2442.762	2.600
&VALUE	0.450	17.778	50.000	1852.907	0.054	-2380.764	2.600
&VALUE	0.500	17.778	50.000	1808.467	0.056	-2324.211	2.600
&VALUE	0.550	17.778	50.000	1767.965	0.058	-2271.752	2.600
&VALUE	0.600	17.778	50.000	1730.762	0.060	-2222.557	2.600
&VALUE	0.650	17.778	50.000	1696.246	0.062	-2178.630	2.600
&VALUE	0.700	17.778	50.000	1663.823	0.064	-2136.911	2.600
&VALUE	0.750	17.778	50.000	1632.928	0.065	-2097.777	2.600
&VALUE	0.800	17.778	50.000	1603.016	0.067	-2059.351	2.600
&VALUE	0.850	17.778	50.000	1573.567	0.068	-2020.943	2.600
&VALUE	0.875	17.778	50.000	1558.860	0.069	-2002.095	2.600
&VALUE	0.900	17.778	50.000	1544.085	0.070	-1982.978	2.600
*							
&VALUE	0.000	20.000	50.000	1792.783	0.035	-2304.173	2.600
&VALUE	0.050	20.000	50.000	1715.102	0.037	-2204.881	2.600
&VALUE	0.100	20.000	50.000	1644.345	0.039	-2111.630	2.600
&VALUE	0.150	20.000	50.000	1580.127	0.042	-2031.050	2.600
&VALUE	0.200	20.000	50.000	1522.019	0.044	-1955.220	2.600
&VALUE	0.250	20.000	50.000	1469.564	0.046	-1887.897	2.600
&VALUE	0.300	20.000	50.000	1422.283	0.048	-1828.478	2.600
&VALUE	0.350	20.000	50.000	1379.685	0.050	-1772.189	2.600
&VALUE	0.400	20.000	50.000	1341.276	0.052	-1722.665	2.600
&VALUE	0.450	20.000	50.000	1306.567	0.054	-1679.243	2.600
&VALUE	0.500	20.000	50.000	1275.077	0.056	-1637.258	2.600
&VALUE	0.550	20.000	50.000	1246.337	0.058	-1600.157	2.600
&VALUE	0.600	20.000	50.000	1219.894	0.060	-1567.321	2.600
&VALUE	0.650	20.000	50.000	1195.308	0.062	-1534.563	2.600
&VALUE	0.700	20.000	50.000	1172.157	0.063	-1506.138	2.600
&VALUE	0.750	20.000	50.000	1150.033	0.065	-1476.680	2.600
&VALUE	0.800	20.000	50.000	1128.545	0.067	-1451.279	2.600
&VALUE	0.850	20.000	50.000	1107.317	0.068	-1423.414	2.600
&VALUE	0.875	20.000	50.000	1096.687	0.069	-1407.890	2.600
&VALUE	0.900	20.000	50.000	1085.989	0.070	-1396.626	2.600
*							
&VALUE	0.000	0.000	60.000	18052.620	0.035	-23195.452	2.600
&VALUE	0.050	0.000	60.000	17091.502	0.037	-21961.209	2.600
&VALUE	0.100	0.000	60.000	16204.506	0.040	-20821.939	2.600
&VALUE	0.150	0.000	60.000	15388.386	0.042	-19771.600	2.600
&VALUE	0.200	0.000	60.000	14639.441	0.045	-18810.281	2.600
&VALUE	0.250	0.000	60.000	13953.640	0.048	-17928.186	2.600
&VALUE	0.300	0.000	60.000	13326.782	0.050	-17123.815	2.600
&VALUE	0.350	0.000	60.000	12754.651	0.053	-16387.160	2.600
&VALUE	0.400	0.000	60.000	12233.174	0.056	-15719.212	2.600
&VALUE	0.450	0.000	60.000	11758.560	0.059	-15108.450	2.600
&VALUE	0.500	0.000	60.000	11327.418	0.062	-14554.797	2.600
&VALUE	0.550	0.000	60.000	10936.855	0.065	-14053.613	2.600
&VALUE	0.600	0.000	60.000	10584.552	0.068	-13600.403	2.600
&VALUE	0.650	0.000	60.000	10268.824	0.071	-13194.431	2.600
&VALUE	0.700	0.000	60.000	9988.664	0.074	-12835.342	2.600
&VALUE	0.750	0.000	60.000	9743.761	0.077	-12520.426	2.600
&VALUE	0.800	0.000	60.000	9534.492	0.080	-12250.450	2.600
&VALUE	0.850	0.000	60.000	9361.854	0.083	-12029.080	2.600
&VALUE	0.875	0.000	60.000	9289.715	0.085	-11937.084	2.600
&VALUE	0.900	0.000	60.000	9227.293	0.087	-11854.797	2.600
*							
&VALUE	0.000	2.222	60.000	16027.748	0.035	-20592.948	2.600
&VALUE	0.050	2.222	60.000	15207.731	0.037	-19538.909	2.600
&VALUE	0.100	2.222	60.000	14450.273	0.039	-18567.267	2.600
&VALUE	0.150	2.222	60.000	13752.543	0.041	-17669.177	2.600
&VALUE	0.200	2.222	60.000	13111.252	0.044	-16847.519	2.600
&VALUE	0.250	2.222	60.000	12522.765	0.046	-16091.119	2.600
&VALUE	0.300	2.222	60.000	11983.237	0.049	-15397.982	2.600
&VALUE	0.350	2.222	60.000	11488.749	0.052	-14761.421	2.600
&VALUE	0.400	2.222	60.000	11035.438	0.054	-14180.081	2.600
&VALUE	0.450	2.222	60.000	10619.615	0.057	-13645.002	2.600
&VALUE	0.500	2.222	60.000	10237.862	0.059	-13155.241	2.600
&VALUE	0.550	2.222	60.000	9887.114	0.062	-12703.937	2.600

&VALUE	0.600	2.222	60.000	9564.727	0.065	-12289.424	2.600
&VALUE	0.650	2.222	60.000	9268.531	0.067	-11907.929	2.600
&VALUE	0.700	2.222	60.000	8996.880	0.070	-11560.891	2.600
&VALUE	0.750	2.222	60.000	8748.696	0.073	-11240.939	2.600
&VALUE	0.800	2.222	60.000	8523.512	0.075	-10952.771	2.600
&VALUE	0.850	2.222	60.000	8321.514	0.078	-10692.582	2.600
&VALUE	0.875	2.222	60.000	8229.459	0.080	-10573.748	2.600
&VALUE	0.900	2.222	60.000	8143.590	0.081	-10463.701	2.600
*							
&VALUE	0.000	4.444	60.000	14124.858	0.034	-18149.256	2.600
&VALUE	0.050	4.444	60.000	13431.351	0.037	-17257.252	2.600
&VALUE	0.100	4.444	60.000	12791.669	0.039	-16435.155	2.600
&VALUE	0.150	4.444	60.000	12203.239	0.041	-15680.356	2.600
&VALUE	0.200	4.444	60.000	11663.076	0.043	-14984.750	2.600
&VALUE	0.250	4.444	60.000	11167.879	0.046	-14349.484	2.600
&VALUE	0.300	4.444	60.000	10714.145	0.048	-13765.718	2.600
&VALUE	0.350	4.444	60.000	10298.275	0.051	-13233.032	2.600
&VALUE	0.400	4.444	60.000	9916.685	0.053	-12742.883	2.600
&VALUE	0.450	4.444	60.000	9565.893	0.055	-12292.104	2.600
&VALUE	0.500	4.444	60.000	9242.598	0.058	-11875.607	2.600
&VALUE	0.550	4.444	60.000	8943.744	0.060	-11490.361	2.600
&VALUE	0.600	4.444	60.000	8666.565	0.063	-11136.206	2.600
&VALUE	0.650	4.444	60.000	8408.627	0.065	-10805.260	2.600
&VALUE	0.700	4.444	60.000	8167.862	0.067	-10495.531	2.600
&VALUE	0.750	4.444	60.000	7942.597	0.070	-10206.343	2.600
&VALUE	0.800	4.444	60.000	7731.586	0.072	-9933.292	2.600
&VALUE	0.850	4.444	60.000	7534.038	0.074	-9680.613	2.600
&VALUE	0.875	4.444	60.000	7440.199	0.075	-9559.809	2.600
&VALUE	0.900	4.444	60.000	7349.655	0.077	-9443.736	2.600
*							
&VALUE	0.000	6.667	60.000	12276.652	0.035	-15775.214	2.600
&VALUE	0.050	6.667	60.000	11698.642	0.037	-15032.312	2.600
&VALUE	0.100	6.667	60.000	11167.268	0.039	-14349.797	2.600
&VALUE	0.150	6.667	60.000	10680.164	0.041	-13722.850	2.600
&VALUE	0.200	6.667	60.000	10234.627	0.044	-13151.450	2.600
&VALUE	0.250	6.667	60.000	9827.694	0.046	-12626.185	2.600
&VALUE	0.300	6.667	60.000	9456.229	0.048	-12149.896	2.600
&VALUE	0.350	6.667	60.000	9117.013	0.050	-11715.342	2.600
&VALUE	0.400	6.667	60.000	8806.821	0.053	-11315.143	2.600
&VALUE	0.450	6.667	60.000	8522.496	0.055	-10949.351	2.600
&VALUE	0.500	6.667	60.000	8261.001	0.057	-10615.370	2.600
&VALUE	0.550	6.667	60.000	8019.468	0.059	-10304.605	2.600
&VALUE	0.600	6.667	60.000	7795.230	0.061	-10016.087	2.600
&VALUE	0.650	6.667	60.000	7585.846	0.063	-9746.393	2.600
&VALUE	0.700	6.667	60.000	7389.126	0.065	-9493.024	2.600
&VALUE	0.750	6.667	60.000	7203.146	0.068	-9254.334	2.600
&VALUE	0.800	6.667	60.000	7026.269	0.070	-9027.238	2.600
&VALUE	0.850	6.667	60.000	6857.162	0.072	-8810.058	2.600
&VALUE	0.875	6.667	60.000	6775.193	0.073	-8705.033	2.600
&VALUE	0.900	6.667	60.000	6694.816	0.074	-8602.932	2.600
*							
&VALUE	0.000	8.889	60.000	10464.049	0.036	-13444.152	2.600
&VALUE	0.050	8.889	60.000	9991.824	0.038	-12838.110	2.600
&VALUE	0.100	8.889	60.000	9559.786	0.040	-12284.358	2.600
&VALUE	0.150	8.889	60.000	9165.786	0.042	-11777.791	2.600
&VALUE	0.200	8.889	60.000	8807.422	0.044	-11316.125	2.600
&VALUE	0.250	8.889	60.000	8482.097	0.046	-10899.510	2.600
&VALUE	0.300	8.889	60.000	8187.084	0.049	-10518.958	2.600
&VALUE	0.350	8.889	60.000	7919.594	0.051	-10176.891	2.600
&VALUE	0.400	8.889	60.000	7676.833	0.053	-9864.208	2.600
&VALUE	0.450	8.889	60.000	7456.053	0.055	-9580.242	2.600
&VALUE	0.500	8.889	60.000	7254.592	0.057	-9321.523	2.600
&VALUE	0.550	8.889	60.000	7069.903	0.059	-9084.678	2.600
&VALUE	0.600	8.889	60.000	6899.578	0.061	-8863.827	2.600
&VALUE	0.650	8.889	60.000	6741.362	0.063	-8661.202	2.600
&VALUE	0.700	8.889	60.000	6593.164	0.065	-8471.259	2.600
&VALUE	0.750	8.889	60.000	6453.069	0.066	-8291.317	2.600
&VALUE	0.800	8.889	60.000	6319.345	0.068	-8118.911	2.600
&VALUE	0.850	8.889	60.000	6190.454	0.070	-7954.419	2.600
&VALUE	0.875	8.889	60.000	6127.397	0.071	-7872.870	2.600
&VALUE	0.900	8.889	60.000	6065.066	0.072	-7793.227	2.600
*							
&VALUE	0.000	11.111	60.000	8639.510	0.037	-11100.289	2.600
&VALUE	0.050	11.111	60.000	8265.149	0.039	-10619.652	2.600

