AD NUMBER

AD870149

LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

FROM:

Distribution authorized to U.S. Gov't. agencies and their contractors; Critical Technology; MAR 1970. Other requests shall be referred to Air Force Armament Laboratory, ATTN: ATM, Eglin AFB, FL 32542. This document contains export-controlled technical data.

AUTHORITY

AFATL ltr dtd 19 Apr 1976

TR-70-26

: I

METHODS FOR PREDICTING CONTAMINATION DENSITY AND OFF-TARGET DRIFT OF DEFOLIANT MATERIALS

VOLUME I. METHODOLOGY AND SUMMARY OF RESULTS

BOOZ ALLEN APPLIED RESEARCH, INC.

TECHNICAL REPORT AFATL-TR-70-26, VOLUME I

MARCH 1970

AIR FORCE ARMAMENT LABORATORY

AIR FORCE SYSTEMS COMMAND • UNITED STATES AIR FORCE

EGLIN AIR FORCE BASE, FLORIDA

METHODS FOR PREDICTING CONTAMINATION DENSITY AND OFF-TARGET DRIFT OF DEFOLIANT MATERIALS

Volume I. Methodology and Summary of Results

Nolan E. Taconi, Jr.
Joseph M. Jones

FOREWORD

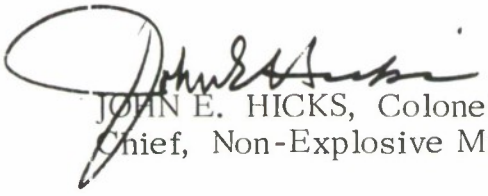
The material presented in this report was prepared for the U. S. Air Force Armament Laboratory, Eglin Air Force Base, Florida, by Booz, Allen Applied Research, Inc., under U. S. Air Force Contract Number F08635-68-C-0015. The research was performed under the technical cognizance of Mr. John M. Scott (ATM), and Lt. Andrew J. Kukura (ATMM), during the period 1 September 1968 through 31 August 1969.

The assistance of the staff of the Mathematical Services Laboratory, Eglin Air Force Base, Florida, is gratefully acknowledged.

Volume I constitutes the main body of the report, and Volume II is a programmer's manual. Both volumes are unclassified.

Information in this report is embargoed under the Department of State International Traffic In Arms Regulations. This report may be released to foreign governments by departments or agencies of the U. S. Government subject to approval of the Air Force Armament Laboratory (ATM), Eglin Air Force Base, Florida 32542, or higher authority within the Department of the Air Force. Private individuals or firms require a Department of State export license.

Publication of this report does not constitute Air Force approval of the report's findings or conclusions. It is published only for the exchange and stimulation of ideas.



JOHN E. HICKS, Colonel, USAF
Chief, Non-Explosive Munitions Division

ABSTRACT

This report describes the results achieved for the study titled "Methods for Predicting Contamination Density and Off-Target Drift of Defoliant Materials." Although several mathematical models presently exist which calculate contamination density under a variety of variable conditions, no one model is suitable for the calculation of contamination density and off-target drift of defoliant material when released from the aircraft internal defoliant dispenser A/A45Y-1. In response to this deficiency, methodology has been developed which enables the prediction of target contamination levels and estimation of off-target drift of defoliant material.

The report consists of two volumes. Volume I provides a detailed description of the methodology. This includes a brief description of the computerized DEFOL program. The model can simulate combinations of defoliation missions which utilize multiple aircraft, different meteorological conditions, different aircraft delivery modes, and different defoliation agents. The methodology was applied to seventeen different test trials, the analysis of which is included in Volume I. Recommendations are made regarding the future utilization of this methodology.

Volume II is a programmer's manual. It contains information needed to properly use the model. Input requirements and a description of output parameters are discussed in detail. Also included in Volume II is a program listing and a logic flow chart of program DEFOL.

(The reverse of this page is blank.)

TABLE OF CONTENTS

TABLE OF CONTENTS (Concluded)

LIST OF FIGURES

LIST OF FIGURES (Continued)

LIST OF FIGURES (Continued)

LIST OF FIGURES (Concluded)

LIST OF TABLES

(The reverse of this page is blank.)

SECTION I

INTRODUCTION

The U. S. Air Force Armament Laboratory (AFATL) has stated a need for methods to be used for determining contamination density and off-target drift of defoliant materials. The Joint Munitions Effectiveness Manual (JMEM) for defoliants contains deposition data based primarily upon observations of defoliant operations and, therefore, does not lend itself to the determination of off-target drift. Although several mathematical models presently exist which calculate contamination density under a variety of variable conditions, no one model is suitable for the calculation of contamination density and off-target drift of defoliant material when released from the aircraft internal defoliant dispenser A/A45Y-1. Consequently, a great deal of confusion exists for the user when attempts are made to obtain meaningful predictions of contamination density on and near the target location.

1. BACKGROUND

The development of defoliants for jungle warfare dates back to 1942 with the establishment of Fort Detrick. The tactical uses of chemical defoliants became apparent, and by 1945 aerial spraying of several inorganic defoliants was tested against subtropical vegetation in the Florida Everglades. Use of defoliants during World War II was never approved. In a post-war program, Fort Detrick demonstrated a successful vegetation control program. After this successful demonstration, a variety of chemical agents were shipped to Vietnam, and from July 1961 to April 1962, a series of defoliation trials was conducted(1).

Present utilization of chemical defoliants in Vietnam is conducted under Operation Ranch Hand. The chemical normally used is agent Orange, a general purpose herbicide. Determination of many aerial spray characteristics has resulted from the experience gained from Operation Ranch Hand(2). These include the following:

- With aircraft delivery conditions at 130 KIAS and 150 feet altitude, most of the agent Orange released varies in droplet size from 100μ to 500μ, and the spray mist settles onto the forest canopy in a swath approximately 260 feet wide within which effective defoliation is produced.

- Spray drift of fine droplets (droplet size $\leq$100μ) influences the effectiveness of herbicide applications, and occasionally some spray drifts from target areas causing damage to adjacent rice crops and rubber trees.

- A deposition level of one gallon per acre is the minimum level which will produce acceptable defoliation.

There currently exists a JMEM for defoliants which contains information on the effectiveness of chemical defoliants disseminated from the A/A45Y-1 when delivered by the C-123 aircraft. While the JMEM does provide effectiveness tables which reflect major delivery and environmental variables, the data presented were based primarily on field data. Therefore, the parameter ranges for wind speed, release height, etc., are limited by the nature of their derivation which, in turn, reduces the utility of the JMEM. Additionally, there does not exist a method for interpolating between or extrapolating beyond the JMEM data. This limitation, however, would be overcome as a result of the development of a suitable model which would be capable of predicting contamination density produced by defoliant agents. Finally, the JMEM does not account for off-target drift.

In fact, no single methodology has been developed to date which gives the concentration of a defoliant agent for the 10μ to 500μ particle range. Since substantial concentrations of particle size 10μ to 100μ can drift away from the target and cause undesirable off-target defoliation, there exists a need for a methodology to be developed to predict target contamination levels and to determine off-target drift of defoliant material.

2. OBJECTIVE AND SCOPE

The primary objective of this study was to develop methods for measuring the effectiveness of spray tank systems which release defoliant agents. The scope of this study was limited to consideration of the target contamination levels and off-target drift associated with the release of defoliant materials from the A/A45Y-1 spray tank carried in the C-123 aircraft.

- Review of pertinent test information to determine the agent and system characteristics which were considered in choosing an applicable model.

- Review of existing models to determine their applicability to this study.

- Development of a methodology for prediction purposes.

- Development of a computer program based upon the developed methodology which produced simplified solutions to problems involving the calculation of contamination density and estimation of off-target drift of defoliant material when released from the A/A45Y-1 spray tank.

- Evaluation of the computer model based upon available test data.

SECTION II

METHODOLOGY

1. BACKGROUND

Several models were reviewed to determine their applicability to the problem of determining contamination density and estimating off-target drift of defoliant materials when released from the A/A45Y-1 defoliant system. Two models appeared to be feasible for use but were subject to modifications necessary to adapt them to defoliation trials. These models are listed below.

- The Numerical Solution of Atmospheric Diffusion Equations by Finite-Difference Methods.
- FILIS, a finite line source model that is a subroutine of ARCHON.

2. GENERAL DESCRIPTION OF MODELS STUDIED

a. The Numerical Solution of Atmospheric Diffusion Equations by Finite-Difference Methods

This model was developed by Mr. Kenneth L. Calder, Aerobiology and Evaluation Laboratory, Fort Detrick, Maryland. It utilizes the classical eddy-diffusivity approach to the problem of turbulent diffusion, but uses a rapid method of approximate numerical solution of the appropriate diffusion equation based on the standard method of finite-differences[3]. Although this model has been substantiated by the Victoria Diffusion Trials[4] and the Matagorda Test Trials[5], it was determined that the model was too complex and lacked the necessary flexibility needed to adapt it to defoliation trials. Considerable programming effort would have had to be expended in order to adapt the model to the CDC 6600 computer made available for this study. The model was reserved as an alternative approach to the study objectives and is completely documented elsewhere[3].

b. FILIS, a Finite Line Source Model

FILIS is a subroutine of ARCHON[6] that contains three basic models:

- Armour Liquid Model
- Sutton-Calder Vapor Model
- Aerosol Model

The Armour liquid model considers particle sizes in excess of 40 to 50 microns in diameter; the Sutton-Calder vapor model considers particle sizes of less than 10 microns; and, the aerosol model considers particle sizes from 10 to 100 microns in diameter. The aerosol model is actually a settling model that uses a Stokes Law modification to the Calder line source approach[7] for particles sized from 10 to 100 microns in diameter.

FILIS was selected as the primary approach to satisfy the objectives of this study as it offered the flexibility necessary to adapt such a contamination model to the A/A45Y-1 defoliant system. Three types of modifications were necessary to establish FILIS as a defoliant program:

- Those changes necessary to confirm FILIS as a working defoliant model when compared to existing empirical data.
- Those changes that omitted unnecessary paths and equations originally in FILIS.
- Those changes which were desirable to make the defoliant program applicable for simulation of the A/A45Y-1 defoliant system.

The development of the computer program from FILIS to simulate the A/A45Y-1 defoliant system was a major task in the formulation of the methodology. The newly developed program was named DEFOL and is documented in detail in Volume II of this report. A brief description of the formulation of the methodology for developing DEFOL is presented at this point in order to assure a more complete presentation of the methodology.

3. THE DEFOL MODEL

a. Model Development

In seeking to satisfy the objectives of this study, it was expected that prediction of on-target contamination density and off-target drift of defoliant materials would require three models to simulate properly vapor, aerosol, and liquid particles. Off-target drift was assumed to be composed of vapor and particles less than 10 microns in diameter. Therefore, predictions could be made with a diffusion routine such as the Sutton-Calder vapor model[6]. On-target contamination density was assumed to be composed of liquid and aerosol droplets greater than 10 microns in diameter. Predictions for the particles greater than 40 to 50 microns could be made using a gravitational settling approach such as the Armour liquid model[6]. The particles sized from 10 to 50 microns are effected by forces lateral to the wind direction. They diffuse and, yet, are large enough to have appreciable fall velocities. It was assumed that significant amounts of defoliant exist in this intermediate range of particle sizes. This assumption was supported by Eglin test trials[8] from which it was found that more than 60 percent of the defoliant material released over test grids at Eglin was in the form of droplets in excess of 50 microns diameter with a mass mean diameter of greater than 250 microns. Sensitivity tests indicated, however, that DEFOL provides the best predictions of contamination density for Orange when 98 percent of the particles are considered in excess of 50 microns. FILIS, then, was selected as the primary approach to the study objectives subject to modifications previously discussed.

Utilization of the vapor, aerosol, liquid models from FILIS permitted simulation of the entire spectrum of expected droplet sizes. Additionally, on-target contamination density and off-target drift of defoliant materials can be treated as separate problems with the output of the vapor model and the combined output of the aerosol and liquid models being treated separately in the output routines. Figure 1 presents a block diagram of program DEFOL.

b. Scope of Developed Model

Program DEFOL has been written as general as possible in order that a variety of defoliants and defoliant delivery systems may be simulated in different meteorological conditions. However, for the purposes of this study, DEFOL was used to simulate the A/A45Y-1

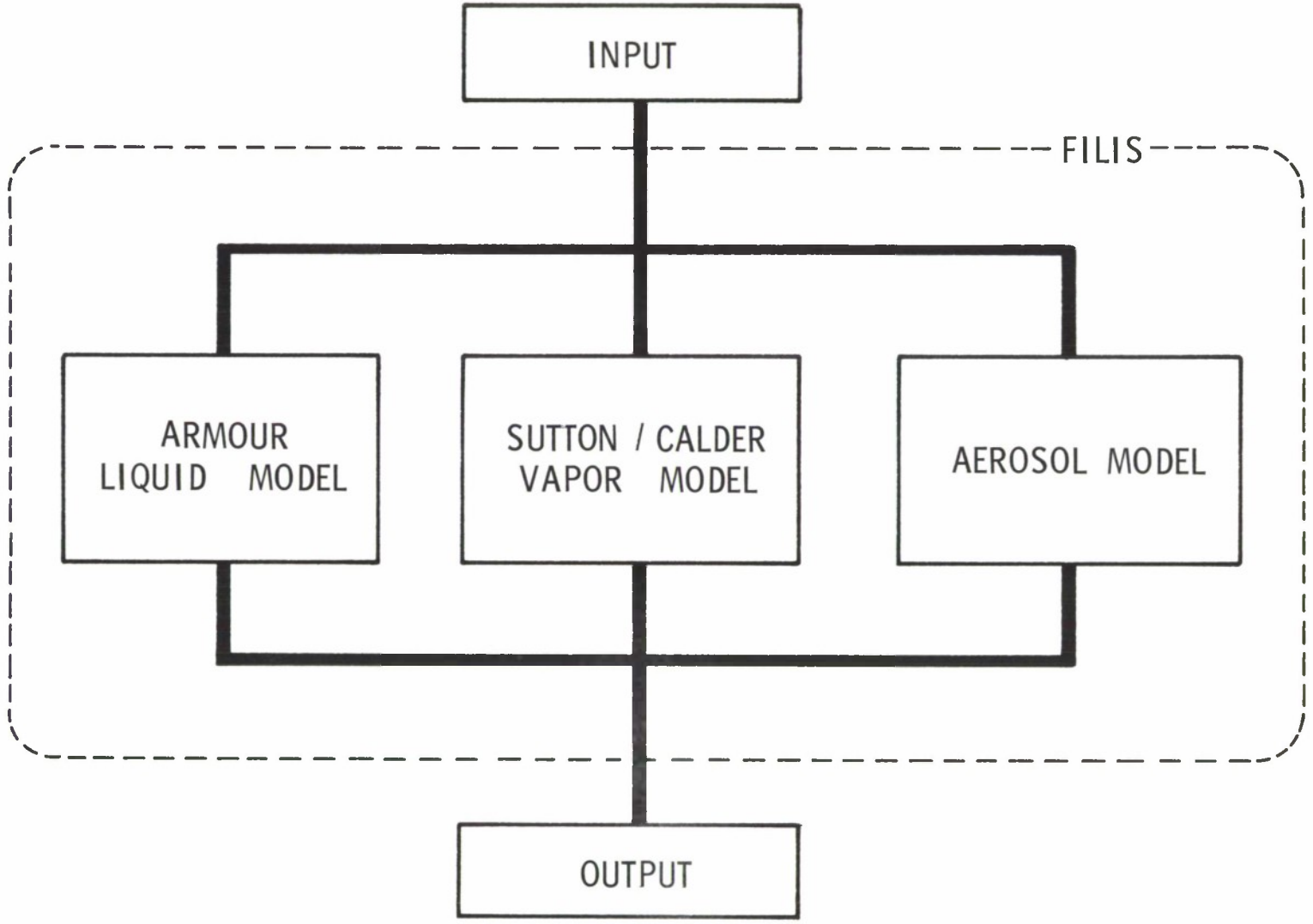


Figure 1. Block Diagram of Program DEFOL

defoliant system mounted in the C-123 aircraft[9]. The scope of simulations within the capabilities of DEFOL include the following:

- The A/A45Y-1 or other external spray line system may be simulated by designating nozzle locations and flow rate through the nozzles.

- There is a delivery capability to simulate simultaneous delivery of defoliant material over a target grid using multiple aircraft.

- Aircraft flight characteristics which may be simulated during delivery include speed, altitude, and aircraft heading relative to a given wind vector.

- Meteorological conditions which include any wind vector, except directly inwind to the flight path, and wind speed may be simulated.

- Various defoliants may be simulated by using agent characteristics of the various defoliants as input parameters. For the purpose of this study, agent Orange[9] was simulated.

When given hardware constraints typical of a given defoliation system, DEFOL may be used to optimize delivery parameters.

4. THE MEASURES OF EFFECTIVENESS

Figure 2 presents the two primary measures of effectiveness superimposed on a graph depicting typical output from program DEFOL:

- Swath Width

- Swath Width Displacement.

The illustration is a plot of deposition in gallons per acre versus the number of feet covered to any selected deposition level. The specific swath width illustrated in Figure 2 is shown for a single deposition level of one gallon per acre.

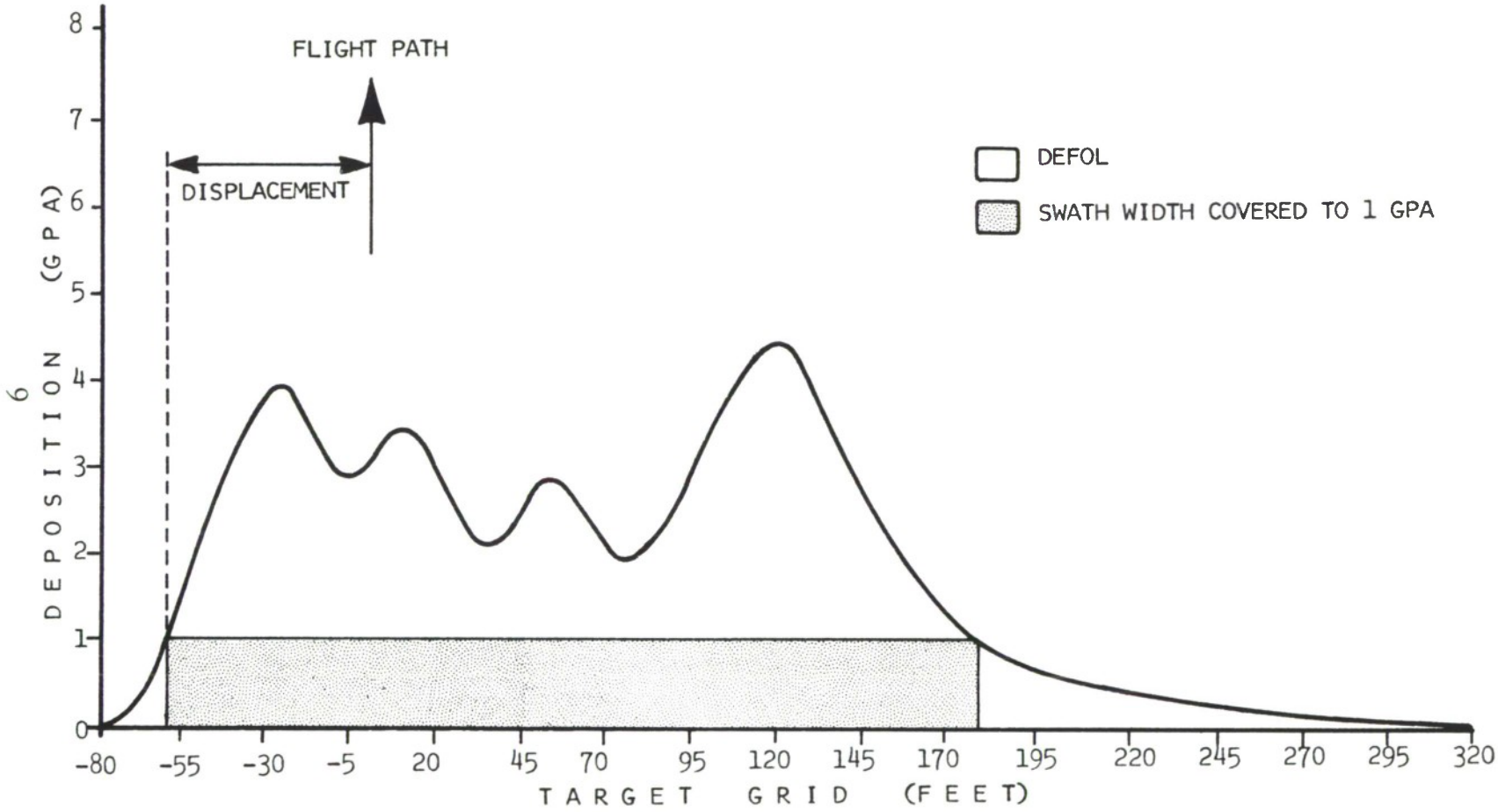


Figure 2. Primary Measures of Effectiveness

a. Swath Width

Swath widths for given deposition levels were of primary interest to this study since their determination was directly related to the primary objective of the study—prediction of contamination density. Experience from field tests has indicated that one gallon per acre is the minimum deposition necessary for obtaining acceptable defoliation results. In order to determine just how well DEFOL can predict swath widths, one gallon per acre swaths were considered as an upper bound, and swaths were calculated for deposition levels ranging in tenths of gallons from 0.3 to 1.0 gallon per acre.

b. Swath Width Displacement

The objectives of this study required not only prediction of contamination density but also location of swath widths for selected deposition levels. This second measure of effectiveness is a means whereby a measure of the location of the swath width relative to the aircraft delivery line can be determined. Swath width displacements were calculated for deposition levels ranging in tenths of gallons from 0.3 to 1.0 gallon per acre.

c. Percent Recovery

Percent recovery was not used as a primary measure of effectiveness, but rather as a means to compare the model's prediction of defoliant recovered to the field trial data. It was by this technique that it could be determined whether or not DEFOL was either generating or losing quantities of defoliant material when the field trials were simulated.