&VALUE	0.100	11.111	60.000	7924.562	0.041	-10181.098	2.600
&VALUE	0.150	11.111	60.000	7615.873	0.043	-9785.592	2.600
&VALUE	0.200	11.111	60.000	7337.030	0.045	-9428.286	2.600
&VALUE	0.250	11.111	60.000	7085.847	0.047	-9105.380	2.600
&VALUE	0.300	11.111	60.000	6860.053	0.049	-8815.410	2.600
&VALUE	0.350	11.111	60.000	6657.335	0.051	-8552.719	2.600
&VALUE	0.400	11.111	60.000	6475.383	0.053	-8319.558	2.600
&VALUE	0.450	11.111	60.000	6311.926	0.055	-8110.838	2.600
&VALUE	0.500	11.111	60.000	6164.751	0.057	-7919.848	2.600
&VALUE	0.550	11.111	60.000	6031.730	0.059	-7750.013	2.600
&VALUE	0.600	11.111	60.000	5910.829	0.061	-7595.884	2.600
&VALUE	0.650	11.111	60.000	5800.113	0.063	-7452.256	2.600
&VALUE	0.700	11.111	60.000	5697.754	0.064	-7320.611	2.600
&VALUE	0.750	11.111	60.000	5602.031	0.066	-7197.280	2.600
&VALUE	0.800	11.111	60.000	5511.336	0.067	-7082.178	2.600
&VALUE	0.850	11.111	60.000	5424.176	0.069	-6968.968	2.600
&VALUE	0.875	11.111	60.000	5381.488	0.070	-6913.798	2.600
&VALUE	0.900	11.111	60.000	5339.178	0.070	-6860.001	2.600
*							
&VALUE	0.000	13.333	60.000	6114.432	0.037	-7857.376	2.600
&VALUE	0.050	13.333	60.000	5849.501	0.039	-7514.659	2.600
&VALUE	0.100	13.333	60.000	5608.370	0.041	-7207.268	2.600
&VALUE	0.150	13.333	60.000	5389.713	0.043	-6925.281	2.600
&VALUE	0.200	13.333	60.000	5192.075	0.045	-6672.123	2.600
&VALUE	0.250	13.333	60.000	5013.903	0.047	-6441.501	2.600
&VALUE	0.300	13.333	60.000	4853.580	0.049	-6236.560	2.600
&VALUE	0.350	13.333	60.000	4709.455	0.051	-6052.015	2.600
&VALUE	0.400	13.333	60.000	4579.875	0.053	-5884.352	2.600
&VALUE	0.450	13.333	60.000	4463.208	0.055	-5735.584	2.600
&VALUE	0.500	13.333	60.000	4357.861	0.057	-5599.670	2.600
&VALUE	0.550	13.333	60.000	4262.292	0.059	-5476.042	2.600
&VALUE	0.600	13.333	60.000	4175.020	0.060	-5363.286	2.600
&VALUE	0.650	13.333	60.000	4094.626	0.062	-5261.960	2.600
&VALUE	0.700	13.333	60.000	4019.760	0.064	-5165.932	2.600
&VALUE	0.750	13.333	60.000	3949.138	0.065	-5074.776	2.600
&VALUE	0.800	13.333	60.000	3881.544	0.067	-4987.422	2.600
&VALUE	0.850	13.333	60.000	3815.834	0.068	-4902.317	2.600
&VALUE	0.875	13.333	60.000	3783.347	0.069	-4862.222	2.600
&VALUE	0.900	13.333	60.000	3750.936	0.070	-4820.463	2.600
*							
&VALUE	0.000	15.556	60.000	4320.486	0.036	-5550.436	2.600
&VALUE	0.050	15.556	60.000	4133.285	0.038	-5311.753	2.600
&VALUE	0.100	15.556	60.000	3962.846	0.041	-5092.954	2.600
&VALUE	0.150	15.556	60.000	3808.232	0.043	-4892.276	2.600
&VALUE	0.200	15.556	60.000	3668.415	0.045	-4714.693	2.600
&VALUE	0.250	15.556	60.000	3542.294	0.047	-4550.181	2.600
&VALUE	0.300	15.556	60.000	3428.722	0.049	-4406.492	2.600
&VALUE	0.350	15.556	60.000	3326.525	0.051	-4273.015	2.600
&VALUE	0.400	15.556	60.000	3234.525	0.053	-4157.245	2.600
&VALUE	0.450	15.556	60.000	3151.557	0.055	-4048.225	2.600
&VALUE	0.500	15.556	60.000	3076.480	0.057	-3952.182	2.600
&VALUE	0.550	15.556	60.000	3008.188	0.058	-3865.669	2.600
&VALUE	0.600	15.556	60.000	2945.612	0.060	-3785.312	2.600
&VALUE	0.650	15.556	60.000	2887.725	0.062	-3711.136	2.600
&VALUE	0.700	15.556	60.000	2833.543	0.064	-3639.684	2.600
&VALUE	0.750	15.556	60.000	2782.126	0.065	-3574.003	2.600
&VALUE	0.800	15.556	60.000	2732.575	0.067	-3510.748	2.600
&VALUE	0.850	15.556	60.000	2684.039	0.068	-3448.783	2.600
&VALUE	0.875	15.556	60.000	2659.897	0.069	-3417.673	2.600
&VALUE	0.900	15.556	60.000	2635.710	0.070	-3387.032	2.600
*							
&VALUE	0.000	17.778	60.000	3049.765	0.036	-3917.300	2.600
&VALUE	0.050	17.778	60.000	2917.621	0.038	-3749.658	2.600
&VALUE	0.100	17.778	60.000	2797.279	0.040	-3595.058	2.600
&VALUE	0.150	17.778	60.000	2688.080	0.043	-3452.609	2.600
&VALUE	0.200	17.778	60.000	2589.296	0.045	-3328.151	2.600
&VALUE	0.250	17.778	60.000	2500.151	0.047	-3211.482	2.600
&VALUE	0.300	17.778	60.000	2419.830	0.049	-3108.139	2.600
&VALUE	0.350	17.778	60.000	2347.502	0.051	-3015.700	2.600
&VALUE	0.400	17.778	60.000	2282.331	0.053	-2931.551	2.600
&VALUE	0.450	17.778	60.000	2223.488	0.055	-2857.258	2.600
&VALUE	0.500	17.778	60.000	2170.160	0.056	-2788.681	2.600
&VALUE	0.550	17.778	60.000	2121.558	0.058	-2724.825	2.600
&VALUE	0.600	17.778	60.000	2076.915	0.060	-2667.747	2.600

&VALUE	0.650	17.778	60.000	2035.495	0.062	-2616.467	2.600
&VALUE	0.700	17.778	60.000	1996.588	0.063	-2564.538	2.600
&VALUE	0.750	17.778	60.000	1959.514	0.065	-2518.465	2.600
&VALUE	0.800	17.778	60.000	1923.619	0.066	-2470.558	2.600
&VALUE	0.850	17.778	60.000	1888.280	0.068	-2426.814	2.600
&VALUE	0.875	17.778	60.000	1870.632	0.069	-2404.320	2.600
&VALUE	0.900	17.778	60.000	1852.903	0.069	-2379.630	2.600
*							
&VALUE	0.000	20.000	60.000	2151.340	0.036	-2764.796	2.600
&VALUE	0.050	20.000	60.000	2058.122	0.038	-2645.036	2.600
&VALUE	0.100	20.000	60.000	1973.214	0.040	-2536.030	2.600
&VALUE	0.150	20.000	60.000	1896.152	0.042	-2437.259	2.600
&VALUE	0.200	20.000	60.000	1826.423	0.045	-2345.617	2.600
&VALUE	0.250	20.000	60.000	1763.477	0.047	-2267.049	2.600
&VALUE	0.300	20.000	60.000	1706.740	0.049	-2193.699	2.600
&VALUE	0.350	20.000	60.000	1655.622	0.051	-2128.420	2.600
&VALUE	0.400	20.000	60.000	1609.531	0.053	-2067.875	2.600
&VALUE	0.450	20.000	60.000	1567.880	0.055	-2013.580	2.600
&VALUE	0.500	20.000	60.000	1530.092	0.056	-1964.714	2.600
&VALUE	0.550	20.000	60.000	1495.605	0.058	-1921.684	2.600
&VALUE	0.600	20.000	60.000	1463.873	0.060	-1881.234	2.600
&VALUE	0.650	20.000	60.000	1434.370	0.062	-1842.680	2.600
&VALUE	0.700	20.000	60.000	1406.589	0.063	-1807.512	2.600
&VALUE	0.750	20.000	60.000	1380.040	0.065	-1772.929	2.600
&VALUE	0.800	20.000	60.000	1354.254	0.066	-1740.474	2.600
&VALUE	0.850	20.000	60.000	1328.780	0.068	-1707.390	2.600
&VALUE	0.875	20.000	60.000	1316.024	0.069	-1691.250	2.600
&VALUE	0.900	20.000	60.000	1303.187	0.069	-1675.290	2.600
*							
&VALUE	0.000	0.000	80.000	24070.160	0.036	-30928.221	2.600
&VALUE	0.050	0.000	80.000	22788.669	0.038	-29281.128	2.600
&VALUE	0.100	0.000	80.000	21606.008	0.040	-27759.843	2.600
&VALUE	0.150	0.000	80.000	20517.849	0.043	-26362.725	2.600
&VALUE	0.200	0.000	80.000	19519.254	0.045	-25080.346	2.600
&VALUE	0.250	0.000	80.000	18604.853	0.048	-23905.552	2.600
&VALUE	0.300	0.000	80.000	17769.042	0.050	-22830.993	2.600
&VALUE	0.350	0.000	80.000	17006.201	0.053	-21851.809	2.600
&VALUE	0.400	0.000	80.000	16310.898	0.055	-20958.244	2.600
&VALUE	0.450	0.000	80.000	15678.080	0.058	-20143.258	2.600
&VALUE	0.500	0.000	80.000	15103.224	0.061	-19405.059	2.600
&VALUE	0.550	0.000	80.000	14582.474	0.063	-18737.887	2.600
&VALUE	0.600	0.000	80.000	14112.736	0.066	-18133.569	2.600
&VALUE	0.650	0.000	80.000	13691.765	0.069	-17593.170	2.600
&VALUE	0.700	0.000	80.000	13318.218	0.072	-17111.945	2.600
&VALUE	0.750	0.000	80.000	12991.681	0.074	-16693.297	2.600
&VALUE	0.800	0.000	80.000	12712.656	0.077	-16334.065	2.600
&VALUE	0.850	0.000	80.000	12482.473	0.080	-16037.202	2.600
&VALUE	0.875	0.000	80.000	12386.286	0.082	-15914.047	2.600
&VALUE	0.900	0.000	80.000	12303.058	0.083	-15808.786	2.600
*							
&VALUE	0.000	2.222	80.000	21370.331	0.036	-27459.181	2.600
&VALUE	0.050	2.222	80.000	20276.975	0.038	-26054.159	2.600
&VALUE	0.100	2.222	80.000	19267.031	0.040	-24754.768	2.600
&VALUE	0.150	2.222	80.000	18336.725	0.042	-23559.925	2.600
&VALUE	0.200	2.222	80.000	17481.670	0.045	-22461.434	2.600
&VALUE	0.250	2.222	80.000	16697.020	0.047	-21453.477	2.600
&VALUE	0.300	2.222	80.000	15977.650	0.049	-20529.690	2.600
&VALUE	0.350	2.222	80.000	15318.332	0.052	-19683.423	2.600
&VALUE	0.400	2.222	80.000	14713.917	0.054	-18905.429	2.600
&VALUE	0.450	2.222	80.000	14159.486	0.056	-18194.397	2.600
&VALUE	0.500	2.222	80.000	13650.482	0.059	-17539.116	2.600
&VALUE	0.550	2.222	80.000	13182.819	0.061	-16938.954	2.600
&VALUE	0.600	2.222	80.000	12752.969	0.064	-16386.446	2.600
&VALUE	0.650	2.222	80.000	12358.042	0.066	-15879.719	2.600
&VALUE	0.700	2.222	80.000	11995.841	0.068	-15412.973	2.600
&VALUE	0.750	2.222	80.000	11664.928	0.071	-14988.271	2.600
&VALUE	0.800	2.222	80.000	11364.682	0.073	-14601.655	2.600
&VALUE	0.850	2.222	80.000	11095.352	0.076	-14256.989	2.600
&VALUE	0.875	2.222	80.000	10972.611	0.077	-14098.519	2.600
&VALUE	0.900	2.222	80.000	10858.120	0.078	-13952.434	2.600
*							
&VALUE	0.000	4.444	80.000	18833.144	0.036	-24197.055	2.600
&VALUE	0.050	4.444	80.000	17908.468	0.038	-23009.261	2.600
&VALUE	0.100	4.444	80.000	17055.558	0.040	-21913.087	2.600