5. METHOD OF OUTPUT ANALYSIS

Output from program DEFOL offers a wide variety of pertinent information for the user. The data that are printed out include:

- Input parameters
  - Defoliant Characteristics
  - Delivery Systems Characteristics
  - Target Description

- Meteorological Conditions
- Delivery conditions such as aircraft altitude, speed, and heading

- Concentrations and dosages as a function of time for:
  - Liquid
  - Aerosol
  - Vapor
  - Total effects of liquid, aerosol, and vapor
- Deposition in gallons per acre in the form of:
  - Swath width
  - Displacement
- Percent of defoliant recovered
- Overkill estimates

In order to evaluate DEFOL, data related to the measures of effectiveness were combined for analysis in evaluation matrices and graphic representations.

a. Evaluation Matrices

Several different evaluation matrices were used to present the field data and DEFOL output for comparison. Figure 3 illustrates one of these matrices that warrants some explanation to preclude misinterpretation of the data presented. The field data were analyzed on a mission basis and for each row of targets per mission. For all missions there existed three rows of sampling stations which were analyzed independently. These rows are shown in Figure 3 as Row A, Row B, and Row C. (A complete presentation of the field data is presented in Section IV, Testing the Methodology, of this volume.) Data in the columns of Figure 3 are presented in tenths of a gallon intervals. While studying the field data, it was noted that at the higher deposition levels (0.7 to 1.0 GPA), there often existed gaps in the swath width

MISSION NUMBER	ROW	1.0 GPA DEPOSITION			0.9 GPA DEPOSITION			0.8 GPA DEPOSITION			0.7 GPA DEPOSITION		
		LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA
	A												
	B												
	C												
	A												
	B												
	C												
	A												
	B												
	C												
	A												
	B												
	C												
	A												
	B												
	C												
	A												
	C												

Figure 3. Evaluation Matrix for Field Data

where the deposition fell to some level lower than the level being analyzed. Some of these gaps, however, were not considered to be long enough to warrant being a boundary to establish one end of the swath width. Hence, a means was needed to show, in the situations where the swath was not continuous, just how much of the total swath fell below the selected level, and just how low did the deposition drop. Therefore, the number appearing under the length column represents the swath width in feet. If the swath was continuous, then zero would appear in the columns headed by percent and low GPA. Otherwise, the percent of the swath width which fell below the level indicated for the column under consideration would be entered as some value other than zero. Also, the lowest level to which the swath dipped would be entered in the column headed by low GPA.

b. Graphic Representations

Two forms of graphic representation are available for the user. The first (accurate only to the nearest tenth of a gallon) is a set of points typed on the computer output listing paper that describes a cross-section of the deposition contour in gallons per acre as a function of distance from the spray line. This graph gives the user a rough but immediate picture of his output data. The second plot option is either a 9mm or 35mm photographic negative containing an image of a computer-driven oscillograph tube that displays accurately graphed output parameters. A positive of the quality of computer paper accompanies the negative. It was this latter means which was used to present portions of the data in this volume.

SECTION III

APPLICATIONS OF THE METHODOLOGY

Program DEFOL was developed in such a manner as to make possible the simulation of a variety of defoliants and defoliant systems in different meteorological conditions. In considering such a variety of defoliant systems, both defoliant system configuration and aircraft delivery conditions can be examined. By examining individual parameters separately, specific areas for improvement can be found. It is felt that the methodology may also be applied to provide for the Air Force the following:

- A single method for predicting contamination density under a wide variety of conditions for the purpose of expanding the JMEM[9].
- A method for estimating off-target drift.
- Effectiveness tables.
- Supplementary data for the JMEM such as interpolation and extrapolation routines.

1. DEFOLIANT SYSTEM CONFIGURATION

Although the external spray line system A/A45Y-1 was simulated for this study, it is possible to simulate some other external spray line system by designing nozzle locations and adjusting the flow rate through the nozzles. It is conceivable that the effectiveness of these other external spray line systems could be determined for a variety of meteorological conditions. In fact, the DEFOL program may be used to optimize the best combination of nozzle location and flow rate for maximum defoliation when holding other variables such as aircraft delivery conditions constant.

2. AIRCRAFT DELIVERY CONDITIONS

Although the best combination of nozzle location and defoliant flow rate through the nozzles may be determined for one set of

aircraft delivery conditions, a different combination may be required where new aircraft delivery conditions are simulated. Therefore, DEFOL may be used to find the best combination of aircraft delivery conditions and external spray line system configuration.

3. PARAMETER SENSITIVITY ANALYSIS

Not counting more than once the variables that are repeated more than one time for a given simulation, there are 68 parameters required for one simulation using DEFOL. These parameters are shown in Tables II, III, and IV of Section IV. The effectiveness of a defoliant system is affected by some combination of these numerous variables, specifically, EXPAND, XO, YO, ZO, RECOMB, PCTLIQ, and PCTASL. Program DEFOL provides a convenient tool whereby any limiting values of these parameters may be established.

4. FUTURE APPLICATIONS

As new external spray line systems are developed, the methodology developed to satisfy the objectives of this study may be applied with relatively few, if any, modifications. It is felt that DEFOL will become a very useful tool in updating effectiveness tables as these new external spray line systems are developed. As more and more data become available for the purposes of testing the reliability of DEFOL under a congeries of conditions, more refinements may be added eventually to make DEFOL a very sophisticated simulation model for defoliation.

SECTION IV

TESTING PROGRAM DEFOL

In order to ascertain whether or not program DEFOL was valid, the model was exercised extensively to assure that it could be applied to practical defoliation problems. Data from seventeen test trials[8] conducted at Eglin Air Force Base, Florida, were used as a basis for comparison with the DEFOL output. The small sample of field trials available for comparison prevents strong conclusions from being drawn in the analysis. The test trials available, however, provided insight into how DEFOL could be applied to three general defoliation delivery conditions utilizing agent Orange:

- Inwind delivery at high flow rates (approximately 230 gallons per minute).
- Inwind delivery at low flow rates (approximately 140 gallons per minute).
- Crosswind delivery at high flow rates.

1. DESCRIPTION OF FIELD DATA

a. Target Grid

Two similar target grids were used to sample the defoliant after it was sprayed from the A/A45Y-1 defoliant system. Figure 4 presents the target grid configuration for inwind field trials. The aircraft flight path was directly over sampler station 149 of the three parallel rows of sampler stations. The target grid was in relatively smooth open terrain, and the sampler stations were located on posts five feet above the surface. Figure 5 depicts the crosswind target grid configuration. For the crosswind trials, the aircraft flight path was directly over sampler station 1 of the three parallel rows of sampler stations. The target grid was located in the same terrain as for the inwind trials. The sampler stations were located on posts five feet above the ground, but the distance between the stations varied as shown in Figure 5.

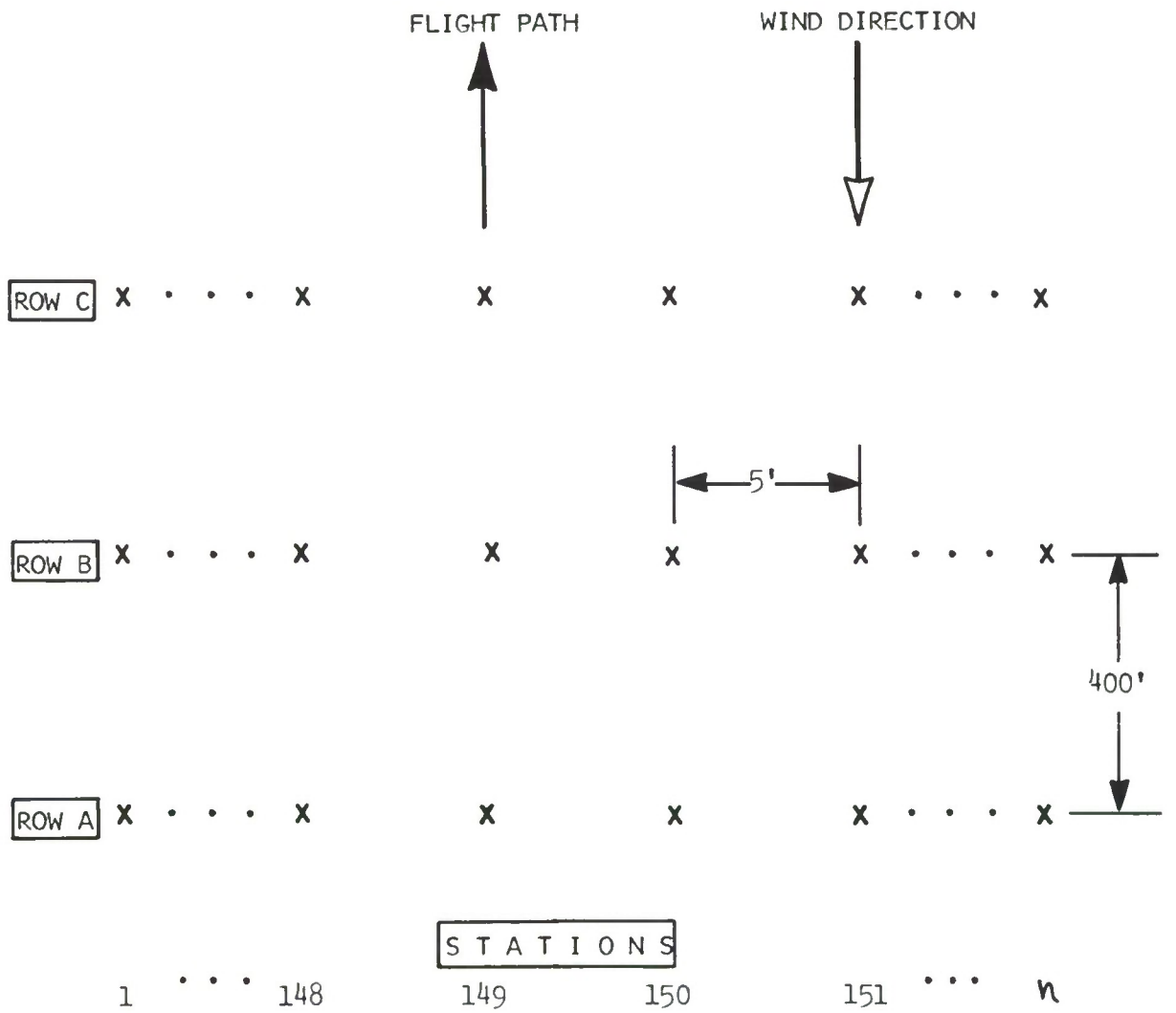


Figure 4. Inwind Target Grid for Field Trials

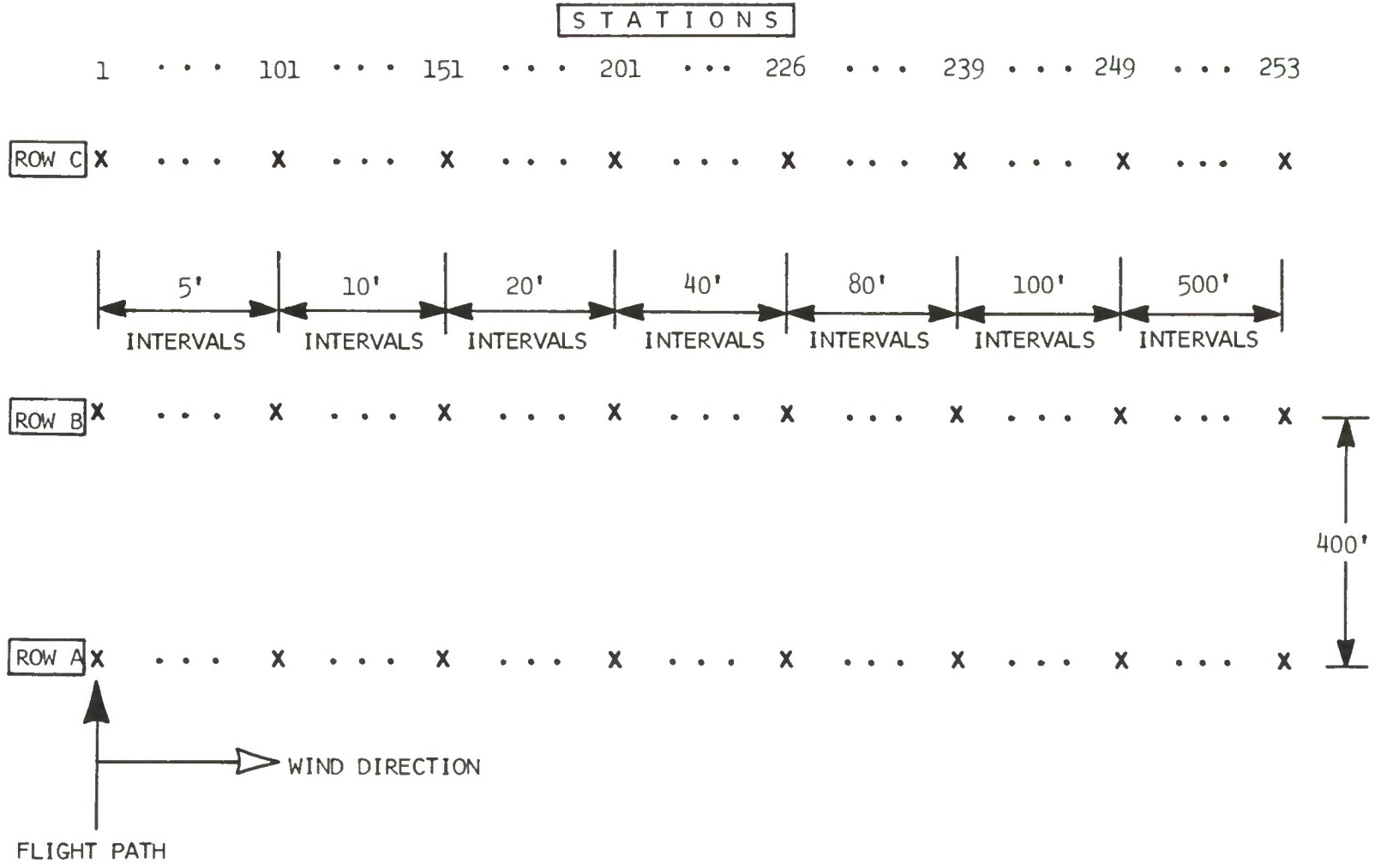


Figure 5. Crosswind Target Grid for Field Trials

b. Tabulated Data

Seventeen test trials were utilized for comparison with the DEFOL results. Figure 6 associates the mission numbers with the three general defoliation delivery conditions. Major inputs to DEFOL are tabulated in Table I. These inputs are aircraft delivery conditions, meteorological conditions, and the flow rate of the defoliant through the A/A45Y-1 delivery system. The deposition data in gallons per acre (GPA) are tabulated for each mission in Tables I-I through 1-XVII of Appendix I. Data from these tables were used to determine swath widths for given deposition levels, and the corresponding displacements of these swaths relative to the flight path of the aircraft.

2. DATA DECK PREPARATION

The data input into DEFOL were prepared in accordance with Section III of Volume II of this report. Selected parameter values (based on actual field trial measurements) for all missions simulated are presented in Tables II, III, and IV. The parameters selected are associated with:

- Defoliant characteristics.
- Delivery system characteristics.
- Target description.
- Meteorological conditions.
- Aircraft delivery conditions.

All parameters which do not fit within one of the preceding categories are associated with the programming options of DEFOL. The parameters are discussed in detail in Volume II. A review of Tables II, III, and IV will provide a complete description of the seventeen field trials simulated by DEFOL.

3. FIELD DATA REDUCTION

Swath widths that were determined from the field data are presented in Tables V-I, V-II, and V-III of Appendix V. These tables are used as evaluation matrices to present a comparison of the variability in the swaths among the three rows of any given test trial.

MISSION NUMBER	
49	INWIND MISSIONS AT HIGH FLOW RATES
602	
555	
323	
5040	
4035	

MISSION NUMBER	
343	INWIND MISSIONS AT LOW FLOW RATES
5046	
505	
345	
758	
247	

MISSION NUMBER	
440	CROSS WIND MISSIONS AT HIGH FLOW RATES
147	
227	
141	
139	

Figure 6. Missions Associated With Three Delivery Conditions

TABLE I. METEOROLOGICAL AND DELIVERY CONDITIONS FOR FIELD TRIAL TEST DATA

MISSION NUMBER	AIRCRAFT DELIVERY CONDITIONS			METEOROLOGICAL CONDITIONS		FLOW RATE (GAL PER MIN)
	ALTITUDE (FT)	SPEED (KTS)	HEADING (DEG)	WINDSPEED(KTS)	WIND DIR (DEG)	
49	102	134.4	360	6.0	345	225
602	111	132.0	360	6.0	015	225
555	100	134.4	180	4.6	211	225
323	130	129.2	180	5.0	158	240
5040	100	130.0	360	7.0	008	220
4035	100	130.0	360	7.0	010	225

MISSION NUMBER	AIRCRAFT DELIVERY CONDITIONS			METEOROLOGICAL CONDITIONS		FLOW RATE (GAL PER MIN)
	ALTITUDE (FT)	SPEED (KTS)	HEADING (DEG)	WINDSPEED(KTS)	WIND DIR(DEG)	
343	100	130	360	4.7	331	140
5046	100	130	360	4.0	346	110
505	100	130	180	6.7	179	120
345	100	130	360	6.3	332	140
758	100	130	360	5.3	340	140
247	100	130	360	9.3	357	135

TABLE I. METEOROLOGICAL AND DELIVERY CONDITIONS FOR FIELD TRIAL TEST DATA (Concluded)

MISSION NUMBER	AIRCRAFT DELIVERY CONDITIONS			METEOROLOGICAL CONDITIONS		FLOW RATE (GAL PER MIN)
	ALTITUDE(FT)	SPEED (KTS)	HEADING (DEG)	WINDSPEED(KTS)	WIND DIR(DEG)	
440	150	130	090	5.4	004	230
147	150	130	090	10.5	357	225
227	150	130	135	8.3	055	235
141	150	130	315	10.7	029	235
139	150	130	090	8.5	197	240

TABLE II. PARAMETER VALUES FOR INWIND MISSIONS AT HIGH FLOW RATES

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		49	602	555	323	5040	4035
ALPHD	Angle measured counterclockwise from target x-axis to wind vector.	285	255	59	112	262	260
WVEL	Wind velocity.	6	6	4.6	5	7	7
NRL	Number of release lines.	32*	32*	32*	32*	32*	32*
RECOMB	Recombination factor, i.e., total dosage = liquid dosage + RECOMB · aerosol.	1	1	1	1	1	1
PCTLIQ	Percent of defoliant that is liquid.	.98	.98	.98	.98	.98	.98
SXSIZE	Sigma on source in X & Y direction.	0	0	0	0	0	0
SZSIZE	Sigma on source in Z direction.	0	0	0	0	0	0
ZT(1)	Height of all targets.	5	5	5	5	5	5
BX(1)	X coordinate of first target.	-80	-230	-100	-300	-205	-295
XINC	Increment between targets along x-axis.	5	5	5	5	5	5
XLAST	X coordinate of last target.	320	320	480	100	195	105
BY(1)	Y coordinate of first target.	0	0	0	0	0	0
YINC	Increment between targets along y-axis.	0	0	0	0	0	0
YLAST	Y coordinate of last target.	0	0	0	0	0	0

*Sensitivity analysis indicated that 8 release lines yielded the same swath widths and displacements as 32 release lines. Hence, 8 release lines were actually simulated in DEFOL to conserve computer time.