&VALUE	0.150	4.444	80.000	16270.985	0.043	-20905.063	2.600
&VALUE	0.200	4.444	80.000	15550.767	0.045	-19982.068	2.600
&VALUE	0.250	4.444	80.000	14890.506	0.047	-19133.085	2.600
&VALUE	0.300	4.444	80.000	14285.527	0.049	-18355.706	2.600
&VALUE	0.350	4.444	80.000	13731.034	0.051	-17643.860	2.600
&VALUE	0.400	4.444	80.000	13222.247	0.054	-16987.757	2.600
&VALUE	0.450	4.444	80.000	12754.524	0.056	-16387.953	2.600
&VALUE	0.500	4.444	80.000	12323.464	0.058	-15832.959	2.600
&VALUE	0.550	4.444	80.000	11924.992	0.060	-15322.825	2.600
&VALUE	0.600	4.444	80.000	11555.420	0.062	-14846.425	2.600
&VALUE	0.650	4.444	80.000	11211.502	0.064	-14406.448	2.600
&VALUE	0.700	4.444	80.000	10890.482	0.066	-13991.969	2.600
&VALUE	0.750	4.444	80.000	10590.129	0.068	-13606.670	2.600
&VALUE	0.800	4.444	80.000	10308.781	0.071	-13244.287	2.600
&VALUE	0.850	4.444	80.000	10045.384	0.073	-12906.889	2.600
&VALUE	0.875	4.444	80.000	9920.266	0.074	-12745.204	2.600
&VALUE	0.900	4.444	80.000	9799.540	0.075	-12591.347	2.600
*							
&VALUE	0.000	6.667	80.000	16368.870	0.037	-21032.832	2.600
&VALUE	0.050	6.667	80.000	15598.189	0.039	-20040.476	2.600
&VALUE	0.100	6.667	80.000	14889.691	0.041	-19131.489	2.600
&VALUE	0.150	6.667	80.000	14240.219	0.043	-18297.817	2.600
&VALUE	0.200	6.667	80.000	13646.170	0.045	-17534.682	2.600
&VALUE	0.250	6.667	80.000	13103.592	0.047	-16835.234	2.600
&VALUE	0.300	6.667	80.000	12608.305	0.049	-16200.457	2.600
&VALUE	0.350	6.667	80.000	12156.017	0.052	-15617.748	2.600
&VALUE	0.400	6.667	80.000	11742.428	0.054	-15088.624	2.600
&VALUE	0.450	6.667	80.000	11363.328	0.056	-14601.715	2.600
&VALUE	0.500	6.667	80.000	11014.668	0.058	-14151.609	2.600
&VALUE	0.550	6.667	80.000	10692.624	0.060	-13738.304	2.600
&VALUE	0.600	6.667	80.000	10393.640	0.062	-13355.647	2.600
&VALUE	0.650	6.667	80.000	10114.461	0.063	-12995.158	2.600
&VALUE	0.700	6.667	80.000	9852.168	0.065	-12659.911	2.600
&VALUE	0.750	6.667	80.000	9604.195	0.067	-12339.417	2.600
&VALUE	0.800	6.667	80.000	9368.359	0.069	-12037.545	2.600
&VALUE	0.850	6.667	80.000	9142.883	0.071	-11748.263	2.600
&VALUE	0.875	6.667	80.000	9033.591	0.072	-11607.259	2.600
&VALUE	0.900	6.667	80.000	8926.422	0.072	-11469.532	2.600
*							
&VALUE	0.000	8.889	80.000	13952.065	0.038	-17925.837	2.600
&VALUE	0.050	8.889	80.000	13322.432	0.040	-17118.698	2.600
&VALUE	0.100	8.889	80.000	12746.381	0.042	-16376.419	2.600
&VALUE	0.150	8.889	80.000	12221.048	0.044	-15702.394	2.600
&VALUE	0.200	8.889	80.000	11743.229	0.046	-15089.316	2.600
&VALUE	0.250	8.889	80.000	11309.462	0.048	-14530.311	2.600
&VALUE	0.300	8.889	80.000	10916.112	0.050	-14025.892	2.600
&VALUE	0.350	8.889	80.000	10559.459	0.052	-13566.517	2.600
&VALUE	0.400	8.889	80.000	10235.778	0.054	-13150.649	2.600
&VALUE	0.450	8.889	80.000	9941.404	0.056	-12772.561	2.600
&VALUE	0.500	8.889	80.000	9672.789	0.058	-12427.639	2.600
&VALUE	0.550	8.889	80.000	9426.537	0.060	-12112.487	2.600
&VALUE	0.600	8.889	80.000	9199.437	0.061	-11819.446	2.600
&VALUE	0.650	8.889	80.000	8988.482	0.063	-11548.060	2.600
&VALUE	0.700	8.889	80.000	8790.886	0.065	-11295.957	2.600
&VALUE	0.750	8.889	80.000	8604.092	0.066	-11055.478	2.600
&VALUE	0.800	8.889	80.000	8425.793	0.068	-10825.920	2.600
&VALUE	0.850	8.889	80.000	8253.939	0.070	-10604.502	2.600
&VALUE	0.875	8.889	80.000	8169.862	0.070	-10497.160	2.600
&VALUE	0.900	8.889	80.000	8086.754	0.071	-10391.692	2.600
*							
&VALUE	0.000	11.111	80.000	11519.347	0.039	-14802.073	2.600
&VALUE	0.050	11.111	80.000	11020.199	0.041	-14160.848	2.600
&VALUE	0.100	11.111	80.000	10566.082	0.043	-13576.744	2.600
&VALUE	0.150	11.111	80.000	10154.497	0.045	-13048.264	2.600
&VALUE	0.200	11.111	80.000	9782.707	0.047	-12568.631	2.600
&VALUE	0.250	11.111	80.000	9447.796	0.049	-12138.350	2.600
&VALUE	0.300	11.111	80.000	9146.737	0.051	-11753.465	2.600
&VALUE	0.350	11.111	80.000	8876.446	0.053	-11403.964	2.600
&VALUE	0.400	11.111	80.000	8633.845	0.055	-11094.578	2.600
&VALUE	0.450	11.111	80.000	8415.901	0.057	-10812.897	2.600
&VALUE	0.500	11.111	80.000	8219.668	0.058	-10560.779	2.600
&VALUE	0.550	11.111	80.000	8042.307	0.060	-10333.330	2.600
&VALUE	0.600	11.111	80.000	7881.105	0.062	-10127.015	2.600
&VALUE	0.650	11.111	80.000	7733.484	0.063	-9936.095	2.600

&VALUE	0.700	11.111	80.000	7597.005	0.065	-9762.115	2.600
&VALUE	0.750	11.111	80.000	7469.375	0.066	-9597.311	2.600
&VALUE	0.800	11.111	80.000	7348.449	0.068	-9441.224	2.600
&VALUE	0.850	11.111	80.000	7232.235	0.069	-9293.618	2.600
&VALUE	0.875	11.111	80.000	7175.317	0.070	-9218.628	2.600
&VALUE	0.900	11.111	80.000	7118.905	0.071	-9147.272	2.600
*							
&VALUE	0.000	13.333	80.000	8152.576	0.039	-10476.031	2.600
&VALUE	0.050	13.333	80.000	7799.335	0.041	-10020.148	2.600
&VALUE	0.100	13.333	80.000	7477.827	0.043	-9606.904	2.600
&VALUE	0.150	13.333	80.000	7186.284	0.045	-9232.464	2.600
&VALUE	0.200	13.333	80.000	6922.767	0.047	-8896.063	2.600
&VALUE	0.250	13.333	80.000	6685.204	0.049	-8590.942	2.600
&VALUE	0.300	13.333	80.000	6471.440	0.051	-8315.962	2.600
&VALUE	0.350	13.333	80.000	6279.274	0.053	-8067.052	2.600
&VALUE	0.400	13.333	80.000	6106.500	0.055	-7844.911	2.600
&VALUE	0.450	13.333	80.000	5950.944	0.056	-7646.686	2.600
&VALUE	0.500	13.333	80.000	5810.481	0.058	-7466.786	2.600
&VALUE	0.550	13.333	80.000	5683.056	0.060	-7302.300	2.600
&VALUE	0.600	13.333	80.000	5566.693	0.061	-7153.459	2.600
&VALUE	0.650	13.333	80.000	5459.501	0.063	-7015.610	2.600
&VALUE	0.700	13.333	80.000	5359.680	0.065	-6886.427	2.600
&VALUE	0.750	13.333	80.000	5265.517	0.066	-6765.841	2.600
&VALUE	0.800	13.333	80.000	5175.392	0.067	-6648.948	2.600
&VALUE	0.850	13.333	80.000	5087.778	0.069	-6537.164	2.600
&VALUE	0.875	13.333	80.000	5044.463	0.069	-6482.607	2.600
&VALUE	0.900	13.333	80.000	5001.248	0.070	-6425.203	2.600
*							
&VALUE	0.000	15.556	80.000	5760.648	0.039	-7401.164	2.600
&VALUE	0.050	15.556	80.000	5511.047	0.041	-7079.924	2.600
&VALUE	0.100	15.556	80.000	5283.794	0.043	-6787.838	2.600
&VALUE	0.150	15.556	80.000	5077.642	0.045	-6522.884	2.600
&VALUE	0.200	15.556	80.000	4891.220	0.047	-6284.004	2.600
&VALUE	0.250	15.556	80.000	4723.059	0.049	-6067.373	2.600
&VALUE	0.300	15.556	80.000	4571.629	0.051	-5872.836	2.600
&VALUE	0.350	15.556	80.000	4435.366	0.053	-5698.035	2.600
&VALUE	0.400	15.556	80.000	4312.700	0.054	-5542.218	2.600
&VALUE	0.450	15.556	80.000	4202.076	0.056	-5399.267	2.600
&VALUE	0.500	15.556	80.000	4101.974	0.058	-5271.348	2.600
&VALUE	0.550	15.556	80.000	4010.917	0.060	-5154.127	2.600
&VALUE	0.600	15.556	80.000	3927.482	0.061	-5045.771	2.600
&VALUE	0.650	15.556	80.000	3850.300	0.063	-4946.912	2.600
&VALUE	0.700	15.556	80.000	3778.058	0.064	-4853.439	2.600
&VALUE	0.750	15.556	80.000	3709.501	0.066	-4766.135	2.600
&VALUE	0.800	15.556	80.000	3643.434	0.067	-4681.036	2.600
&VALUE	0.850	15.556	80.000	3578.719	0.068	-4599.094	2.600
&VALUE	0.875	15.556	80.000	3546.530	0.069	-4556.434	2.600
&VALUE	0.900	15.556	80.000	3514.280	0.070	-4516.490	2.600
*							
&VALUE	0.000	17.778	80.000	4066.354	0.039	-5224.120	2.600
&VALUE	0.050	17.778	80.000	3890.161	0.041	-4997.255	2.600
&VALUE	0.100	17.778	80.000	3729.705	0.043	-4793.373	2.600
&VALUE	0.150	17.778	80.000	3584.106	0.045	-4604.389	2.600
&VALUE	0.200	17.778	80.000	3452.395	0.047	-4436.095	2.600
&VALUE	0.250	17.778	80.000	3333.534	0.049	-4282.156	2.600
&VALUE	0.300	17.778	80.000	3226.440	0.050	-4144.402	2.600
&VALUE	0.350	17.778	80.000	3130.003	0.052	-4021.398	2.600
&VALUE	0.400	17.778	80.000	3043.108	0.054	-3908.796	2.600
&VALUE	0.450	17.778	80.000	2964.651	0.056	-3810.441	2.600
&VALUE	0.500	17.778	80.000	2893.547	0.058	-3716.870	2.600
&VALUE	0.550	17.778	80.000	2828.744	0.059	-3634.736	2.600
&VALUE	0.600	17.778	80.000	2769.220	0.061	-3557.614	2.600
&VALUE	0.650	17.778	80.000	2713.993	0.063	-3487.072	2.600
&VALUE	0.700	17.778	80.000	2662.118	0.064	-3421.581	2.600
&VALUE	0.750	17.778	80.000	2612.685	0.065	-3357.470	2.600
&VALUE	0.800	17.778	80.000	2564.825	0.067	-3296.114	2.600
&VALUE	0.850	17.778	80.000	2517.707	0.068	-3233.945	2.600
&VALUE	0.875	17.778	80.000	2494.176	0.069	-3205.784	2.600
&VALUE	0.900	17.778	80.000	2470.537	0.069	-3174.931	2.600
*							
&VALUE	0.000	20.000	80.000	2868.453	0.039	-3685.322	2.600
&VALUE	0.050	20.000	80.000	2744.162	0.041	-3526.999	2.600
&VALUE	0.100	20.000	80.000	2630.953	0.043	-3379.343	2.600
&VALUE	0.150	20.000	80.000	2528.203	0.045	-3249.695	2.600

&VALUE	0.200	20.000	80.000	2435.231	0.047	-3129.434	2.600
&VALUE	0.250	20.000	80.000	2351.303	0.048	-3020.778	2.600
&VALUE	0.300	20.000	80.000	2275.653	0.050	-2923.517	2.600
&VALUE	0.350	20.000	80.000	2207.495	0.052	-2836.635	2.600
&VALUE	0.400	20.000	80.000	2146.041	0.054	-2758.302	2.600
&VALUE	0.450	20.000	80.000	2090.507	0.056	-2685.057	2.600
&VALUE	0.500	20.000	80.000	2040.123	0.058	-2620.850	2.600
&VALUE	0.550	20.000	80.000	1994.139	0.059	-2563.057	2.600
&VALUE	0.600	20.000	80.000	1951.830	0.061	-2508.328	2.600
&VALUE	0.650	20.000	80.000	1912.493	0.062	-2458.179	2.600
&VALUE	0.700	20.000	80.000	1875.452	0.064	-2409.318	2.600
&VALUE	0.750	20.000	80.000	1840.053	0.065	-2363.319	2.600
&VALUE	0.800	20.000	80.000	1805.672	0.067	-2319.379	2.600
&VALUE	0.850	20.000	80.000	1771.707	0.068	-2276.734	2.600
&VALUE	0.875	20.000	80.000	1754.699	0.069	-2254.447	2.600
&VALUE	0.900	20.000	80.000	1737.582	0.069	-2232.209	2.600
*							
&VALUE	0.000	0.000	100.000	30087.700	0.038	-38658.978	2.600
&VALUE	0.050	0.000	100.000	28485.837	0.040	-36600.782	2.600
&VALUE	0.100	0.000	100.000	27007.511	0.042	-34701.315	2.600
&VALUE	0.150	0.000	100.000	25647.311	0.045	-32953.626	2.600
&VALUE	0.200	0.000	100.000	24399.068	0.047	-31349.788	2.600
&VALUE	0.250	0.000	100.000	23256.067	0.049	-29881.173	2.600
&VALUE	0.300	0.000	100.000	22211.303	0.052	-28538.781	2.600
&VALUE	0.350	0.000	100.000	21257.751	0.054	-27313.584	2.600
&VALUE	0.400	0.000	100.000	20388.623	0.057	-26196.862	2.600
&VALUE	0.450	0.000	100.000	19597.600	0.059	-25180.495	2.600
&VALUE	0.500	0.000	100.000	18879.031	0.062	-24257.222	2.600
&VALUE	0.550	0.000	100.000	18228.092	0.064	-23420.847	2.600
&VALUE	0.600	0.000	100.000	17640.920	0.067	-22666.403	2.600
&VALUE	0.650	0.000	100.000	17114.707	0.069	-21990.284	2.600
&VALUE	0.700	0.000	100.000	16647.773	0.072	-21390.332	2.600
&VALUE	0.750	0.000	100.000	16239.602	0.074	-20865.882	2.600
&VALUE	0.800	0.000	100.000	15890.820	0.077	-20417.741	2.600
&VALUE	0.850	0.000	100.000	15603.091	0.080	-20048.044	2.600
&VALUE	0.875	0.000	100.000	15482.858	0.081	-19893.560	2.600
&VALUE	0.900	0.000	100.000	15378.822	0.083	-19759.887	2.600
*							
&VALUE	0.000	2.222	100.000	26712.913	0.038	-34322.794	2.600
&VALUE	0.050	2.222	100.000	25346.219	0.040	-32566.761	2.600
&VALUE	0.100	2.222	100.000	24083.789	0.042	-30944.694	2.600
&VALUE	0.150	2.222	100.000	22920.906	0.044	-29450.533	2.600
&VALUE	0.200	2.222	100.000	21852.087	0.047	-28077.233	2.600
&VALUE	0.250	2.222	100.000	20871.276	0.049	-26817.011	2.600
&VALUE	0.300	2.222	100.000	19972.062	0.051	-25661.633	2.600
&VALUE	0.350	2.222	100.000	19147.915	0.053	-24602.706	2.600
&VALUE	0.400	2.222	100.000	18392.397	0.056	-23631.958	2.600
&VALUE	0.450	2.222	100.000	17699.358	0.058	-22741.489	2.600
&VALUE	0.500	2.222	100.000	17063.103	0.060	-21923.980	2.600
&VALUE	0.550	2.222	100.000	16478.523	0.062	-21172.867	2.600
&VALUE	0.600	2.222	100.000	15941.212	0.065	-20482.488	2.600
&VALUE	0.650	2.222	100.000	15447.552	0.067	-19848.196	2.600
&VALUE	0.700	2.222	100.000	14994.801	0.069	-19266.467	2.600
&VALUE	0.750	2.222	100.000	14581.161	0.071	-18734.990	2.600
&VALUE	0.800	2.222	100.000	14205.853	0.073	-18252.766	2.600
&VALUE	0.850	2.222	100.000	13869.189	0.076	-17820.195	2.600
&VALUE	0.875	2.222	100.000	13715.764	0.077	-17623.063	2.600
&VALUE	0.900	2.222	100.000	13572.650	0.078	-17439.179	2.600
*							
&VALUE	0.000	4.444	100.000	23541.430	0.039	-30247.830	2.600
&VALUE	0.050	4.444	100.000	22385.585	0.041	-28762.712	2.600
&VALUE	0.100	4.444	100.000	21319.448	0.043	-27392.857	2.600
&VALUE	0.150	4.444	100.000	20338.731	0.045	-26132.757	2.600
&VALUE	0.200	4.444	100.000	19438.459	0.047	-24976.019	2.600
&VALUE	0.250	4.444	100.000	18613.132	0.049	-23915.576	2.600
&VALUE	0.300	4.444	100.000	17856.908	0.051	-22943.922	2.600
&VALUE	0.350	4.444	100.000	17163.792	0.053	-22053.353	2.600
&VALUE	0.400	4.444	100.000	16527.808	0.055	-21236.192	2.600
&VALUE	0.450	4.444	100.000	15943.155	0.057	-20484.984	2.600
&VALUE	0.500	4.444	100.000	15404.331	0.059	-19792.662	2.600
&VALUE	0.550	4.444	100.000	14906.240	0.061	-19152.678	2.600
&VALUE	0.600	4.444	100.000	14444.275	0.063	-18559.109	2.600
&VALUE	0.650	4.444	100.000	14014.378	0.065	-18006.745	2.600
&VALUE	0.700	4.444	100.000	13613.103	0.067	-17491.156	2.600