TABLE II. PARAMETER VALUES FOR INWIND MISSIONS AT HIGH FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		49	602	555	323	5040	4035
OFFINC	Increment between off-grid targets.	0	0	0	0	0	0
OFFLAS	Last off-grid target coordinate.	0	0	0	0	0	0
FLONE	Length of release lines.	5280	5280	5280	5280	5280	5280
PHI(1)	Angle measured counterclockwise from positive wind vector to first encounter with release line about vertical axis.	165	15	31	158	8	10
THETA	Angle measured from vertical to release line.	90	90	90	90	90	90
PCTASL	Percent of non-liquid defoliant that is aerosol. Remainder is vapor, i.e., Vapor = (1 - PCTLIQ) (1 - PCTASL).	.50	.50	.50	.50	.50	.50
EXPAND	Expand: Expand · XO(I) = Effective XO(I).	2.25	2.25	2.25	2.25	2.25	2.25
XO(1)	X component of cloud centroid 1.	-41.10	-41.10	-41.10	-41.10	-41.10	-41.10
YO(1)	Y component of cloud centroid 1.	0	0	0	0	0	0
ZO(1)	Z component of cloud centroid 1.	102	111	100	130	100	100
XO(2)	X component of cloud centroid 2.	-33.18	-33.18	-33.18	-33.18	-33.18	-33.18
YO(2)	Y component of cloud centroid 2.	0	0	0	0	0	0
ZO(2)	Z component of cloud centroid 2.	102	111	100	130	100	100
XO(3)	X component of cloud centroid 3.	-25.27	-25.27	-25.27	-25.27	-25.27	-25.27
YO(3)	Y component of cloud centroid 3.	0	0	0	0	0	0

TABLE II. PARAMETER VALUES FOR INWIND MISSIONS AT HIGH FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		49	602	555	323	5040	4035
ZO(3)	Z component of cloud centroid 3.	102	111	100	130	100	100
XO(4)	X component of cloud centroid 4.	-9.25	-9.25	-9.25	-9.25	-9.25	-9.25
YO(4)	Y component of cloud centroid 4.	0	0	0	0	0	0
ZO(4)	Z component of cloud centroid 4.	92	101	90	120	90	90
XO(5)	X component of cloud centroid 5.	9.25	9.25	9.25	9.25	9.25	9.25
YO(5)	Y component of cloud centroid 5.	0	0	0	0	0	0
ZO(5)	Z component of cloud centroid 5.	92	101	90	120	90	90
XO(6)	X component of cloud centroid 6.	25.27	25.27	25.27	25.27	25.27	25.27
YO(6)	Y component of cloud centroid 6.	0	0	0	0	0	0
ZO(6)	Z component of cloud centroid 6.	102	111	100	130	100	100
XO(7)	X component of cloud centroid 7.	33.18	33.18	33.18	33.18	33.18	33.18
YO(7)	Y component of cloud centroid 7.	0	0	0	0	0	0
ZO(7)	Z component of cloud centroid 7.	102	111	100	130	100	100
XO(8)	X component of cloud centroid 8.	41.10	41.10	41.10	41.10	41.10	41.10
YO(8)	Y component of cloud centroid 8.	0	0	0	0	0	0
ZO(8)	Z component of cloud centroid 8.	102	111	100	130	100	100
DTM	Time increment at which liquid concentrations are to be computed.	3	3	3	3	3	3

TABLE II. PARAMETER VALUES FOR INWIND MISSIONS AT HIGH FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		49	602	555	323	5040	4035
TMAX	Maximum time for liquid test.	8	8	8	8	8	8
P	Parameter used to describe particle size.	2	2	2	2	2	2
Q	Parameter used to describe particle distribution.	1	1	1	1	1	1
XKNOTS	Aircraft speed.	134.4	132	134.4	129.2	130	130
FLOWRT	Flow rate of defoliant.	225	225	225	240	220	225
QMU	Absolute viscosity of agent droplet.	.01002	.01002	.01002	.01002	.01002	.01002
DIFFUS	Mass diffusivity of spray agent.	.05	.05	.05	.05	.05	.05
RHO	Liquid droplet density.	1.27	1.27	1.27	1.27	1.27	1.27
QM	Molecular mass of droplet.	267.4	267.4	267.4	267.4	267.4	267.4
PS	Vapor pressure at droplet surface.	.01264	.01264	.01264	.01264	.01264	.01264
TMP	Absolute temperature.	293.16	293.16	293.16	293.16	293.16	293.16
DT	Time increment at which vapor or aerosol concentration is to be computed.	.025	.025	.025	.025	.025	.025
TMAX	Maximum time for which vapor or aerosol concentrate is to be computed.	8	8	8	8	8	8
ALP2	Alpha for aerosol/vapor.	285	255	59	112	262	260
WV2	WVEL for aerosol/vapor.	6	6	4.6	5	7	7
PHI2	PHI for aerosol/vapor.	165	15	31	158	8	10

TABLE II. PARAMETER VALUES FOR INWIND MISSIONS AT HIGH FLOW RATES
(Concluded)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		49	602	555	323	5040	4035
RHOA	Density of aerosol.	1.27	1.27	1.27	1.27	1.27	1.27
QMUA	Viscosity of aerosol.	.0185	.0185	.0185	.0185	.0185	.0185
RADM	Mean radius of aerosol particles.	45	45	45	45	45	45
SIGMAR	Standard deviation of droplet diameter distribution.	25	25	25	25	25	25
XMINEF	Minimum effective deposition level.	1	1	1	1	1	1
SIGTI(1)	Standard deviation of cloud in X direction sampled at 100 meters downwind.	3.41	3.41	3.41	3.41	3.41	3.41
DELTA	Exponent for standard deviation X in Calder model.	.83	.83	.83	.83	.83	.83
SIGTI(2)	Standard deviation of cloud in Y direction sampled at 100 meters downwind.	3.41	3.41	3.41	3.41	3.41	3.41
DELTA	Exponent for standard deviation Y in Calder model.	.83	.83	.83	.83	.83	.83
SIGTI(3)	Standard deviation of cloud in Z direction sampled at 100 meters downwind.	6.8	6.8	6.8	6.8	6.8	6.8
DELTA	Exponent for standard deviation Z in Calder model.	.83	.83	.83	.83	.83	.83

TABLE III. PARAMETER VALUES FOR INWIND MISSIONS AT LOW FLOW RATES

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		343	5046	505	345	758	247
ALPHD	Angle measured counterclockwise from target x-axis to wind vector.	299	284	91	298	290	273
WVEL	Wind velocity.	4.7	4	6.7	6.3	5.3	9.3
NRL	Number of release lines.	32*	32*	32*	32*	32*	32*
RECOMB	Recombination factor, i.e., total dosage = liquid dosage + RECOMB · aerosol.	1	1	1	1	1	1
PCTLIQ	Percent of defoliant that is liquid	.98	.98	.98	.98	.98	.98
SXSIZE	Sigma on source in X & Y direction.	0	0	0	0	0	0
SZSIZE	Sigma on source in Z direction.	0	0	0	0	0	0
ZT(1)	Height of all targets.	5	5	5	5	5	5
BX(1)	X coordinate of first target.	-85	-80	-350	-50	-80	-150
XINC	Increment between targets along x-axis.	5	5	5	5	5	5
XLAST	X coordinate of last target.	315	320	150	450	320	300
BY(1)	Y coordinate of first target.	0	0	0	0	0	0
YINC	Increment between targets along y-axis.	0	0	0	0	0	0
YLAST	Y coordinate of last target.	0	0	0	0	0	0

*Sensitivity analysis indicated that 8 release lines yielded the same swath widths and displacements as 32 release lines. Hence, 8 release lines were actually simulated in DEFOL to conserve computer time.

TABLE III. PARAMETER VALUES FOR INWIND MISSIONS AT LOW FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		343	5046	505	345	758	247
OFFINC	Increment between off-grid targets.	0	0	0	0	0	0
OFFLAS	Last off-grid target coordinate.	0	0	0	0	0	0
FLONE	Length of release lines.	5280	5280	5280	5280	5280	5280
PHI(1)	Angle measured counterclockwise from positive wind vector to first encounter with release line about vertical axis.	151	166	179	152	160	177
THETA	Angle measured from vertical to release line.	90	90	90	90	90	90
PCTASL	Percent of non-liquid defoliant that is aerosol. Remainder is vapor, i.e., Vapor = (1 - PCTLIQ) (1 - PCTASL).	.50	.50	.50	.50	.50	.50
EXPAND	Expand: Expand · XO(I) = Effective XO(I).	2.25	2.25	2.25	2.25	2.25	2.25
XO(1)	X component of cloud centroid 1.	-41.10	-41.10	-41.10	-41.10	-41.10	-41.10
YO(1)	Y component of cloud centroid 1.	0	0	0	0	0	0
ZO(1)	Z component of cloud centroid 1.	100	100	100	100	100	100
XO(2)	X component of cloud centroid 2.	-33.18	-33.18	-33.18	-33.18	-33.18	-33.18
YO(2)	Y component of cloud centroid 2.	0	0	0	0	0	0
ZO(2)	Z component of cloud centroid 2.	100	100	100	100	100	100
XO(3)	X component of cloud centroid 3.	-25.27	-25.27	-25.27	-25.27	-25.27	-25.27
YO(3)	Y component of cloud centroid 3.	0	0	0	0	0	0

TABLE III. PARAMETER VALUES FOR INWIND MISSIONS AT LOW FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		343	5046	505	345	758	247
ZO(3)	Z component of cloud centroid 3.	100	100	100	100	100	100
XO(4)	X component of cloud centroid 4.	-9.25	-9.25	-9.25	-9.25	-9.25	-9.25
YO(4)	Y component of cloud centroid 4.	0	0	0	0	0	0
ZO(4)	Z component of cloud centroid 4.	90	90	90	90	90	90
XO(5)	X component of cloud centroid 5.	9.25	9.25	9.25	9.25	9.25	9.25
YO(5)	Y component of cloud centroid 5.	0	0	0	0	0	0
ZO(5)	Z component of cloud centroid 5.	90	90	90	90	90	90
XO(6)	X component of cloud centroid 6.	25.27	25.27	25.27	25.27	25.27	25.27
YO(6)	Y component of cloud centroid 6.	0	0	0	0	0	0
ZO(6)	Z component of cloud centroid 6.	100	100	100	100	100	100
XO(7)	X component of cloud centroid 7.	33.18	33.18	33.18	33.18	33.18	33.18
YO(7)	Y component of cloud centroid 7.	0	0	0	0	0	0
ZO(7)	Z component of cloud centroid 7.	100	100	100	100	100	100
XO(8)	X component of cloud centroid 8.	41.10	41.10	41.10	41.10	41.10	41.10
YO(8)	Y component of cloud centroid 8.	0	0	0	0	0	0
ZO(8)	Z component of cloud centroid 8.	100	100	100	100	100	100
DTM	Time increment at which liquid concentrations are to be computed.	3	3	3	3	3	3
TMAX	Maximum time for liquid test.	8	8	8	8	8	8

TABLE III. PARAMETER VALUES FOR INWIND MISSIONS AT LOW FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		343	5046	505	345	758	247
P	Parameter used to describe particle size.	2	2	2	2	2	2
Q	Parameter used to describe particle distribution.	1	1	1	1	1	1
XKNOTS	Aircraft speed.	130	130	130	130	130	130
FLOWRT	Flow rate of defoliant.	140	110	120	140	140	135
QMU	Absolute viscosity of agent droplet.	.01002	.01002	.01002	.01002	.01002	.01002
DIFFUS	Mass diffusivity of spray agent.	.05	.05	.05	.05	.05	.05
RHO	Liquid droplet density.	1.27	1.27	1.27	1.27	1.27	1.27
QM	Molecular mass of droplet.	267.4	267.4	267.4	267.4	267.4	267.4
PS	Vapor pressure at droplet surface.	.01264	.01264	.01264	.01264	.01264	.01264
TMP	Absolute temperature.	293.16	293.16	293.16	293.16	293.16	293.16
DT	Time increment at which vapor or aerosol concentration is to be computed.	.025	.025	.025	.025	.025	.025
TMAX	Maximum time for which vapor or aerosol concentrate is to be computed.	8	8	8	8	8	8
ALP2	Alpha for aerosol/vapor.	202	255	285	59	262	260
WV2	WVEL for aerosol/vapor.	4	6	6	4.6	7	7
PHI2	PHI for aerosol/vapor.	158	15	165	31	8	10
RHOA	Density of aerosol.	1.27	1.27	1.27	1.27	1.27	1.27

TABLE III. PARAMETER VALUES FOR INWIND MISSIONS AT LOW FLOW RATES
(Concluded)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER					
		343	5046	505	345	758	247
QMUA	Viscosity of aerosol.	.0185	.0185	.0185	.0185	.0185	.0185
RADM	Mean radius of aerosol particles.	45	45	45	45	45	45
SIGMAR	Standard deviation of droplet diameter distribution.	25	25	25	25	25	25
XMINEF	Minimum effective deposition level.	1	1	1	1	1	1
SIGTI(1)	Standard deviation of cloud in X direction sampled at 100 meters downwind.	3.41	3.41	3.41	3.41	3.41	3.41
DELTA	Exponent for standard deviation X in Calder model.	.83	.83	.83	.83	.83	.83
SIGTI(2)	Standard deviation of cloud in Y direction sampled at 100 meters downwind.	3.41	3.41	3.41	3.41	3.41	3.41
DELTA	Exponent for standard deviation Y in Calder model.	.83	.83	.83	.83	.83	.83
SIGTI(3)	Standard deviation of cloud in Z direction sampled at 100 meters downwind.	6.8	6.8	6.8	6.8	6.8	6.8
DELTA	Exponent for standard deviation Z in Calder model.	.83	.83	.83	.83	.83	.83

TABLE IV. PARAMETER VALUES FOR CROSSWIND MISSIONS AT HIGH FLOW RATES

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER				
		440	147	227	141	139
ALPHD	Angle measured counterclockwise from target x-axis to wind vector.	356	3	350	16	17
WVEL	Wind velocity.	5.4	10.5	8.3	10.7	8.5
NRL	Number of release lines.	32*	32*	32*	32*	32*
RECOMB	Recombination factor, i.e., total dosage = liquid dosage + RECOMB · aerosol.	1	1	1	1	1
PCTLIQ	Percent of defoliant that is liquid.	.90	.90	.90	.90	.90
SXSIZE	Sigma on source in X & Y direction.	0	0	0	0	0
SZSIZE	Sigma on source in Z direction.	0	0	0	0	0
ZT(1)	Height of all targets.	5	5	5	5	5
BX(1)	X coordinate of first target.	0	0	0	0	0
XINC	Increment between targets along x-axis.	5	5	5	5	5
XLAST	X coordinate of last target.	715	800	700	700	640
BY(1)	Y coordinate of first target.	0	0	0	0	0
YINC	Increment between targets along y-axis.	0	0	0	0	0
YLAST	Y coordinate of last target.	0	0	0	0	0

*Sensitivity analysis indicated that 8 release lines yielded the same swath widths and displacements as 32 release lines. Hence, 8 release lines were actually simulated in DEFOL to conserve computer time.

TABLE IV. PARAMETER VALUES FOR CROSSWIND MISSIONS AT HIGH FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER				
		440	147	227	141	139
OFFINC	Increment between off-grid targets.	0	0	0	0	0
OFFLAS	Last off-grid target coordinate.	0	0	0	0	0
FLONE	Length of release lines.	5280	5280	5280	5280	5280
PHI(1)	Angle measured counterclockwise from positive wind vector to first encounter with release line about vertical axis.	94	94	100	74	73
THETA	Angle measured from vertical to release line.	90	90	90	90	90
PCTASL	Percent of non-liquid defoliant that is aerosol. Remainder is vapor, i.e., Vapor = (1 - PCTLIQ) (1 - PCTASL).	.50	.50	.50	.50	.50
EXPAND	Expand: Expand · XO(I) = Effective XO(I).	2.25	2.25	2.25	2.25	2.25
XO(1)	X component of cloud centroid 1.	-41.10	-41.10	-41.10	-41.10	-41.10
YO(1)	Y component of cloud centroid 1.	0	0	0	0	0
ZO(1)	Z component of cloud centroid 1.	150	150	150	150	150
XO(2)	X component of cloud centroid 2.	-33.18	-33.18	-33.18	-33.18	-33.18
YO(2)	Y component of cloud centroid 2.	0	0	0	0	0
ZO(2)	Z component of cloud centroid 2.	150	150	150	150	150
XO(3)	X component of cloud centroid 3.	-25.27	-25.27	-25.27	-25.27	-25.27
YO(3)	Y component of cloud centroid 3.	0	0	0	0	0

TABLE IV. PARAMETER VALUES FOR CROSSWIND MISSIONS AT HIGH FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER				
		440	147	227	141	139
ZO(3)	Z component of cloud centroid 3.	150	150	150	150	150
XO(4)	X component of cloud centroid 4.	-9.25	-9.25	-9.25	-9.25	-9.25
YO(4)	Y component of cloud centroid 4.	0	0	0	0	0
ZO(4)	Z component of cloud centroid 4.	140	140	140	140	140
XO(5)	X component of cloud centroid 5.	9.25	9.25	9.25	9.25	9.25
YO(5)	Y component of cloud centroid 5.	0	0	0	0	0
ZO(5)	Z component of cloud centroid 5.	140	140	140	140	140
XO(6)	X component of cloud centroid 6.	25.27	25.27	25.27	25.27	25.27
YO(6)	Y component of cloud centroid 6.	0	0	0	0	0
ZO(6)	Z component of cloud centroid 6.	150	150	150	150	150
XO(7)	X component of cloud centroid 7.	33.18	33.18	33.18	33.18	33.18
YO(7)	Y component of cloud centroid 7.	0	0	0	0	0
ZO(7)	Z component of cloud centroid 7.	150	150	150	150	150
XO(8)	X component of cloud centroid 8.	41.10	41.10	41.10	41.10	41.10
YO(8)	Y component of cloud centroid 8.	0	0	0	0	0
ZO(8)	Z component of cloud centroid 8.	150	150	150	150	150
DTM	Time increment at which liquid concentrations are to be computed.	3	3	3	3	3
TMAX	Maximum time for liquid test.	8	8	8	8	8

TABLE IV. PARAMETER VALUES FOR CROSSWIND MISSIONS AT HIGH FLOW RATES
(Continued)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER				
		440	147	227	141	139
P	Parameter used to describe particle size.	2	2	2	2	2
Q	Parameter used to describe particle distribution.	1	1	1	1	1
XKNOTS	Aircraft speed.	130	130	130	130	130
FLOWRT	Flow rate of defoliant.	230	225	235	235	240
QMU	Absolute viscosity of agent droplet.	.01002	.01002	.01002	.01002	.01002
DIFFUS	Mass diffusivity of spray agent.	.05	.05	.05	.05	.05
RHO	Liquid droplet density.	1.27	1.27	1.27	1.27	1.27
QM	Molecular mass of droplet.	267.4	267.4	267.4	267.4	267.4
PS	Vapor pressure at droplet surface.	.01264	.01264	.01264	.01264	.01264
TMP	Absolute temperature.	293.16	293.16	293.16	293.16	293.16
DT	Time increment at which vapor or aerosol concentration is to be computed.	.025	.025	.025	.025	.025
TMAX	Maximum time for which vapor or aerosol concentrate is to be computed.	8	8	8	8	8
ALP2	Alpha for aerosol/vapor.	255	202	262	59	112
WV2	WVEL for aerosol/vapor.	6	4	7	4.6	5
PHI2	PHI for aerosol/vapor.	15	158	8	31	158
RHOA	Density of aerosol.	1.27	1.27	1.27	1.27	1.27

TABLE IV. PARAMETER VALUES FOR CROSSWIND MISSIONS AT HIGH FLOW RATES
(Concluded)

VARIABLE NAME	PARAMETER DESCRIPTION	PARAMETER VALUE FOR MISSION NUMBER				
		440	147	227	141	139
QMUA	Viscosity of aerosol.	.0185	.0185	.0185	.0185	.0185
RADM	Mean radius of aerosol particles.	45	45	45	45	45
SIGMAR	Standard deviation of droplet diameter distribution.	25	25	25	25	25
XMINEF	Minimum effective deposition level.	1	1	1	1	1
SIGTI(1)	Standard deviation of cloud in X direction sampled at 100 meters downwind.	3.41	3.41	3.41	3.41	3.41
DELTA	Exponent for standard deviation X in Calder model.	.83	.83	.83	.83	.83
SIGTI(2)	Standard deviation of cloud in Y direction sampled at 100 meters downwind.	3.41	3.41	3.41	3.41	3.41
DELTA	Exponent for standard deviation Y in Calder model.	.83	.83	.83	.83	.83
SIGTI(3)	Standard deviation of cloud in Z direction sampled at 100 meters downwind.	6.8	6.8	6.8	6.8	6.8
DELTA	Exponent for standard deviation Z in Calder model.	.83	.83	.83	.83	.83

Interpretation of Tables V-I, V-II, and V-III has been discussed in Section II. 5. a. of this volume. In a similar manner, the swath width displacements determined from the field data are presented in Tables V-IV, V-V, and V-VI of Appendix V. Swath width displacements are distances that determine the start of a swath relative to the flight path of the aircraft. A negative sign indicates that the swath started on the windward side of the flight path and similarly, a positive sign indicates that the swath started on the leeward side of the flight path. These definitions were permissible since none of the twelve inwind test trials were conducted under conditions of zero crosswind components. Utilization of these data formed the basis against which the DEFOL output was compared.