&VALUE	0.750	4.444	100.000	13237.662	0.069	-17008.760	2.600
&VALUE	0.800	4.444	100.000	12885.976	0.071	-16556.888	2.600
&VALUE	0.850	4.444	100.000	12556.730	0.073	-16133.847	2.600
&VALUE	0.875	4.444	100.000	12400.332	0.074	-15932.895	2.600
&VALUE	0.900	4.444	100.000	12249.425	0.075	-15738.999	2.600
*							
&VALUE	0.000	6.667	100.000	20461.087	0.040	-26289.970	2.600
&VALUE	0.050	6.667	100.000	19497.737	0.042	-25052.183	2.600
&VALUE	0.100	6.667	100.000	18612.113	0.044	-23914.267	2.600
&VALUE	0.150	6.667	100.000	17800.274	0.046	-22871.153	2.600
&VALUE	0.200	6.667	100.000	17057.712	0.048	-21917.053	2.600
&VALUE	0.250	6.667	100.000	16379.490	0.050	-21045.621	2.600
&VALUE	0.300	6.667	100.000	15760.381	0.052	-20250.143	2.600
&VALUE	0.350	6.667	100.000	15195.021	0.054	-19523.725	2.600
&VALUE	0.400	6.667	100.000	14678.035	0.056	-18859.462	2.600
&VALUE	0.450	6.667	100.000	14204.160	0.058	-18250.591	2.600
&VALUE	0.500	6.667	100.000	13768.335	0.059	-17690.610	2.600
&VALUE	0.550	6.667	100.000	13365.780	0.061	-17173.377	2.600
&VALUE	0.600	6.667	100.000	12992.050	0.063	-16693.179	2.600
&VALUE	0.650	6.667	100.000	12643.076	0.065	-16244.792	2.600
&VALUE	0.700	6.667	100.000	12315.210	0.067	-15823.523	2.600
&VALUE	0.750	6.667	100.000	12005.244	0.068	-15425.255	2.600
&VALUE	0.800	6.667	100.000	11710.449	0.070	-15046.480	2.600
&VALUE	0.850	6.667	100.000	11428.603	0.072	-14684.343	2.600
&VALUE	0.875	6.667	100.000	11291.989	0.072	-14508.811	2.600
&VALUE	0.900	6.667	100.000	11158.027	0.073	-14336.687	2.600
*							
&VALUE	0.000	8.889	100.000	17440.081	0.041	-22408.350	2.600
&VALUE	0.050	8.889	100.000	16653.040	0.043	-21397.100	2.600
&VALUE	0.100	8.889	100.000	15932.976	0.045	-20471.907	2.600
&VALUE	0.150	8.889	100.000	15276.310	0.047	-19628.171	2.600
&VALUE	0.200	8.889	100.000	14679.037	0.049	-18860.749	2.600
&VALUE	0.250	8.889	100.000	14136.828	0.051	-18164.077	2.600
&VALUE	0.300	8.889	100.000	13645.140	0.052	-17532.319	2.600
&VALUE	0.350	8.889	100.000	13199.324	0.054	-16959.501	2.600
&VALUE	0.400	8.889	100.000	12794.722	0.056	-16439.638	2.600
&VALUE	0.450	8.889	100.000	12426.756	0.058	-15966.846	2.600
&VALUE	0.500	8.889	100.000	12090.987	0.060	-15535.424	2.600
&VALUE	0.550	8.889	100.000	11783.172	0.062	-15139.920	2.600
&VALUE	0.600	8.889	100.000	11499.297	0.063	-14775.176	2.600
&VALUE	0.650	8.889	100.000	11235.603	0.065	-14436.362	2.600
&VALUE	0.700	8.889	100.000	10988.607	0.066	-14119.003	2.600
&VALUE	0.750	8.889	100.000	10755.115	0.068	-13818.995	2.600
&VALUE	0.800	8.889	100.000	10532.242	0.069	-13532.630	2.600
&VALUE	0.850	8.889	100.000	10317.423	0.071	-13256.615	2.600
&VALUE	0.875	8.889	100.000	10212.328	0.072	-13121.580	2.600
&VALUE	0.900	8.889	100.000	10108.443	0.072	-12988.100	2.600
*							
&VALUE	0.000	11.111	100.000	14399.183	0.042	-18501.172	2.600
&VALUE	0.050	11.111	100.000	13775.248	0.044	-17699.493	2.600
&VALUE	0.100	11.111	100.000	13207.603	0.046	-16970.139	2.600
&VALUE	0.150	11.111	100.000	12693.121	0.048	-16309.093	2.600
&VALUE	0.200	11.111	100.000	12228.383	0.050	-15711.962	2.600
&VALUE	0.250	11.111	100.000	11809.745	0.052	-15174.064	2.600
&VALUE	0.300	11.111	100.000	11433.421	0.054	-14690.534	2.600
&VALUE	0.350	11.111	100.000	11095.558	0.055	-14256.421	2.600
&VALUE	0.400	11.111	100.000	10792.306	0.057	-13866.780	2.600
&VALUE	0.450	11.111	100.000	10519.876	0.059	-13516.741	2.600
&VALUE	0.500	11.111	100.000	10274.585	0.061	-13201.572	2.600
&VALUE	0.550	11.111	100.000	10052.884	0.062	-12916.714	2.600
&VALUE	0.600	11.111	100.000	9851.382	0.064	-12657.809	2.600
&VALUE	0.650	11.111	100.000	9666.855	0.065	-12420.715	2.600
&VALUE	0.700	11.111	100.000	9496.256	0.067	-12201.517	2.600
&VALUE	0.750	11.111	100.000	9336.719	0.068	-11996.530	2.600
&VALUE	0.800	11.111	100.000	9185.561	0.069	-11802.311	2.600
&VALUE	0.850	11.111	100.000	9040.294	0.071	-11615.661	2.600
&VALUE	0.875	11.111	100.000	8969.146	0.071	-11524.245	2.600
&VALUE	0.900	11.111	100.000	8898.631	0.072	-11433.641	2.600
*							
&VALUE	0.000	13.333	100.000	10190.721	0.042	-13093.817	2.600
&VALUE	0.050	13.333	100.000	9749.169	0.044	-12526.478	2.600
&VALUE	0.100	13.333	100.000	9347.284	0.046	-12010.105	2.600
&VALUE	0.150	13.333	100.000	8982.855	0.048	-11541.859	2.600
&VALUE	0.200	13.333	100.000	8653.458	0.050	-11118.625	2.600

&VALUE	0.250	13.333	100.000	8356.506	0.051	-10737.077	2.600
&VALUE	0.300	13.333	100.000	8089.300	0.053	-10393.752	2.600
&VALUE	0.350	13.333	100.000	7849.092	0.055	-10085.114	2.600
&VALUE	0.400	13.333	100.000	7633.126	0.057	-9807.623	2.600
&VALUE	0.450	13.333	100.000	7438.681	0.059	-9557.786	2.600
&VALUE	0.500	13.333	100.000	7263.102	0.060	-9332.189	2.600
&VALUE	0.550	13.333	100.000	7103.820	0.062	-9127.531	2.600
&VALUE	0.600	13.333	100.000	6958.366	0.063	-8940.641	2.600
&VALUE	0.650	13.333	100.000	6824.377	0.065	-8768.481	2.600
&VALUE	0.700	13.333	100.000	6699.600	0.066	-8608.158	2.600
&VALUE	0.750	13.333	100.000	6581.896	0.068	-8456.923	2.600
&VALUE	0.800	13.333	100.000	6469.239	0.069	-8312.174	2.600
&VALUE	0.850	13.333	100.000	6359.723	0.070	-8171.458	2.600
&VALUE	0.875	13.333	100.000	6305.579	0.071	-8101.890	2.600
&VALUE	0.900	13.333	100.000	6251.560	0.071	-8032.482	2.600
*							
&VALUE	0.000	15.556	100.000	7200.810	0.042	-9252.152	2.600
&VALUE	0.050	15.556	100.000	6888.809	0.044	-8851.269	2.600
&VALUE	0.100	15.556	100.000	6604.743	0.046	-8486.279	2.600
&VALUE	0.150	15.556	100.000	6347.053	0.047	-8155.179	2.600
&VALUE	0.200	15.556	100.000	6114.024	0.049	-7855.766	2.600
&VALUE	0.250	15.556	100.000	5903.823	0.051	-7585.684	2.600
&VALUE	0.300	15.556	100.000	5714.536	0.053	-7342.473	2.600
&VALUE	0.350	15.556	100.000	5544.208	0.055	-7123.622	2.600
&VALUE	0.400	15.556	100.000	5390.874	0.057	-6926.608	2.600
&VALUE	0.450	15.556	100.000	5252.595	0.058	-6748.935	2.600
&VALUE	0.500	15.556	100.000	5127.467	0.060	-6588.162	2.600
&VALUE	0.550	15.556	100.000	5013.647	0.062	-6441.917	2.600
&VALUE	0.600	15.556	100.000	4909.353	0.063	-6307.912	2.600
&VALUE	0.650	15.556	100.000	4812.875	0.065	-6183.950	2.600
&VALUE	0.700	15.556	100.000	4722.572	0.066	-6067.922	2.600
&VALUE	0.750	15.556	100.000	4636.876	0.067	-5957.813	2.600
&VALUE	0.800	15.556	100.000	4554.292	0.069	-5851.703	2.600
&VALUE	0.850	15.556	100.000	4473.399	0.070	-5747.765	2.600
&VALUE	0.875	15.556	100.000	4433.162	0.070	-5696.066	2.600
&VALUE	0.900	15.556	100.000	4392.850	0.071	-5644.270	2.600
*							
&VALUE	0.000	17.778	100.000	5082.942	0.042	-6530.953	2.600
&VALUE	0.050	17.778	100.000	4862.702	0.043	-6247.971	2.600
&VALUE	0.100	17.778	100.000	4662.132	0.045	-5990.264	2.600
&VALUE	0.150	17.778	100.000	4480.133	0.047	-5756.417	2.600
&VALUE	0.200	17.778	100.000	4315.494	0.049	-5544.877	2.600
&VALUE	0.250	17.778	100.000	4166.918	0.051	-5353.975	2.600
&VALUE	0.300	17.778	100.000	4033.050	0.053	-5181.971	2.600
&VALUE	0.350	17.778	100.000	3912.503	0.055	-5027.084	2.600
&VALUE	0.400	17.778	100.000	3803.885	0.056	-4887.522	2.600
&VALUE	0.450	17.778	100.000	3705.813	0.058	-4761.512	2.600
&VALUE	0.500	17.778	100.000	3616.934	0.060	-4647.313	2.600
&VALUE	0.550	17.778	100.000	3535.929	0.061	-4543.233	2.600
&VALUE	0.600	17.778	100.000	3461.525	0.063	-4447.632	2.600
&VALUE	0.650	17.778	100.000	3392.491	0.064	-4358.932	2.600
&VALUE	0.700	17.778	100.000	3327.647	0.066	-4275.615	2.600
&VALUE	0.750	17.778	100.000	3265.856	0.067	-4196.222	2.600
&VALUE	0.800	17.778	100.000	3206.032	0.068	-4119.355	2.600
&VALUE	0.850	17.778	100.000	3147.133	0.070	-4043.678	2.600
&VALUE	0.875	17.778	100.000	3117.720	0.070	-4005.885	2.600
&VALUE	0.900	17.778	100.000	3088.171	0.071	-3967.918	2.600
*							
&VALUE	0.000	20.000	100.000	3585.566	0.042	-4607.010	2.600
&VALUE	0.050	20.000	100.000	3430.203	0.043	-4407.387	2.600
&VALUE	0.100	20.000	100.000	3288.691	0.045	-4225.561	2.600
&VALUE	0.150	20.000	100.000	3160.254	0.047	-4060.536	2.600
&VALUE	0.200	20.000	100.000	3044.039	0.049	-3911.214	2.600
&VALUE	0.250	20.000	100.000	2939.129	0.051	-3776.417	2.600
&VALUE	0.300	20.000	100.000	2844.566	0.053	-3654.916	2.600
&VALUE	0.350	20.000	100.000	2759.369	0.055	-3545.449	2.600
&VALUE	0.400	20.000	100.000	2682.552	0.056	-3446.747	2.600
&VALUE	0.450	20.000	100.000	2613.134	0.058	-3357.554	2.600
&VALUE	0.500	20.000	100.000	2550.154	0.060	-3276.632	2.600
&VALUE	0.550	20.000	100.000	2492.674	0.061	-3202.779	2.600
&VALUE	0.600	20.000	100.000	2439.788	0.063	-3134.826	2.600
&VALUE	0.650	20.000	100.000	2390.617	0.064	-3071.647	2.600
&VALUE	0.700	20.000	100.000	2344.314	0.066	-3012.155	2.600
&VALUE	0.750	20.000	100.000	2300.067	0.067	-2955.302	2.600

&VALUE	0.800	20.000	100.000	2257.090	0.068	-2900.082	2.600
&VALUE	0.850	20.000	100.000	2214.634	0.069	-2845.531	2.600
&VALUE	0.875	20.000	100.000	2193.374	0.070	-2818.215	2.600
&VALUE	0.900	20.000	100.000	2171.978	0.071	-2790.723	2.600

&END.

APPENDIX G

WEIGHTS AND INERTIA MODEL FOR CITATION X
IN VATES DATA STANDARD

There is 1 file that comprises the propulsion definition for the Citation X in the VATES data standard. It is constructed with the design optimization tool PrADO. There descriptions and contents follow: INERTIA.INP.

```

&ARG01      C   PROTOCOL          0   DCLEAN1
&ARG02      C   TEST_CONDITION    0   TEST0001.CND
&ARG03      C   REPORT_CODE       0   18-11
&ARG04      X   TOGW              1   REF. BELOW
&ARG05      X   RESERVE           2   REF. BELOW
&ARG06      X   RESERVE           9   REF. BELOW
&ARG07      X   IXX               44  0.0
&ARG08      X   IYY               45  0.0
&ARG09      X   IZZ               46  0.0
&ARG10      X   IXZ               47  0.0
*
&SNAME      &ARG04      &ARG05      &ARG06      &FUN01      &FUN02      &FUN03      &FUN04
&UNAME      TOGW       RESERVE     RESERVE     IXX        IYY        IZZ        IXZ
&FORMAT     XXXXXXXX.XX XXXXXXXX.XX XXXXXXXX.XX XXXXXXXX.XX XXXXXXXX.XX XXXXXXXX.XX XXXXXXXX.XX
*
&VALUE      36155.00   00000.00   00000.00   82445.25   166016.00   229956.31   00000.00
&END

```

REFERENCES

1. Chudoba, Bernd. "Stability and Control of Conventional and Unconventional Aircraft Configuration." Books-on-Demand GmbH. 2001.
2. Anonymous. "Computers in Engineering: Visualizing the Future of Aerospace" Aerospace Engineering. June 2006: 30-31.
3. Costlow, Terry. "Simulating Real-time Safety." Aerospace Engineering. June 2006: 14-16.
4. Hughes, David. "787 Proving Ground." Aviation Week and Space Technology. June 18, 2007: 156.
5. Burdun, I; Chudoba, B. "Virtual Test and Evaluation of Air France Concorde Flight No. AF4590: Preliminary Case Study, 26 July 2000." Future Projects, E2 Presentation. July 27, 2000.
6. Burdun, I "Virtual Test and Evaluation of Air France Concorde Flight No. AF4590 (Preliminary Case Study, July 26, 2000)." 2000.
7. BEA. "Accident on 25 July 2000 at La Patte d'Oie in Gonesse (95) to the Concorde registered F-BTSC operated by Air France." Bureau D'Enquetes ET D'Analyses Pour La Securite De L'Aviation Civile. Jan 2002. F-SC000725a.
8. Anonymous. "Reader Reaction Letter." Aviation Week and Space Technology. February 20, 1995: 8-10.
9. Learmount, David. "NTSB Fuels 587 Crash Controversy." Flight International. 9-15 March 2004: 6.
10. French Commission of Investigation. "Team Simulates A330 Autopilot's Abnormal Pitch Commands." Aviation Week and Space Technology. May 15, 1995: 58-60.

11. French Commission of Investigation. "A330 Crash Analysis: Weather, Engine Failure Not Factors." *Aviation Week and Space Technology*. May 22, 1995: 55-56.
12. Learmount, David. " 'Fatal Flaw' Made Challenger 604 Lose Pitch Control." *Flight International*. 15-21 January 2008: 17.
13. Norris, Guy. "737 Rudder Issues Resurface Despite Redesign." *Flight International*. 13-19 February 2007: 13.
14. Phillips, EH. "NTSB Tests Focus On 737 Rudder." *Aviation Week and Space Technology*. Feb. 26. 1996: 31.
15. Anonymous. "Electric Shock." *Flight International*. 15-21 January 2008: 3."
16. Norris, Guy. "Certification For Stage 4 MD-80 Kit." *Flight International*. 20-26 February 2007: 6.
17. Rybak, Boris. "Long-Delayed AN-70 Flight Testing Begins." *Aviation Week and Space Technology*. Jan. 9, 1995: 35.
18. Norris, Guy. "Short-Field 737 Goes Into Flight Test." *Flight International*. 3-9 January 2006: 9.
19. Collins, Peter. "Korea High." *Flight International*. 21-27 February 2006: 58-63.
20. Dillenschneider, P. G., A. W. Shaw. "Use of Ground Based Simulators in Aircraft Design." *Journal of Aircraft* Vol. 8 No. 2 (1971): 113-119.
21. Roskam, Jan. Aircraft Design – Part VII: Determination of Stability, Control and Performance Characteristics: FAR and Military Requirements. DAR Corporation. 2002.
22. Torenbeek, Egbert. Synthesis of Subsonic Airplane Design. Kluwer Academic Publishers. 1982.
23. Nicolai, LM. Fundamentals of Aircraft Design. Mets. 1975.
24. Loftin, LK. "Subsonic Aircraft: Evolution and the Matching of Size and Performance". NASA. 1980. NASA-RP-1060.

25. Chudoba,B; A. Oza. "AVD Laboratory Product Life-Cycle Development Capability: From Initial Sizing to Accident Investigation." Presentation to Flight Operations Group, Lockheed Martin. Jan 26, 2008.
26. US Air Force. "Flying Qualities Testing". Air Force Flight Test Center, Edwards AFB. 2002.
27. Gallagher GL, LB Higgins, et al. "Fixed Wing Performance – Theory and Flight Test Techniques". Naval Air Warfare Center, Aircraft Division, Patuxent River, MD. 1997. USNTPS-FTM-No. 108. 1992.
28. US Navy. "Fixed Wing Stability and Control– Theory and Flight Test Techniques". Naval Air Warfare Center, Aircraft Division, Patuxent River, MD. 1997. USNTPS-FTM-No. 103. 1997.
29. Burdun, I. "Introduction to Computation Flight Dynamics for Aircraft Safety Performance Analysis and Prediction Using VATES Tool". Presentation to AVD Lab – University of Texas at Arlington. Feb 4-7, 2008.
30. Rasmussen, S. J., S. G. Breslin, "AVDS: A Flight Systems Design Tool For Visualization and Engineer-In-The-Loop Simulation." AIAA Conference Proceeding. 1997. AIAA-97-3467.
31. Anderson, F. G., D. J. Biezad, "A Low-Cost Flight Simulation for Handling Qualities Evaluations During Design." AIAA Conference Proceeding. 1998. AIAA-98-4368.
32. Kellett, M. G., A. Robinson, et al. "Real-Time Flight Simulation for Graduate Aerospace Education." AIAA Conference Proceeding. 1998. AIAA-98-4371.
33. Burdun, I. Y., D. N. Mavris. "A Technique for Testing and Evaluation of Aircraft Flight Performance During Early Design Phases." World Aviation Congress Conference Proceeding, Anaheim, CA. 1997. SAE-975541.
34. Totah, J. J., D. J. Kinney, et al. "An Integrated Vehicle Modeling Environment." AIAA Conference Proceeding. 1999. AIAA-99-4106
35. Render, P. M., L. R. Jenkinson, et al. "The Integration of Simulators, Personal Computers and Aircraft in Teaching Aircraft Design." AIAA 33rd Aerospace Sciences Meeting and Exhibit Conference Proceeding, Reno, NV. 1995. AIAA-95-0069.