4. ANALYSIS OF OUTPUT

The deposition in gallons per acre versus the target grid in feet, output from program DEFOL for each of the seventeen test trials simulated, are presented graphically in Figures II-1 through II-17 of Appendix II. Two missions simulated in DEFOL were less than five degrees from being true inwind simulations. Figure II-9 of Appendix II presents the simulation of Mission 505 for which the aircraft flight path was one degree less than a perfect inwind delivery. Mission 247 is presented in Figure II-12 of Appendix II. The flight path flown for this simulation was three degrees less than true inwind. In both of these simulations, the DEFOL output yielded large variations in the deposition level. These large variations are attributed to angular limitations of the trigonometric functions involved. Sensitivity tests show that DEFOL will produce large variations in the deposition levels whenever angles less than five degrees are utilized. Hence, the predictions of swath width and swath width displacement become less reliable for these near inwind conditions. Nevertheless, DEFOL did predict swath widths for Missions 505 and 247 that lay within the 95 percent confidence intervals at the higher deposition levels.

a. Swath Widths

Swath widths determined from the field trials and predicted by DEFOL have been combined in the set of tables that constitute Appendix III. For the field trial data, the range of swaths was determined from selection of the minimum and maximum values of the three target grid rows for each of the seventeen missions. The tables of Appendix III provide a rapid comparison of DEFOL output to the field trial data for given deposition levels. The 95 percent confidence interval for each mission swath width and for a given contamination

density was then calculated. These confidence intervals of the swath widths are presented in Tables V-Vll, V-Vlll, and V-lX of Appendix V. The DEFOL predictions of swath width are indicated in the same tables. For convenience, these values are graphically shown in Figures 7 through 23. The DEFOL swath width predictions, for the inwind missions, generally fell within these 95 percent confidence intervals. However, certain DEFOL predictions fell both above and below the 95 percent confidence intervals. For example, DEFOL prediction of Mission 49 (Figure 7), an inwind mission at high flow rate generally ranged smaller than the range of swaths determined from the field data for Mission 49. Conversely, DEFOL prediction of Mission 343 (Figure 13), an inwind mission at low flow rate, generally ranged higher than the range of swaths determined from the field data for Mission 343. lt is felt that these results show that DEFOL does not bias swath width predictions as a function of high or low flow rates for inwind missions. There was one exception: DEFOL consistently predicted larger swaths than the field data indicated when the crosswind missions were considered. Further sensitivity tests of the input parameters and more consideration of varying the downwind direction and wind velocity could produce more accurate predictions for the crosswind missions. However, time limitations prevented any deeper research into the crosswind simulations. It is important to emphasize that defoliation missions usually are conducted under inwind conditions and not under crosswind conditions. Therefore, no effort was made to develop the model to simulate accurately the delivery of defoliants under crosswind conditions. The crosswind data are included merely to show that crosswind delivery simulation is feasible, but subjects DEFOL to further parameter adjustments.

b. Swath Width Displacements

Swath width displacements are distances that determine the start of a swath relative to the flight path of the aircraft. These displacements have been determined for the various deposition levels already addressed for the swath width data. None of the twelve inwind missions simulated by DEFOL were conducted with zero component crosswind values. Hence, it was feasible to utilize terminology such as "leeward" and "windward" when addressing sides of the aircraft flight path. The swath for a given deposition level did not always initiate on the leeward side of the delivery line. Hence, a negative sign was used to indicate that a given swath relative to the flight path was initiated on the windward side of the flight path. Appendix lV contains tables of swath width displacements determined from field

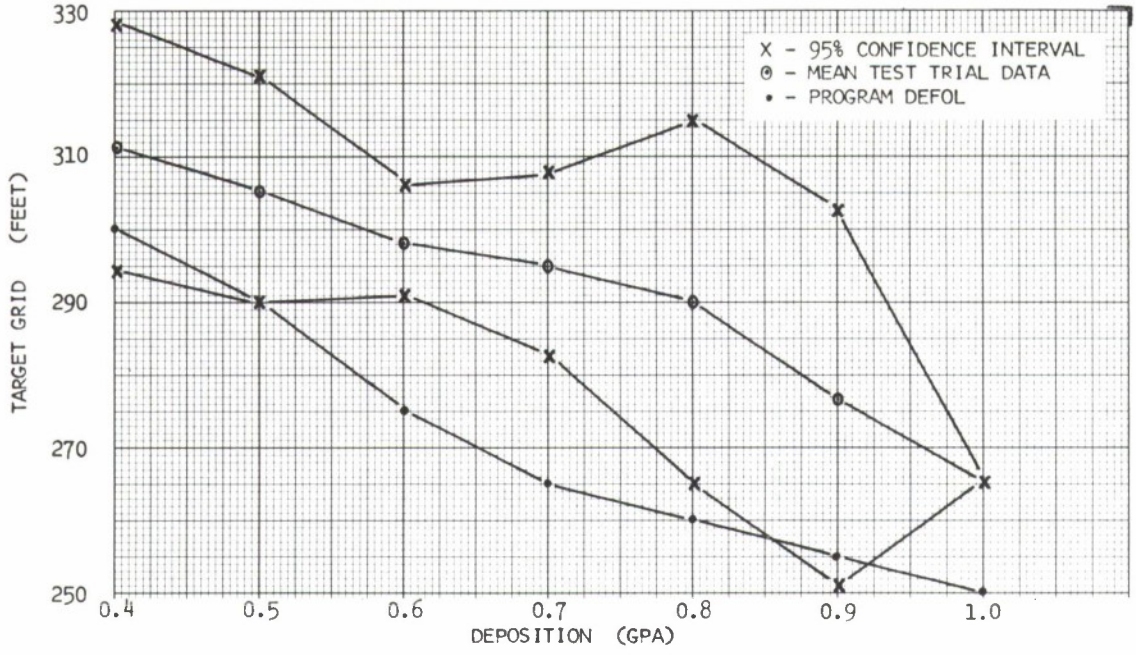


Figure 7. Inwind Swath Width Versus Deposition Level for Mission 49 - High Flow Rate

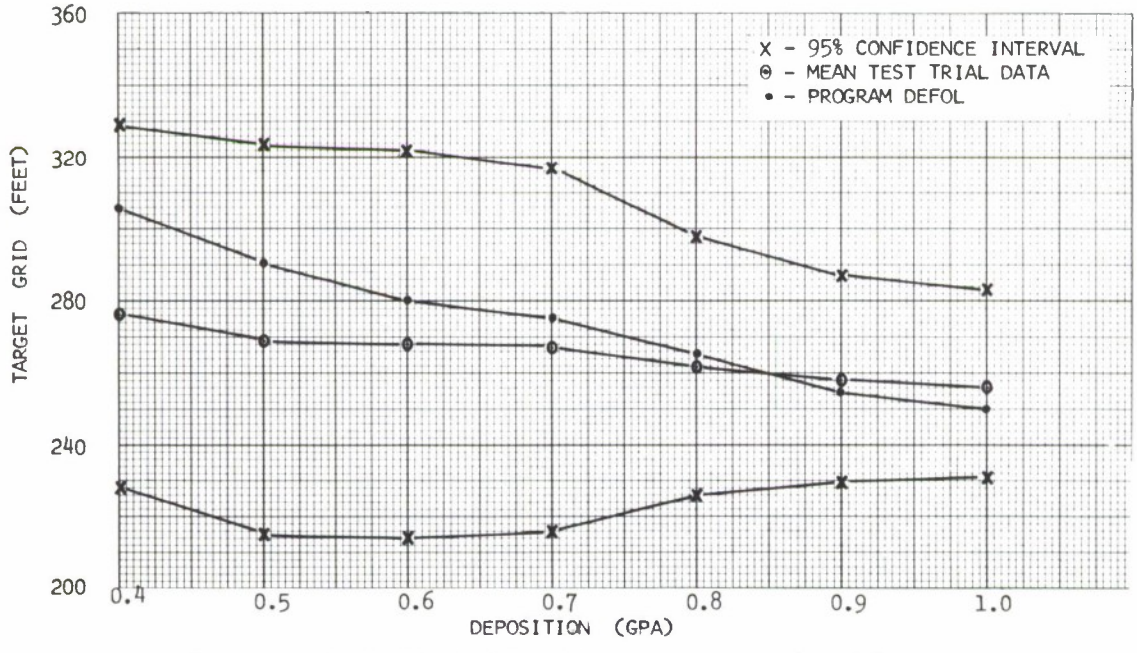


Figure 8. Inwind Swath Width Versus Deposition Level for Mission 602 - High Flow Rate

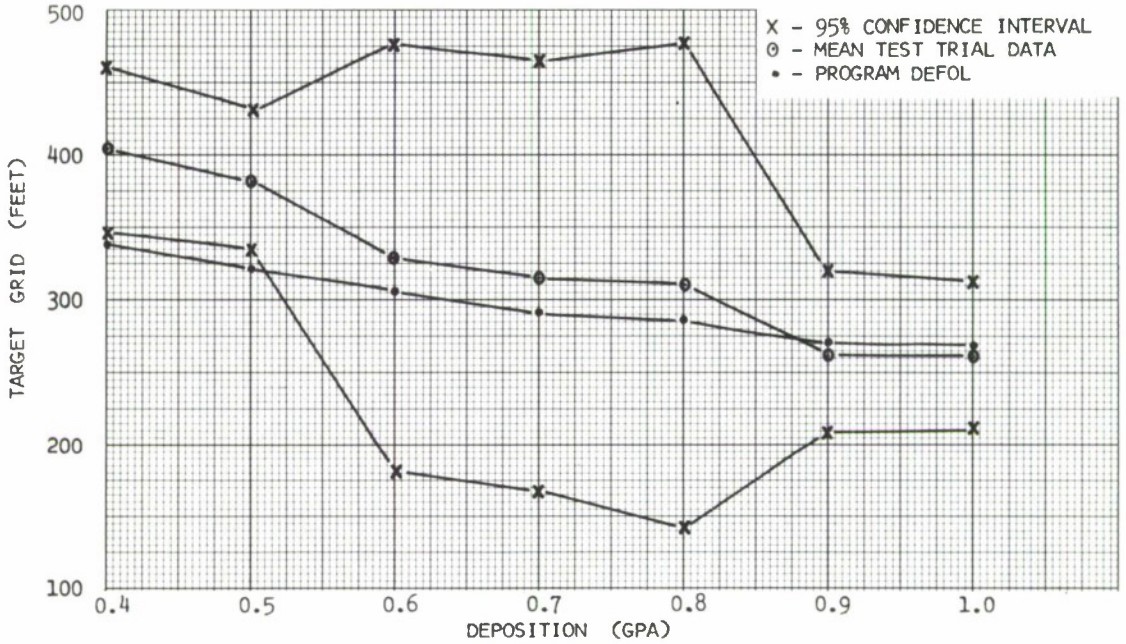


Figure 9. Inwind Swath Width Versus Deposition Level for Mission 555 - High Flow Rate

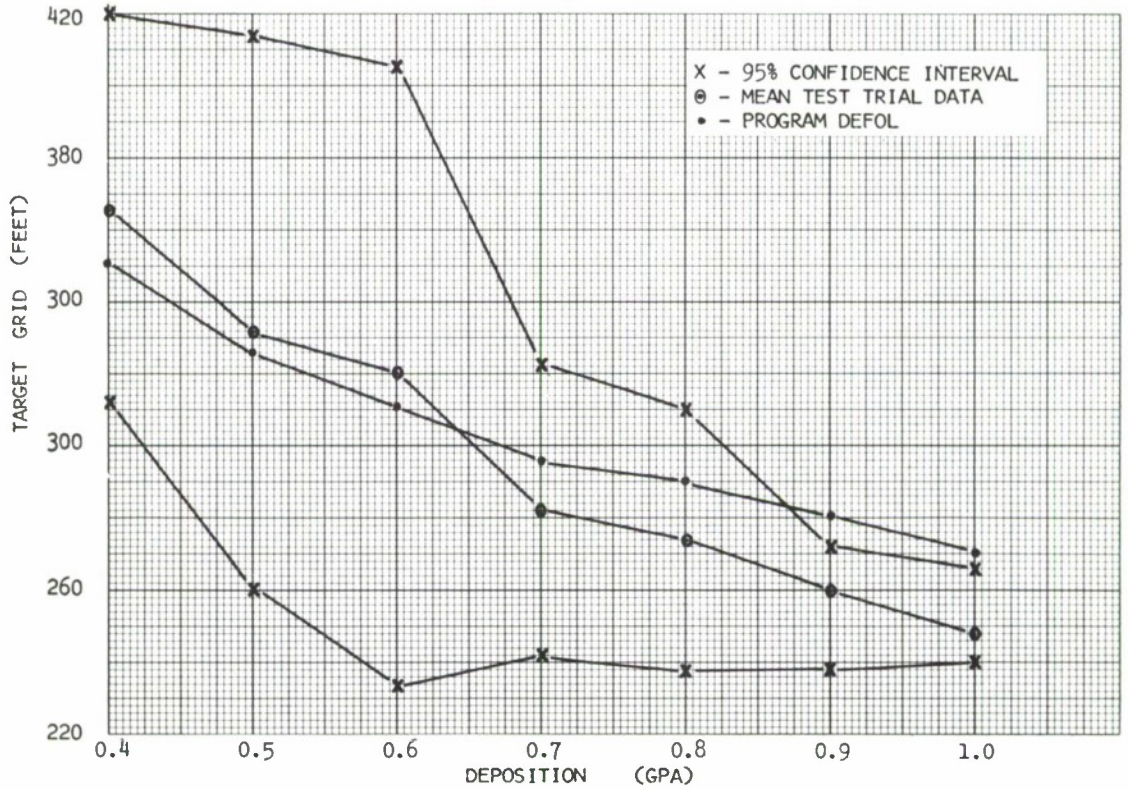


Figure 10. Inwind Swath Width Versus Deposition Level for Mission 323 - High Flow Rate

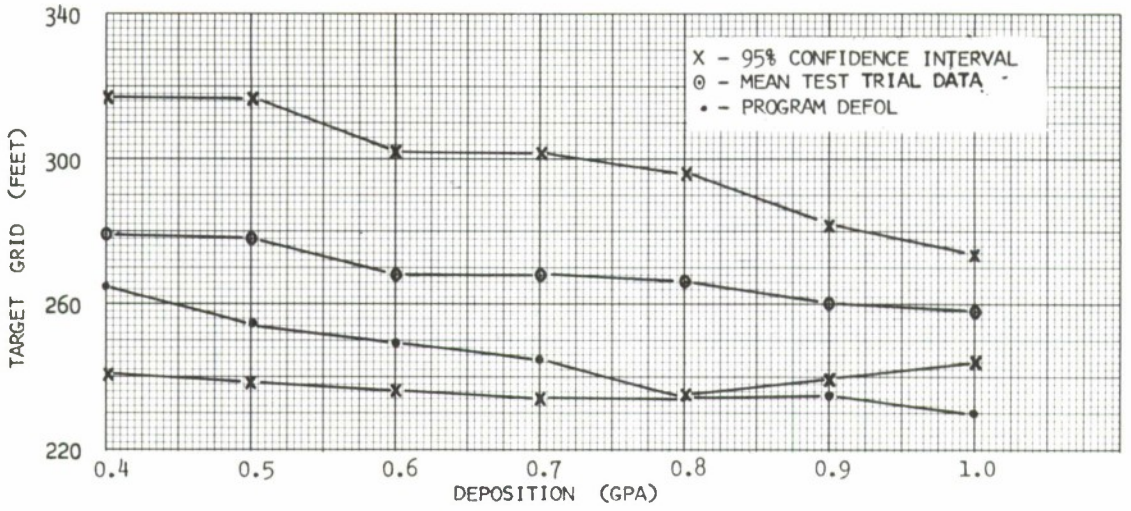


Figure 11. Inwind Swath Width Versus Deposition Level for Mission 5040 - High Flow Rate

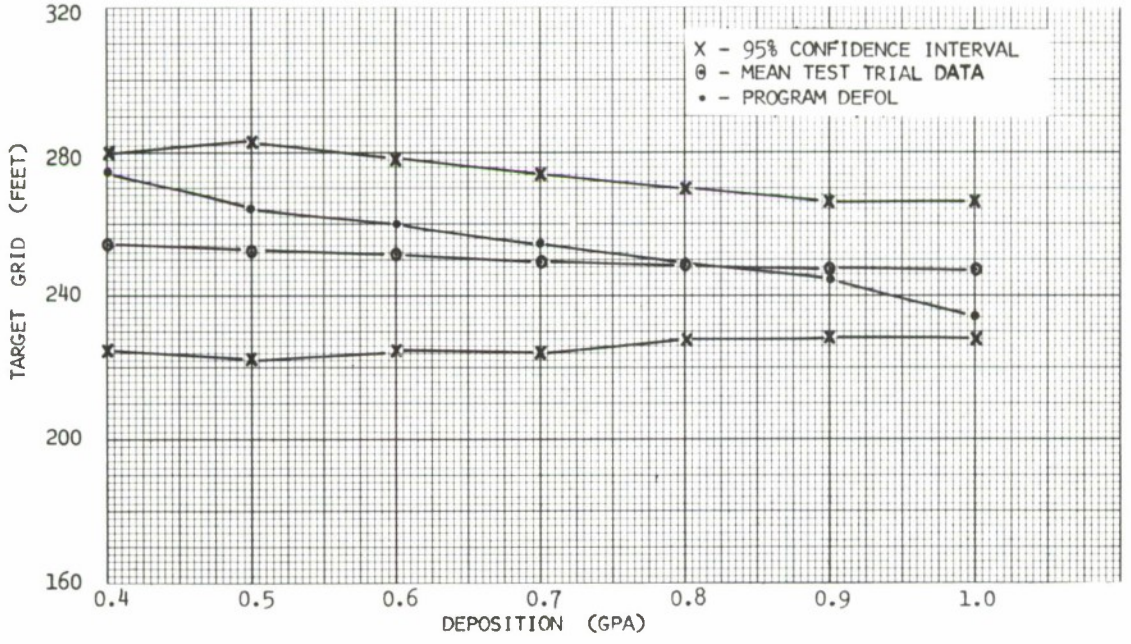


Figure 12. Inwind Swath Width Versus Deposition Level for Mission 4035 - High Flow Rate

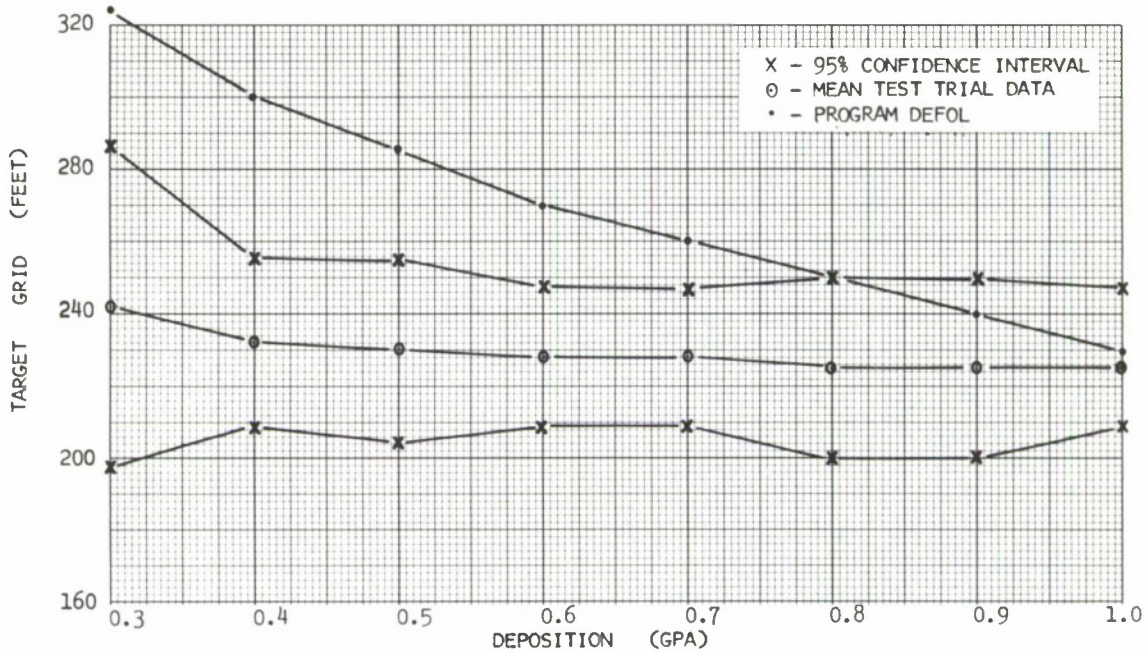


Figure 13. Inwind Swath Width Versus Deposition Level for Mission 343 - Low Flow Rate