36. Baldwin, D. M., J. D. Drewett. "The Air Combat Simulator and its Role in the Aircraft Development Process." AIAA/AHS/ASEE Aircraft Systems, Design, and Technology Meeting, Dayton, OH. 1986. AIAA-86-2682.
37. Scharl, J. "Formulation and Implementation of a Methodology for Dynamic Modeling and Simulation in Early Aerospace Design". PhD Dissertation, Georgia Institute of Technology. 2001.
38. Homsy, P., P. Webster. "CRESCENDO: Collaborative and Robust Engineering using Simulation Capability Enabling Next Design Optimisation." SME Aero Workshop. Nov 30, 2007.
39. Amit Oza Personal Communication with Jeff Canclini. Feb 2008.
40. Amit Oza Personal Communication with Dan Canin. Feb 2008.
41. Amit Oza Personal Communication with Gerald Bausey. Feb 2007.
42. Amit Oza Personal Communication with Harry Dunbrack. March 2008.
43. Amit Oza Personal Communication with Bob Hoey. April 2007.
44. Amit Oza Personal Communication with William Norton. December 2007.
45. Amit Oza Personal Communication with Andy Hahn. May 2009.
46. Amit Oza Personal Communication with Mark Moore. May 2009.
47. Amit Oza Personal Communication with William Schweikhard. September 2007
48. . Amit Oza Personal Communication with Jacques Rosay. November 2007
49. Burdun, Ivan., "*Method and Tool For Virtual Flight Testing and Evaluation Of Aircraft*", 6th Annual International Science & Technology Symposium (Aerospace Technologies of the XXI Century: New Challenges in Aeronautics), Central Aero-Hydrodynamic Institute, Zhukovsky, Russia, Aug. 2001
50. Burdun, IY. "*Virtual Autonomous Test and Evaluation Simulator (VATES): User's Manual.*" 2nd Edition. Novosibirsk, Russia. July 2001

51. Stevens, BL; Lewis FL. "Aircraft Control and Simulation." 2nd ed. John Wiley and Sons, Inc: Hoboken, NJ. 2003.
52. Dreier, ME. "Introduction to Helicopter and Tiltrotor Flight Simulation." American Institute of Aeronautics and Astronautics: Reston, Virginia. 2007.
53. Abzug, MJ. "Computational Flight Dynamics." American Institute of Aeronautics and Astronautics. 1998.
54. Coleman, GJ. "A Generic Stability and Control Tool for Flight Vehicle Conceptual Design." Thesis. University of Texas at Arlington. 2007.
55. Lan, E., "User's Manual for VORSTAB Code (Version 3.2)," Department of Aerospace Engineering, The University of Kansas, Kansas, 1999.
56. Ammoniums, "The USAF Stability and Control DATCOM, Volume I, User's Manual," Public Domain Aeronautical Software, California, 1999.
57. Miranda, L., Elliot, D., "A Generalized Vortex Lattice Method for Subsonic and Supersonic Flow Applications," NASA CR-2865, 1977.
58. Colman, G, A Oza. "DATCOM^{MAX} User's Guide." AVD Lab Internal Document, UT at Arlington. May 2009.
59. Heinze, W., "Ein Beitrag zur quantitativen Analyse der technischen und wirtschaftlichen Auslegungsgrenzen verschiedenster Flugzeugkonzepte für den Transport großer Nutzlasten," Ph.D. Thesis, Technische Universität Braunschweig, Institut für Flugzeugbau und Leichtbau, ZLR-Forschungsbericht 94-01, Februar 1994.
60. Burdun, I. "VATES Aircraft Input Parametric Definition Database Construction Algorithm: 'Do-It-Yourself' Steps 00-11 Brief Instruction – User's Manual." Intelonics, Ltd: Novosibirsk, Russia. April 2009.
61. Burdun, EI. "Prediction of Civil Airplane Flight Safety in Complex Conditions." School of Transport and Mechanical Engineering Aviation Institute: Riga Technical University. 2008.
62. Amit Oza Personal Communication with Bob Hoey. March 2007.

63. Wilson, R., "*Business Aviation Outlook*," Honeywell Aerospace, Presentation NBAA 2006. 2006.
64. Chase, M. "Aircraft Comparative Analysis – Citation X." <www.avbuyer.com>. Accessed 7-15-09.
65. Anon. "Bombardier Learjet 85." <www.learjet85.com>. Accessed 7-15-09.
66. Anon. "G650". <www.gulfstream.com/gulfstream650/>. Accessed 7-15-09.
67. Anon., "2009-2027 Business Jet Outlook," EBACE 2008, Rolls-Royce plc., 2008
68. Warwick, G, B. Wilson. "Cessna Citation Columbus Program Killed." <www.aviationweek.com>. Accessed 7-15-09.
69. Coleman, G, A. Oza. "Conceptual Design of the Cessna Citation X Towards a Control Configured Vehicle – Part 1: Mission Definition and Parametric Sizing." AVD Lab Internal Document, UT at Arlington. June 2008.
70. Kalberer, P., "*Design Challengers of the High Mach Citation X Business Aircraft*," AIAA-95-3952, 1st AIAA Aircraft Engineering, Technology and Operations Congress, Los Angeles, CA, September, 1995.
71. Coleman, G, A. Oza. "Conceptual Design of the Cessna Citation X Towards a Control Configured Vehicle – Part 2: Configuration Layout." AVD Lab Internal Document, UT at Arlington. June 2008.
72. Coleman, G, A. Oza. "Conceptual Design of the Cessna Citation X Towards a Control Configured Vehicle – Part 3: Configuration Evaluation." AVD Lab Internal Document, UT at Arlington. June 2008.
73. Anon, "*Structural Repair Manual, Model 750 Citation X*," Cessna Aircraft Company, Wichita, Kansas, 1996.
74. Corning, G., "*Supersonic and Subsonic Airplane Design*," 2nd Edition, Edward Brothers, Ann Arbor, Michigan, 1953.
75. Anon. "Citation X Maintenance Schematic Manual." FlightSafety International.

76. Anon., *"Revision 37 Model 750 Maintenance Manual,"* Cessna Aircraft Company, Wichita, Kansas, 2008.
77. Anon. "Citation X Pilot Training Manual. Volume 1. Operational Information", Flight Safety International Inc., USA, 2003, 353 pp.
78. Anon. "Citation X Operating Handbook", CAE SimuFlite Inc., USA, 2004.
79. Tomas A. Horne, "The Power of Ten", AOPA Pilot, April 1997, pp. T-9 – T-16
80. Anon, "Cessna Citation X Specification and Description," Cessna Aircraft Company, Kansas.
81. Amit Oza Personal Communication with Thompson Petroleum Pilots for Flight Test Scheduling (Bob Gilmer and Vance Purtell). March 2009.
82. Amit Oza Personal Communication with Thompson Petroleum Pilots (Bob Gilmer and Vance Purtell) for Product Review. May 2009.

BIOGRAPHICAL INFORMATION

Amit Oza's journey into aircraft started while he was still in grade school. During this time, the sight of anything flying would cause him pause and wonder why and how an aircraft works?. It was only a 'slap to the head' that would return his attention to finishing a run to homeplate or moving from the center of the street to let traffic pass. In the end, it was not until his undergraduate studies at the University of Oklahoma that his questions would be start to be answered

By the age of 22 Amit, was a research student in the Aerospace Vehicle Design (AVD) Lab at the University of Texas at Arlington. Under this environment, his Master's career into conceptual design began. His initial involvement with the AVD Lab was for Supersonic Business Jet, modified from a LearJet 23, under a contract from SpirtWing Aviation. At the conclusion of this work, he began his primary research into developing a new flight safety discipline for conceptual design.

Additionally, during his Master's research he: (1) in conjunction with the AVD Lab worked on a NASA future long-haul commercial transport initiative, (2) worked on a contract to develop a hypersonic commercial transport, (3) has produced 3 AIAA conference papers, (4) has been a co-author on four journal papers, and (5) has worked as a graduate teaching assistant for Compressible and Incompressible Aerodynamics, Statics, Thermal Engineering, and Introduction to Aerospace.

His future plans include continuing on with PhD research in the AVD Lab at the University of Texas at Arlington for flight test and flight safety emulation inconceptual design and develop concepts into decision-making and design productivity.