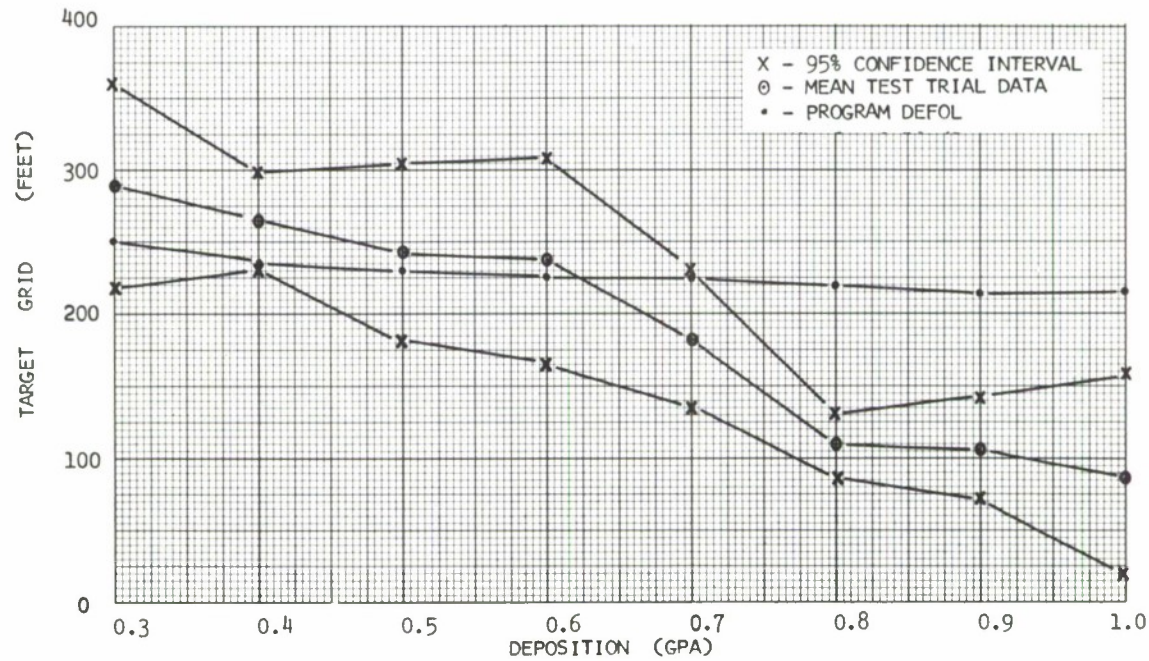


Figure 14. Inwind Swath Width Versus Deposition Level for Mission 5046 - Low Flow Rate

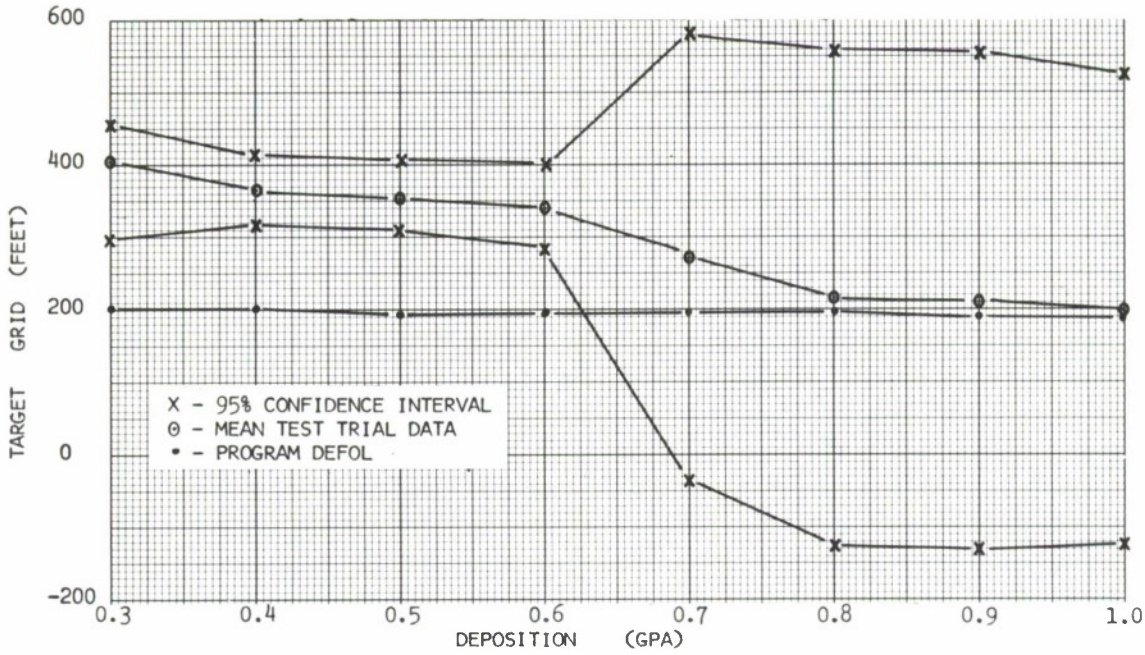


Figure 15. Inwind Swath Width Versus Deposition Level for Mission 505 - Low Flow Rate

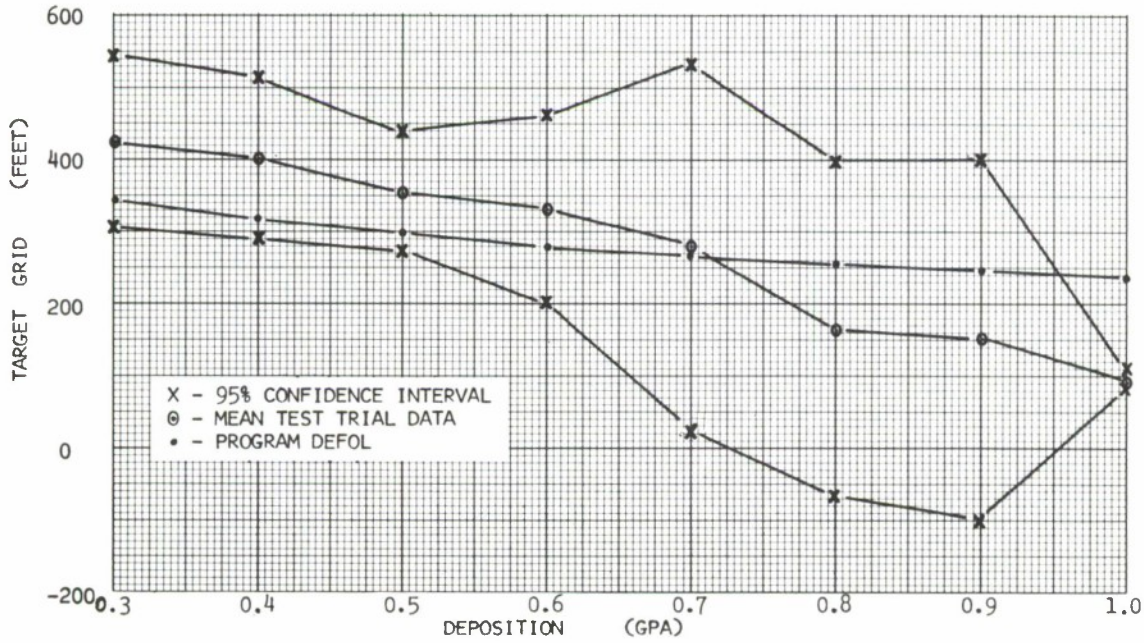


Figure 16. Inwind Swath Width Versus Deposition Level for Mission 345 - Low Flow Rate

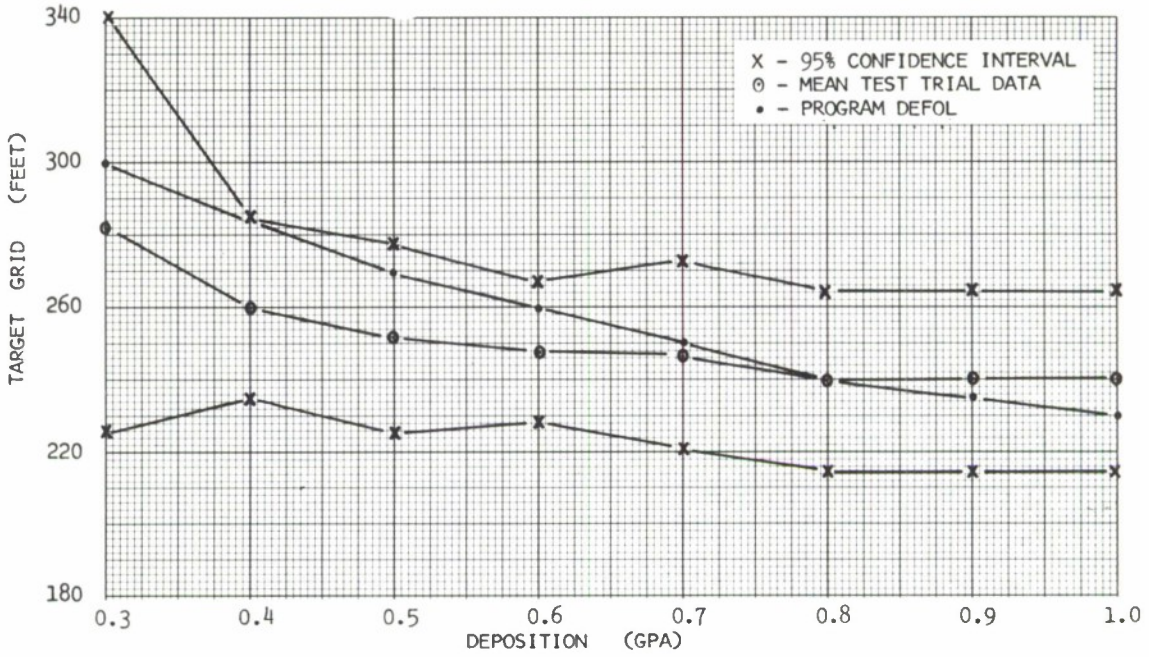


Figure 17. Inwind Swath Width Versus Deposition Level for Mission 758 - Low Flow Rate

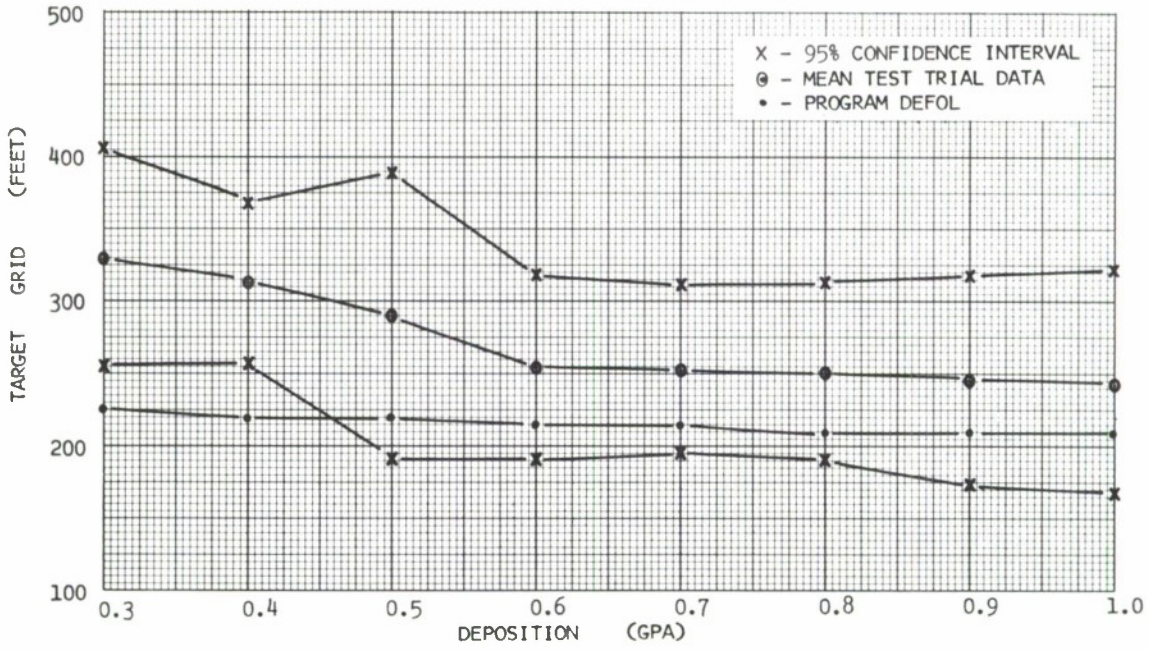


Figure 18. Inwind Swath Width Versus Deposition Level for Mission 247 - Low Flow Rate

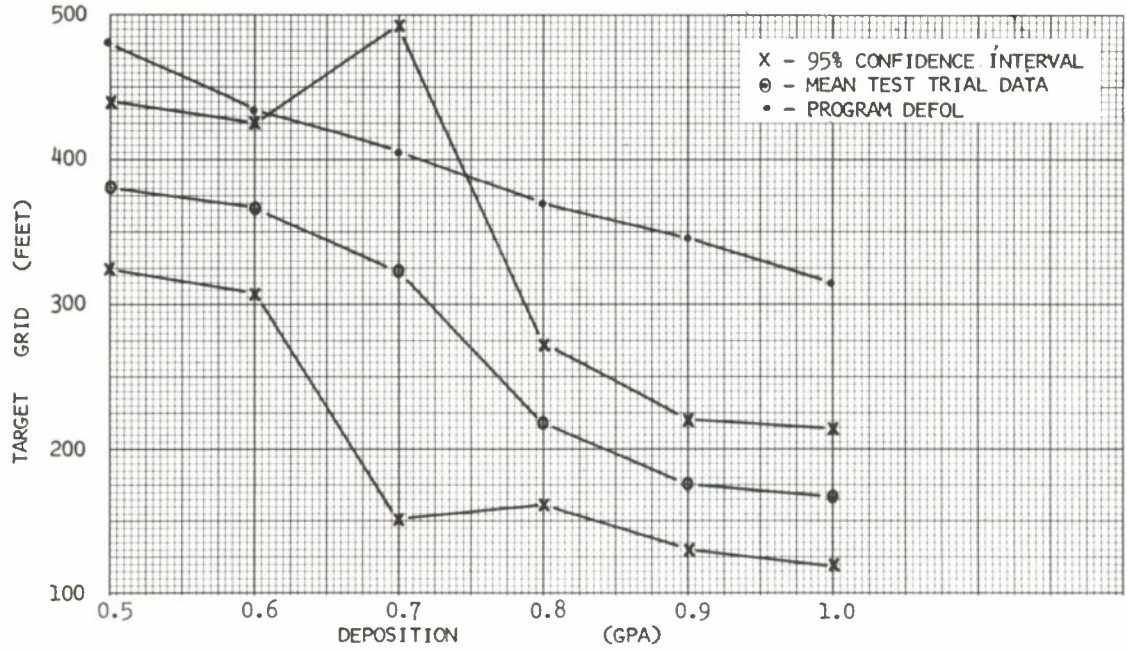


Figure 19. Crosswind Swath Width Versus Deposition Level for Mission 440 - High Flow Rate

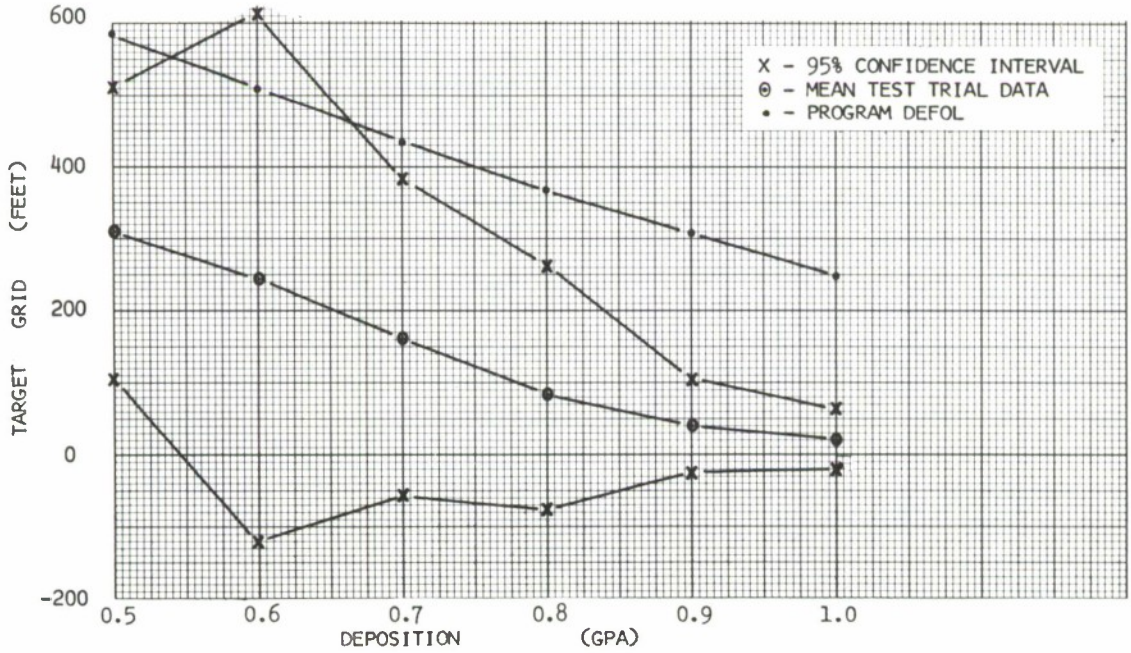


Figure 20. Crosswind Swath Width Versus Deposition Level for Mission 147 - High Flow Rate

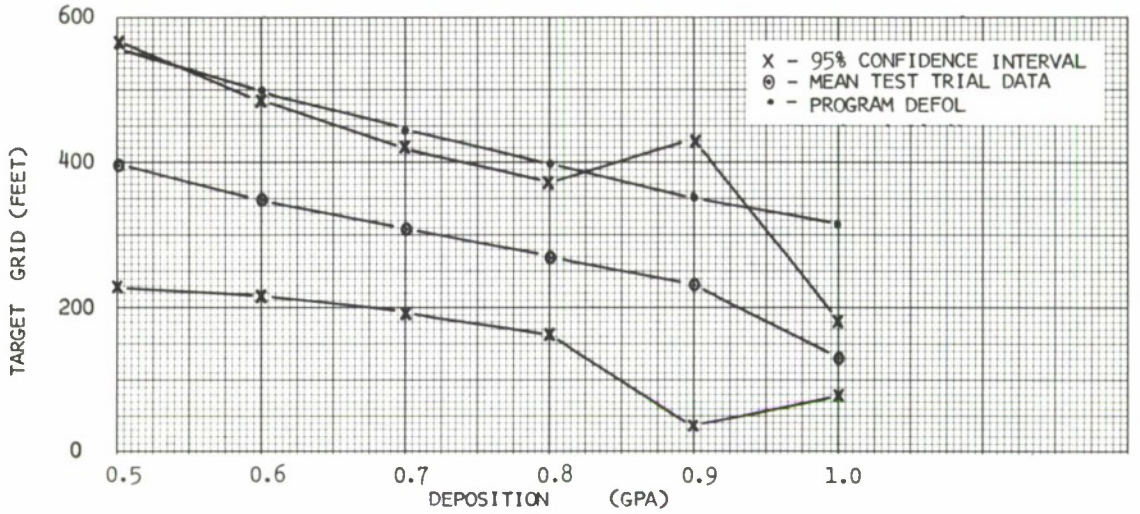


Figure 21. Crosswind Swath Width Versus Deposition Level for Mission 227 - High Flow Rate

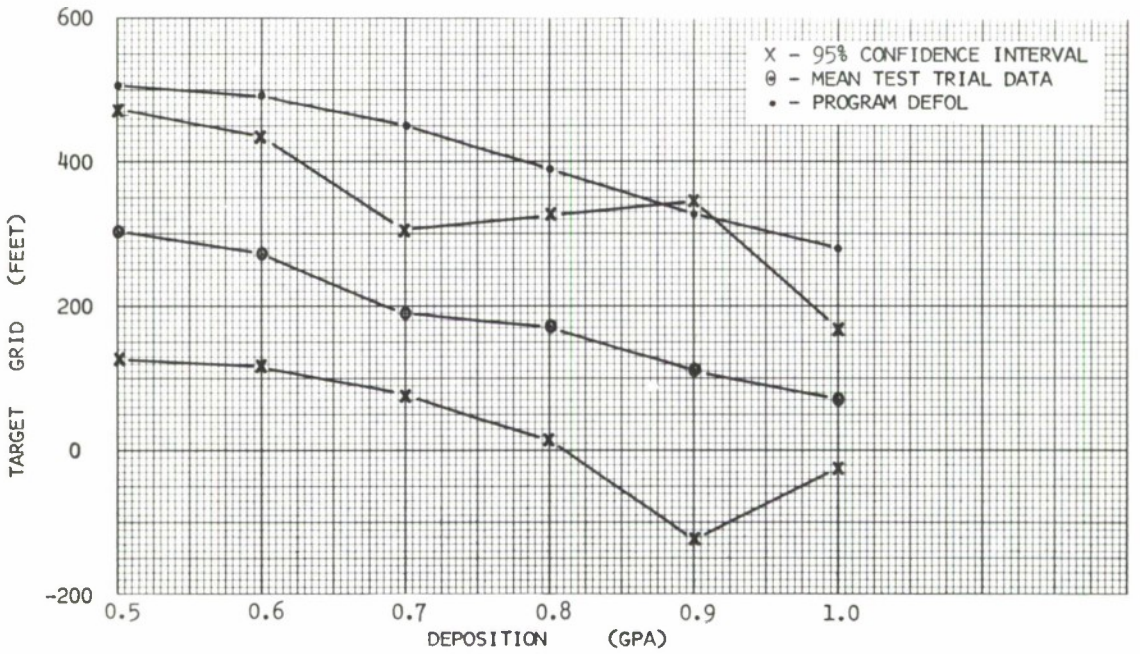


Figure 22. Crosswind Swath Width Versus Deposition Level for Mission 141 - High Flow Rate

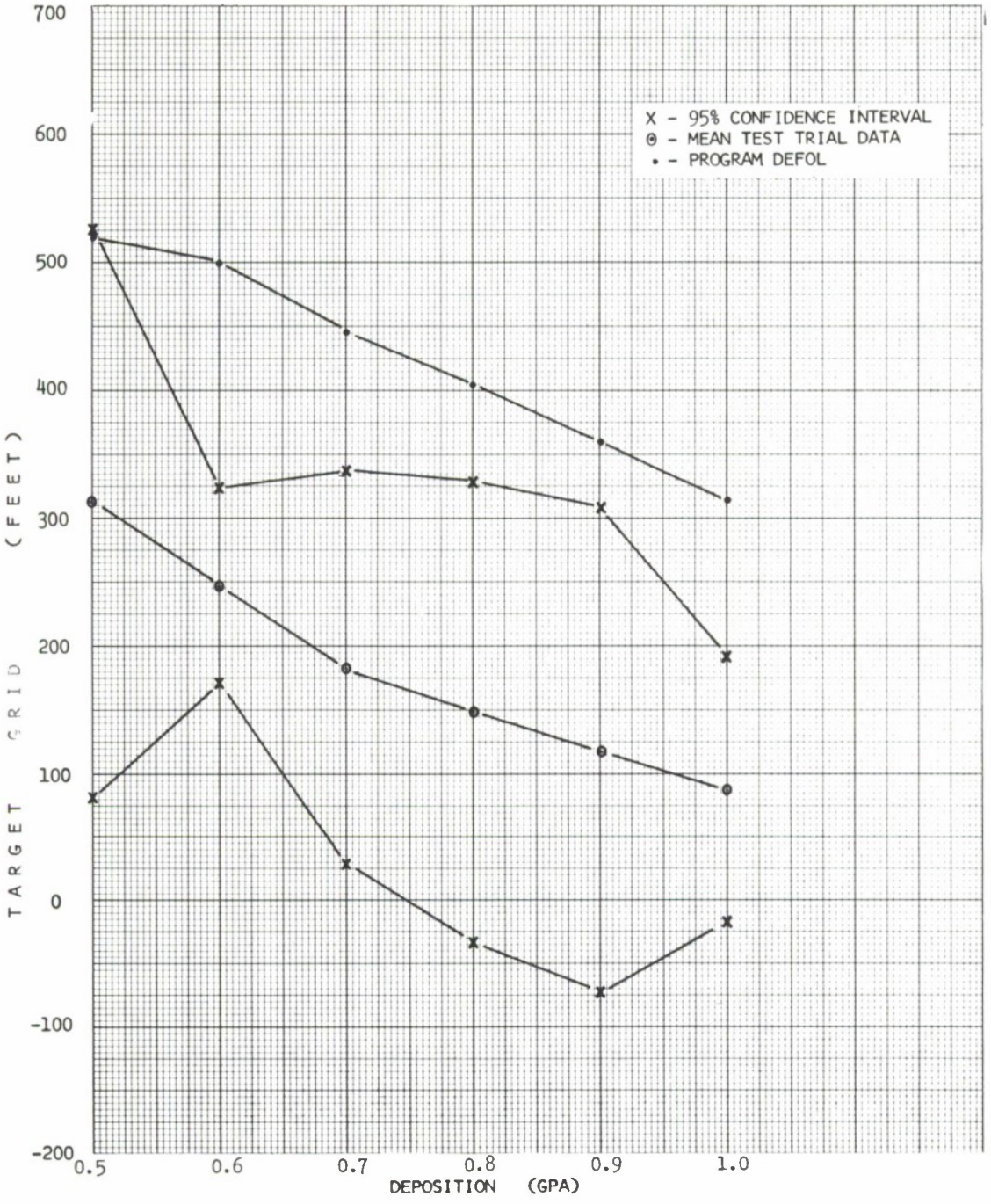


Figure 23. Crosswind Swath Width Versus Deposition Level for Mission 139 - High Flow Rate

trials and predicted by DEFOL. The range of displacement was determined by selecting maximum and minimum values of the three target grid rows. The 95 percent confidence intervals of the swath width displacements for each mission and for given contamination densities have been calculated. These confidence intervals are presented in Tables V-X, V-XI, and V-XII of Appendix V. DEFOL predictions of swath width displacements are also presented in these tables. These values are graphically presented in Figures 24 through 40. DEFOL predictions of swath width displacements yielded similar results as discussed previously for swath widths. Predicted displacements of swath widths ranged from values that were below the values within the 95 percent confidence intervals to values that were above these limits. Specifically, the displacements for all deposition levels considered in the simulation of Mission 5046 (Figure 31) fell within the 95 percent confidence intervals for the various deposition levels. However, in Mission 758 (Figure 34), the DEFOL predictions consistently fell short of the 95 percent confidence intervals for all deposition levels considered. While for Mission 345 (Figure 33), the DEFOL predictions consistently fell beyond the 95 percent confidence intervals for all deposition levels. In all situations, however, it was felt that there was no large deviation in the empirical data when compared to the DEFOL predicted results. Indications were such that DEFOL is considered to accurately simulate crosswind missions when considering swath width displacements. This contrasts directly with the previously discussed results for swath widths.

5. OFF-TARGET DRIFT CONSIDERATIONS

DEFOL computes the concentration of vapor using the Sutton-Calder vapor model. On-target contamination density and off-target drift of defoliant materials have been treated as separate problems with the output of the vapor model and the combined output of the aerosol and liquid models being treated separately in the output routines. Off-target drift was assumed to be composed of vapor and particles less than 10 microns in diameter. Therefore, predictions were made with the Sutton-Calder vapor model. However, there are no data available to substantiate this portion of DEFOL. Rather than omit the calculation of vapor concentrations for off-target drift which cannot be substantiated, it was decided to put the feature of calculating vapor concentration into DEFOL for off-target considerations and recommend that as data become available, analysis should then be conducted. Off-target drift of vapor concentrations is automatically calculated on any DEFOL simulation whenever the total amounts of liquid and aerosol do not add up to 100 percent of the total amount

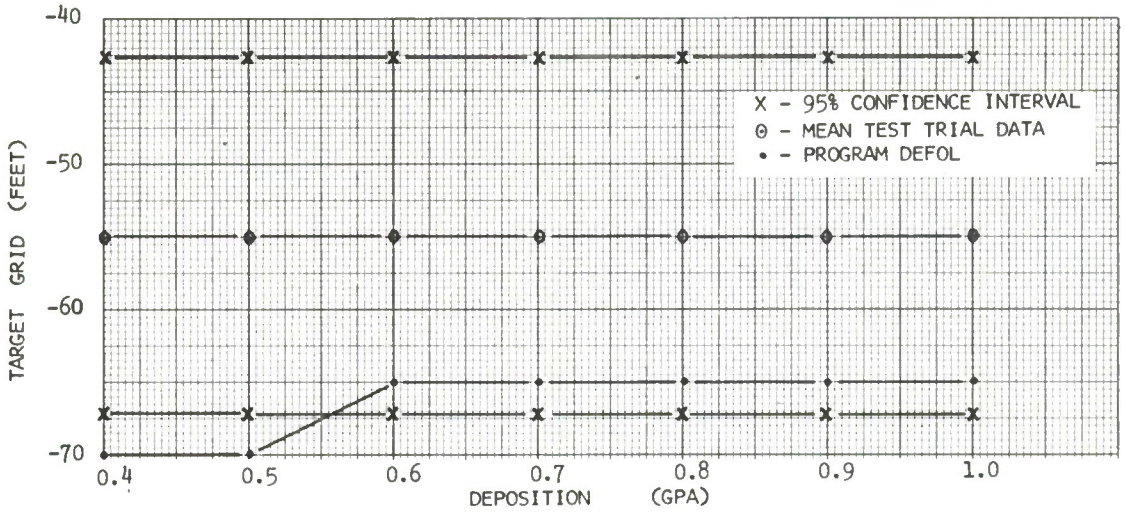


Figure 24. Inwind Swath Width Displacement Versus Deposition Level for Mission 49 - High Flow Rate

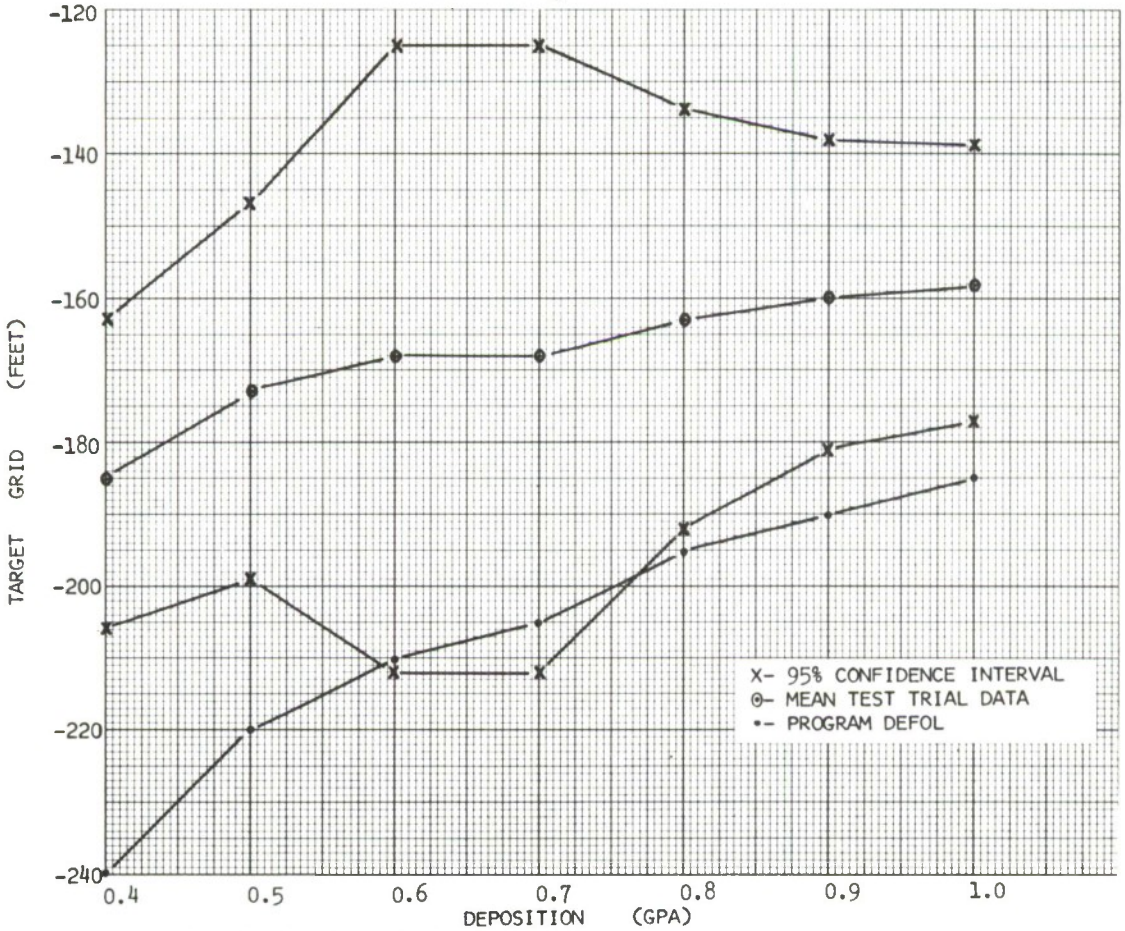


Figure 25. Inwind Swath Width Displacement Versus Deposition Level for Mission 602 - High Flow Rate

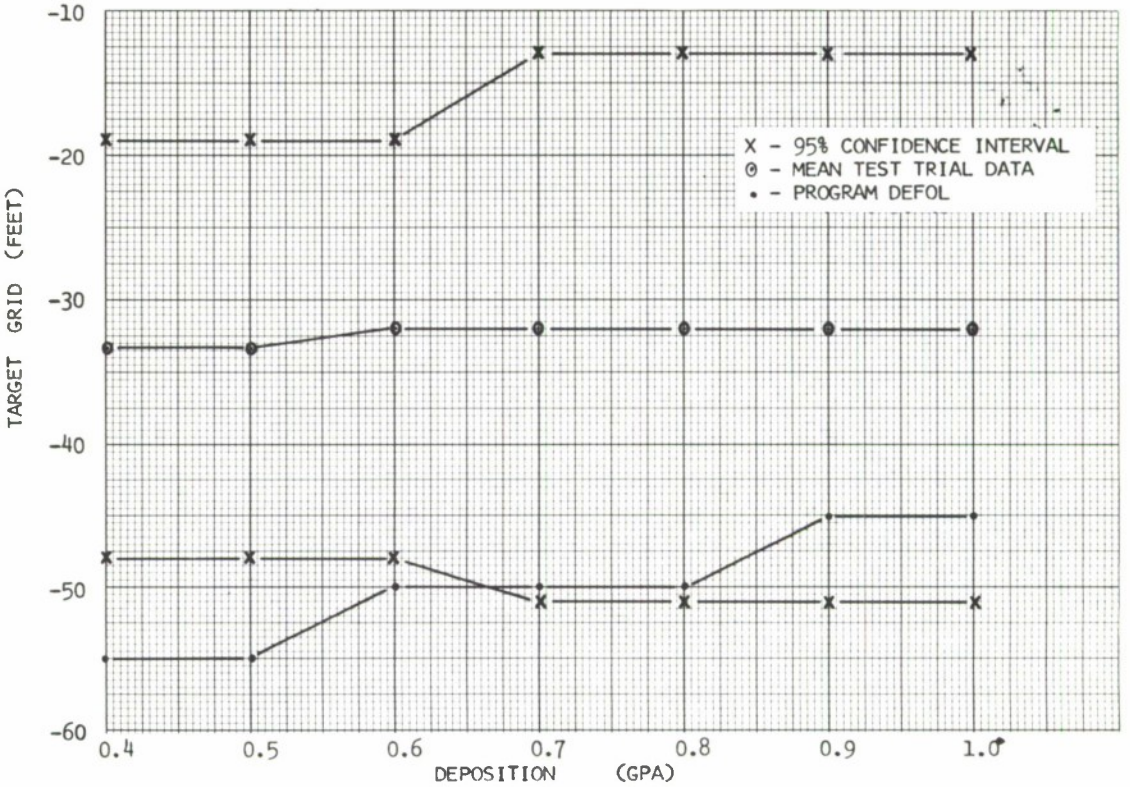


Figure 26. Inwind Swath Width Displacement Versus Deposition Level for Mission 555 - High Flow Rate

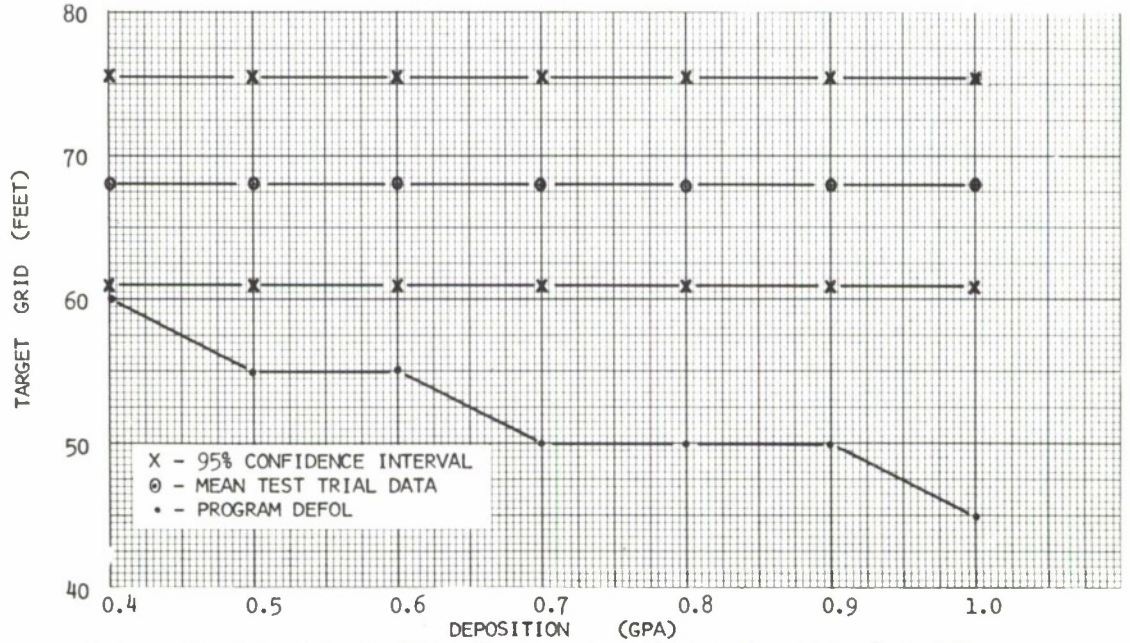


Figure 27. Inwind Swath Width Displacement Versus Deposition Level for Mission 323 - High Flow Rate

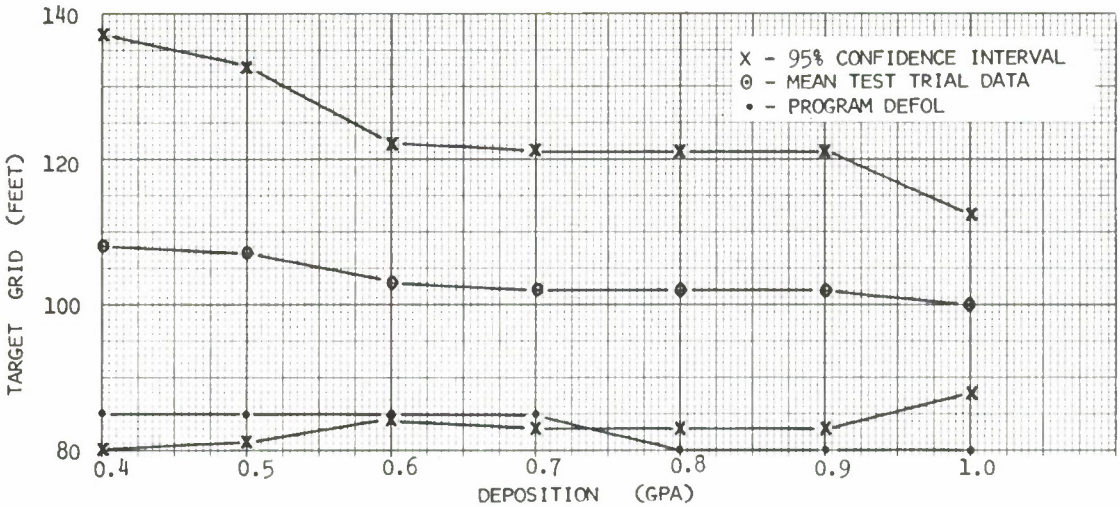


Figure 28. Inwind Swath Width Displacement Versus Deposition Level for Mission 5050 - High Flow Rate

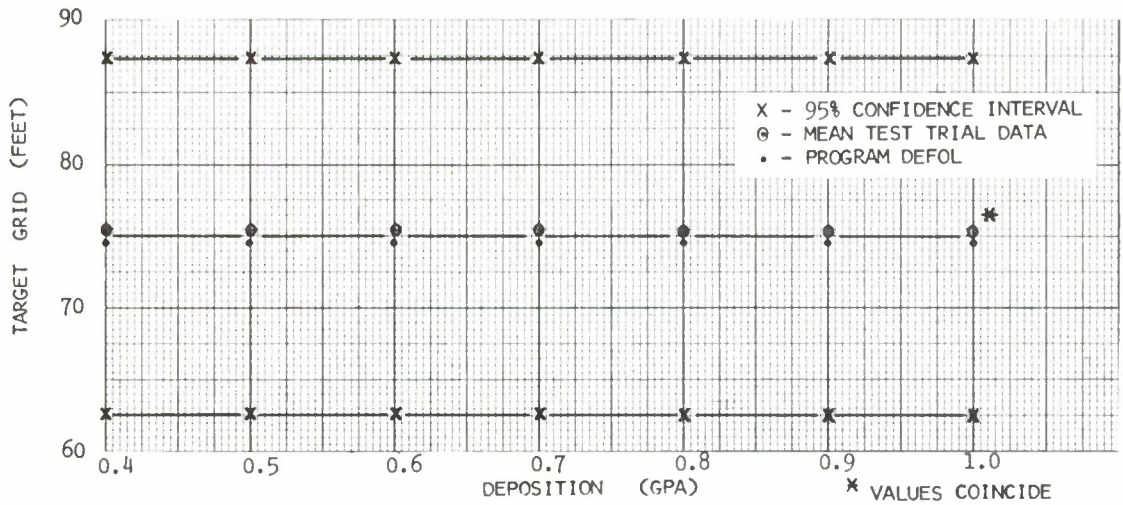


Figure 29. Inwind Swath Width Displacement Versus Deposition Level for Mission 4035 - High Flow Rate

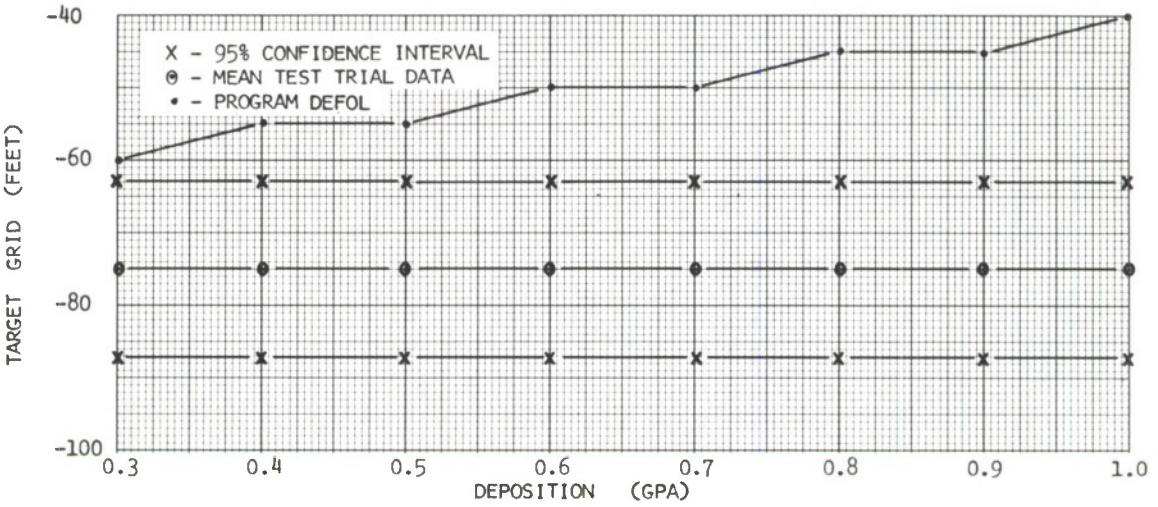


Figure 30. Inwind Swath Width Displacement Versus Deposition Level for Mission 343 - Low Flow Rate

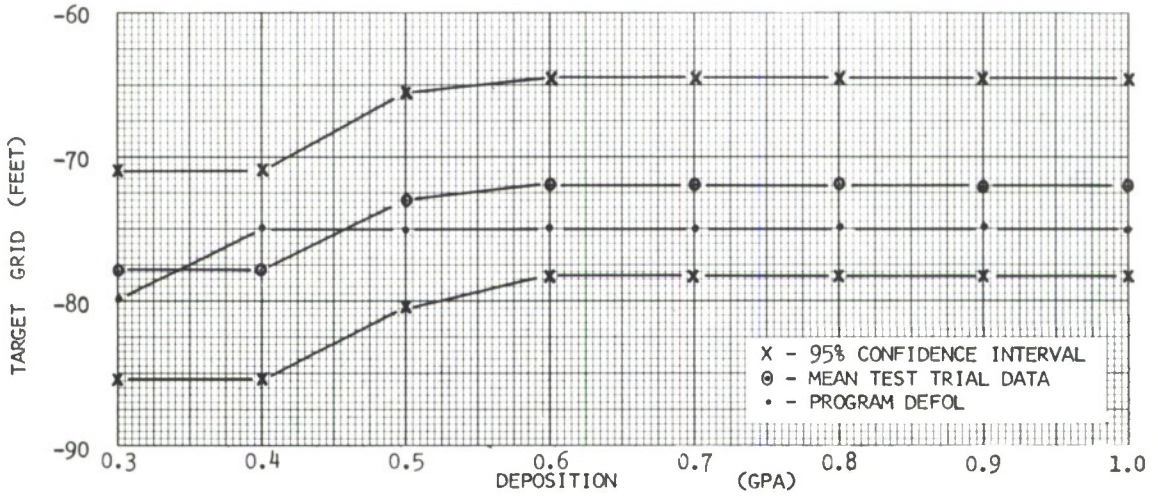


Figure 31. Inwind Swath Width Displacement Versus Deposition Level for Mission 5046 - Low Flow Rate

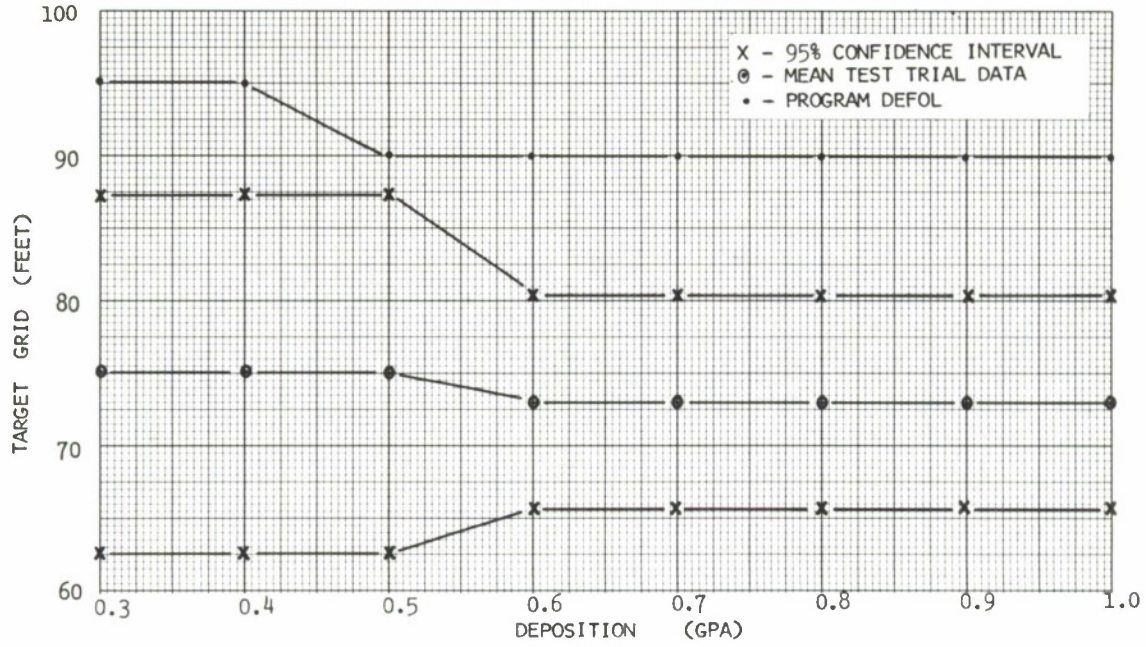


Figure 32. Inwind Swath Width Displacement Versus Deposition Level for Mission 505 - Low Flow Rate

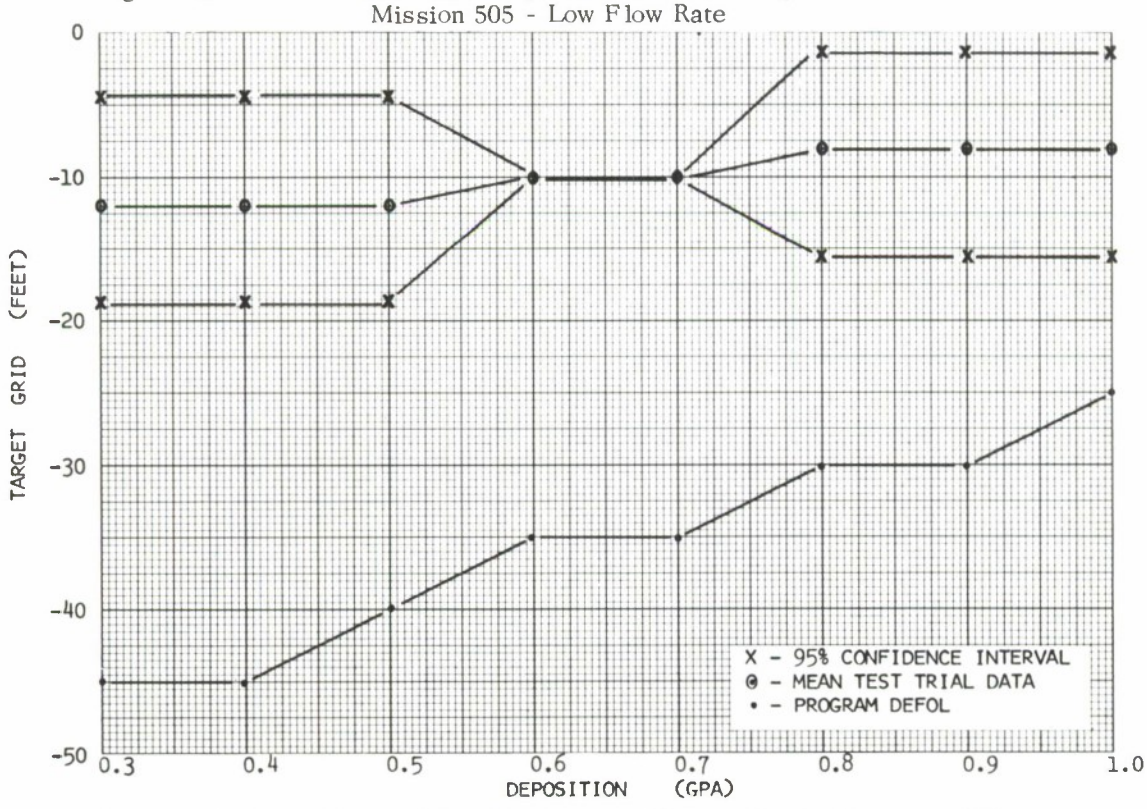


Figure 33. Inwind Swath Width Displacement Versus Deposition Level for Mission 345 - Low Flow Rate

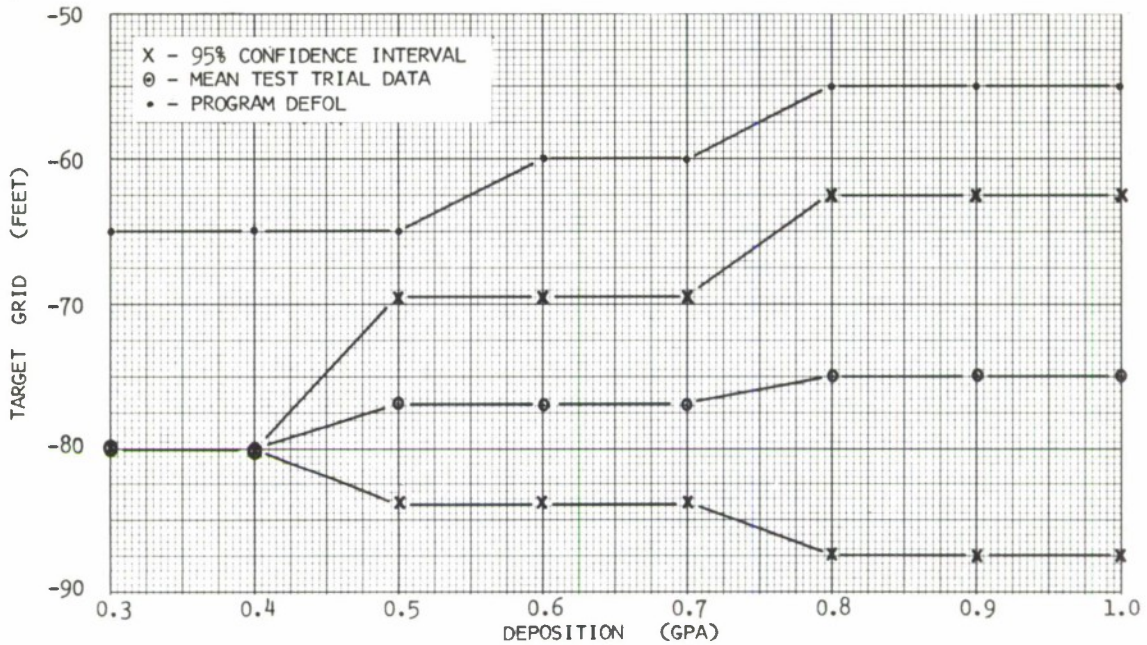


Figure 34. Inwind Swath Width Displacement Versus Deposition Level for Mission 758 - Low Flow Rate

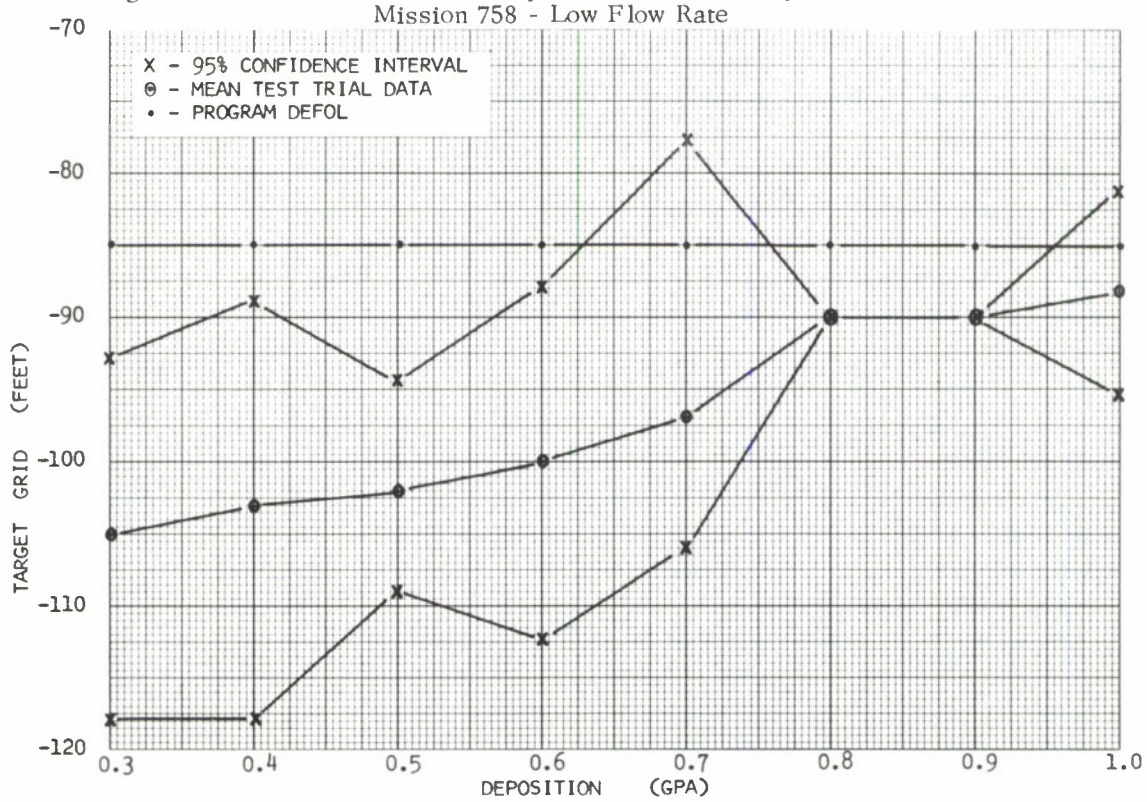


Figure 35. Inwind Swath Width Displacement Versus Deposition Level for Mission 247 - Low Flow Rate

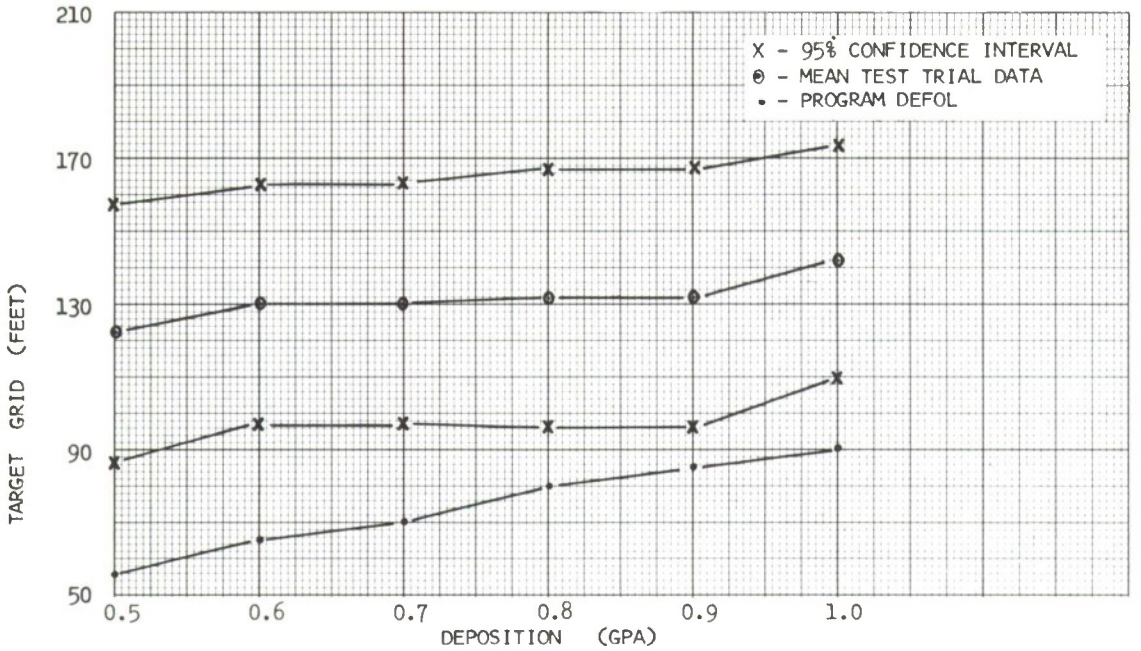


Figure 36. Crosswind Swath Width Displacement Versus Deposition Level for Mission 440 - High Flow Rate

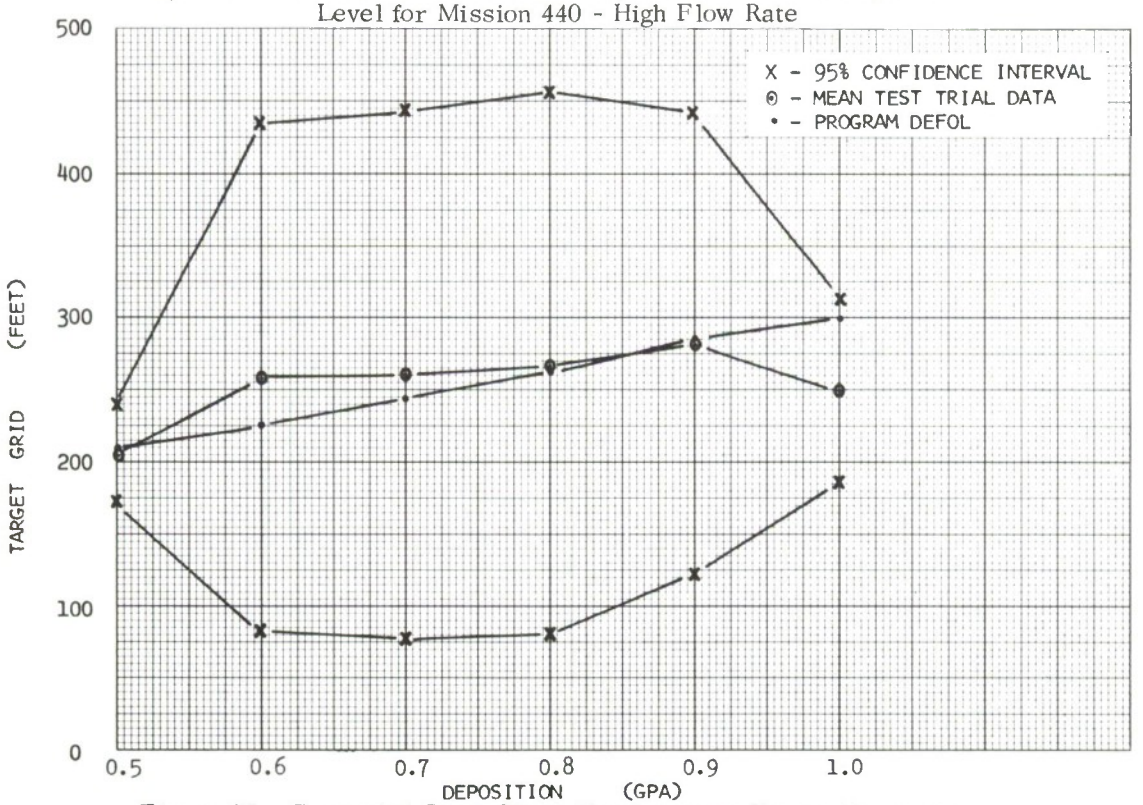


Figure 37. Crosswind Swath Width Displacement Versus Deposition Level for Mission 147 - High Flow Rate

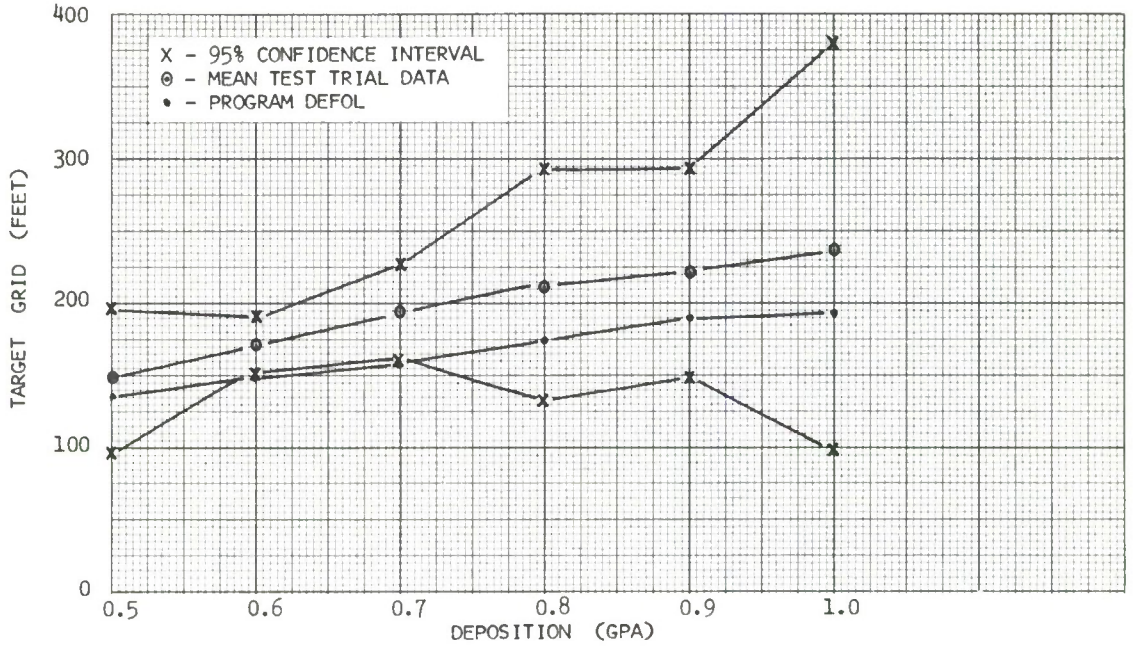


Figure 38. Crosswind Swath Width Displacement Versus Deposition Level for Mission 227 - High Flow Rate

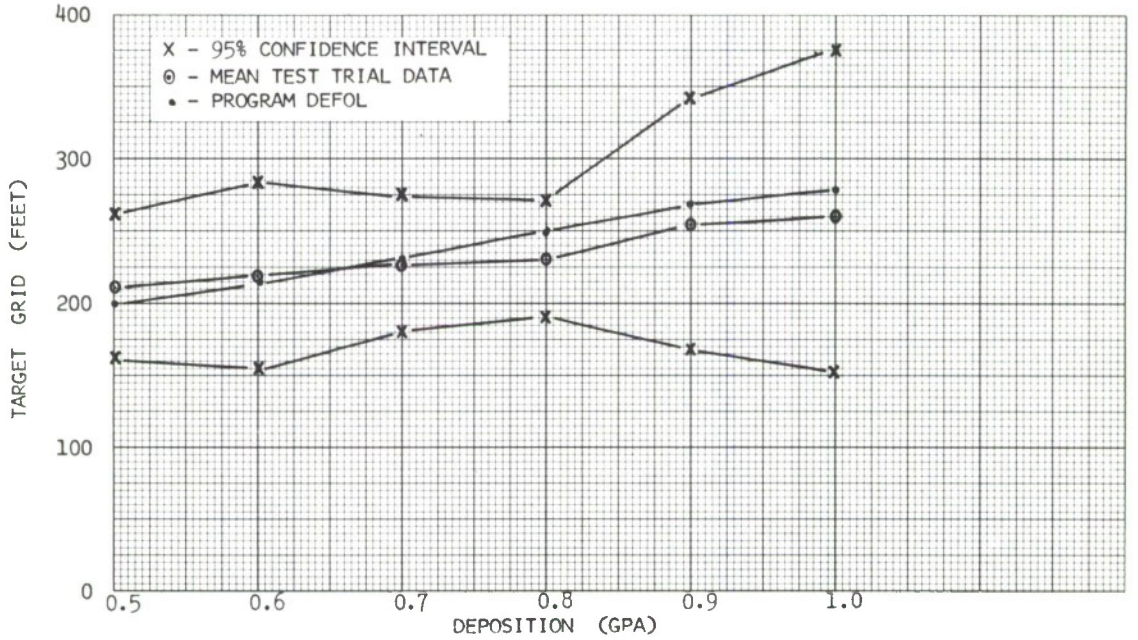


Figure 39. Crosswind Swath Width Displacement Versus Deposition Level for Mission 141 - High Flow Rate

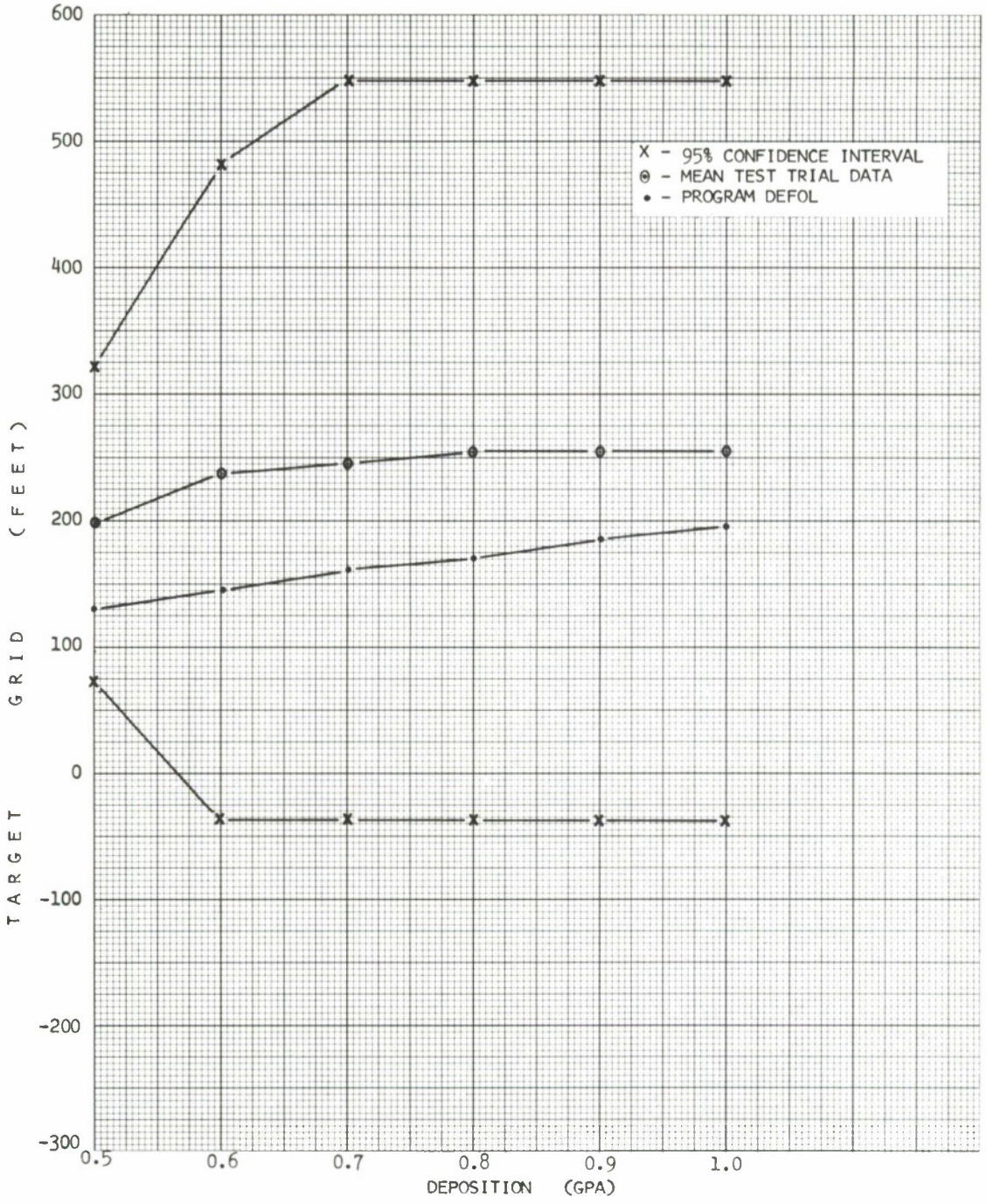


Figure 40. Crosswind Swath Width Displacement Versus Deposition Level for Mission 139 - High Flow Rate

of defoliant delivered. There are no distance limitations relative to the delivery line for calculating off-target drift. A feature which allows off-target drift to be calculated for additional targets located in units of miles from the delivery line was added to DEFOL. This feature is in addition to the normal capability to describe the target grid (whether on-target or off-target) in units of feet. Lack of data prevents any feature for calculation of off-target drift from being substantiated at the time of publication of this report.

6. CONCLUSIONS

DEFOL was written to simulate any external defoliant system although it was used in this study to simulate the A/A45Y-1 defoliant system mounted in the C-123 aircraft. Using the limited data available, DEFOL proved to be an effective model for calculating on-target deposition of defoliant material under normal inwind delivery conditions. Features exist in DEFOL that permit the estimation of off-target drift of defoliant particles sized less than or equal to 10 microns. However, since no data were available to prove or disprove these estimates, no attempt was made to address these data in this report.

Although DEFOL proved to be an effective model for its primary purpose, simulation of defoliation missions conducted under inwind delivery conditions, data were included for crosswind delivery conditions to see how DEFOL simulated these conditions. It was discovered that DEFOL, when parameterized for inwind delivery of defoliants, would not effectively simulate delivery of defoliants under crosswind conditions. However, time limitations prevented any deeper research into crosswind simulations. From all indications, it is felt that DEFOL could be parameterized for crosswind delivery of defoliants following further sensitivity tests of the input parameters, especially EXPAND, PCTLIQ, PCTASL, SIGTI, and DELTA.

SECTION V

RECOMMENDATIONS

DEFOL is thought to be an effective model for prediction of on-target contamination density for defoliant materials under normal in-wind delivery conditions. However, only seventeen test trials were available to compare with DEFOL output—twelve inwind and seven crosswind trials. These data certainly did not provide sufficient resources for exhaustive testing of the developed model. No data existed for testing the off-target prediction capabilities of DEFOL. In general, lack of data prevents a complete development of a defoliation model. More specifically, a data bank needs to be built which will provide data of the following type:

- Defoliation trials over forested environments. (The seventeen trials used were conducted in open terrain.)
- Effects of differing meteorological conditions.
- Defoliation trials for the purpose of determining contamination density of off-target drift ranging as far as several miles from the release line.
- Different defoliation trials conducted under as similar meteorological conditions as possible.
- Defoliation trials using different defoliants.

Any combination of the above data could provide a basis for refining the methodology developed for program DEFOL. The building of such a data bank will also provide insight into other areas of data gaps.

It is felt that the user should utilize this model for the purpose of expanding the JMEM, developing more complete effectiveness tables, and for providing supplementary data for the JMEM such as interpolation and extrapolation routines. The DEFOL program may also be used to optimize the best combination of nozzle location and flow rate for maximum defoliation when holding other variables such as aircraft delivery conditions constant. Although the best combination

of nozzle location and defoliant flow rate through the nozzles may be determined for one set of aircraft delivery conditions, a different combination may be required where new aircraft delivery conditions are simulated. It is conceivable that DEFOL could be used to find the best combination of aircraft delivery conditions and external spray line configuration. DEFOL should be a very useful tool for evaluation of any new or existing defoliation system.

(The reverse of this page is blank)

APPENDIX I

TEST TRIAL DEPOSITION DATA

Appendix I contains tables of test trial deposition data for the seventeen missions simulated in program DEFOL. Data in these tables are presented in gallons per acre for each sampling station of the three target grid rows. Pertinent meteorological and aircraft delivery conditions for each test trial simulated are presented in Tables II, III, and IV of the main body of this volume.

LIST OF TABLES

LIST OF TABLES (Concluded)

TABLE I-I. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 49

STA NO	ROW A	ROW B	ROW C
136	0.1	<0.1	<0.1
137	3.6	<0.1	<0.1
138	7.0	4.5	<0.1
139	6.5	3.0	2.8
140	6.5	3.0	2.4
141	6.5	4.8	2.4
142	3.6	4.8	4.8
143	3.0	4.2	6.5
144	2.8	3.0	3.6
145	2.6	1.8	3.6
146	1.5	2.1	2.4
147	1.8	1.8	2.4
148	1.8	2.1	2.4
149	1.8	1.8	2.0
150	1.5	1.8	1.8
151	1.5	1.5	1.5
152	1.5	1.5	1.5
153	1.5	1.2	1.5
154	1.5	1.8	1.5
155	1.5	1.5	1.8
156	4.2	2.4	2.0
157	4.8	4.2	4.0
158	2.1	3.6	3.8
159	1.2	3.6	5.0
160	1.2	1.8	2.0
161	1.3	1.5	1.2
162	1.1	1.2	1.5
163	1.0	0.9	1.2
164	0.9	1.0	1.2
165	0.9	0.9	0.9
166	0.8	0.9	1.1
167	1.1	1.0	1.1
168	1.2	1.2	1.3
169	1.1	1.3	1.1
170	1.2	1.2	0.9
171	1.2	1.0	1.1
172	1.5	0.9	1.2
173	1.2	1.8	1.0
174	1.5	1.1	1.5
175	2.1	1.2	1.2
176	2.1	1.8	1.8
177	2.2	2.7	1.8
178	2.2	2.1	1.8
179	2.4	2.4	1.7
180	2.2	2.4	2.0
181	2.2	2.4	2.0
182	2.2	2.7	2.4
183	2.1	2.1	3.9
184	1.5	1.8	1.8
185	1.2	2.1	2.0
186	1.5	2.1	2.0
187	1.5	1.8	1.8
188	1.5	1.5	1.5
189	1.2	1.5	1.2
190	0.8	1.1	1.2
191	0.7	0.9	1.2
192	0.8	0.9	0.9
193	0.8	1.0	0.9
194	0.7	0.7	0.9
195	0.8	0.6	1.0

TABLE I-I. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 49
(Concluded)

STA NO	ROW A	ROW B	ROW C
196	0.8	0.7	0.8
197	0.5	0.5	0.6
198	0.5	0.5	0.5
199	0.4	0.4	0.3
200	0.3	0.4	0.4
201	0.2	0.3	0.4
202	0.2	0.2	0.3
203	0.1	0.3	0.3
204	0.1	0.2	0.2
205	0.1	0.2	0.2
206	0.1	0.2	0.1
207	0.1	0.1	0.1
208	0.1	0.1	0.1
209	0.1	0.1	0.1
210	0.1	0.1	0.1
211	0.1	0.1	0.1
212	0.1	0.1	0.1
213	0.1	0.1	0.1
214	0.1	0.1	0.1
Station 215 through 240 less than 0.1 for Rows A, B, and C.			
241	0.0	<0.1	0.0
242	0.0	<0.1	0.0
243	0.0	<0.1	0.0
244	0.0	<0.1	0.0
245	0.0	0.0	0.0

TABLE I-II. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 602

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
93	<0.1	<0.1	<0.1	113	0.4	0.4	0.7	133	2.0	2.1	1.6
94	<0.1	<0.1	<0.1	114	0.4	0.3	0.7	134	1.4	1.6	1.1
95	0.1	<0.1	<0.1	115	0.8	0.4	0.8	135	2.0	1.2	1.7
96	0.1	<0.1	<0.1	116	0.9	0.5	1.1	136	1.6	1.0	1.6
97	0.1	0.1	<0.1	117	1.2	0.4	1.1	137	1.6	1.1	0.8
98	0.1	0.1	<0.1	118	1.7	0.5	2.3	138	1.9	1.2	1.0
99	0.1	0.1	<0.1	119	1.5	1.5	2.0	139	1.7	1.7	1.3
100	0.1	0.1	<0.1	120	2.3	2.4	3.4	140	1.7	2.3	1.0
101	0.1	0.1	<0.1	121	2.3	3.7	4.5	141	0.9	2.5	1.0
102	0.1	0.1	<0.1	122	2.6	4.7	3.1	142	1.2	2.8	0.9
103	0.2	0.1	0.1	123	2.9	8.0	3.9	143	2.5	2.8	0.8
104	0.2	0.1	0.1	124	5.1	5.8	3.8	144	1.6	2.8	0.9
105	0.2	0.1	0.1	125	8.7	7.5	2.9	145	2.7	2.5	0.8
106	0.2	0.1	<0.1	126	6.3	6.2	2.8	146	2.3	2.6	1.0
107	0.2	0.1	0.1	127	4.3	4.9	3.3	147	3.2	4.3	3.9
108	0.2	0.1	0.1	128	5.4	4.0	3.0	148	2.8	4.1	5.6
109	0.2	0.2	0.2	129	3.3	4.4	3.1	149	3.8	3.4	4.0
110	0.2	0.2	0.4	130	3.6	3.9	3.2	150	4.3	3.1	1.5
111	0.2	0.3	0.4	131	2.7	3.5	2.1	151	3.0	1.5	1.5
112	0.2	0.3	0.7	132	2.5	2.8	1.5	152	1.0	1.5	1.1

TABLE I-II. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 602
(Concluded)

STA NO	ROW A	ROW B	ROW C
153	0.8	1.3	1.1
154	1.1	1.5	1.3
155	1.3	1.6	1.7
156	1.4	1.9	2.0
157	1.2	2.6	2.0
158	1.8	3.2	2.4
159	2.0	3.0	2.7
160	2.5	4.2	3.2
161	3.3	4.4	4.5

STA NO	ROW A	ROW B	ROW C
162	7.6	3.8	5.5
163	7.1	1.8	5.5
164	7.3	9.0	3.7
165	5.5	3.6	2.7
166	4.2	3.8	3.2
167	2.5	2.1	2.0
168	1.5	0.1	2.6
169	0.5	<0.1	<0.1
170	0.3	<0.1	<0.1

STA NO	ROW A	ROW B	ROW C
171	<0.1	<0.1	<0.1
172	<0.1	<0.1	<0.1
173	<0.1	<0.1	<0.1
174	<0.1	<0.1	<0.1
175	<0.1	<0.1	<0.1
176	<0.1	<0.1	<0.1
177	<0.1	<0.1	<0.1
178	<0.1	<0.1	<0.1

TABLE I-III. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 555

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
140	0.0	0.4	0.0	160	2.3	1.8	2.0	180	0.7	1.2	0.9
141	0.0	2.0	0.0	161	2.6	1.6	2.0	181	0.7	1.1	0.7
142	<0.1	2.6	0.6	162	2.1	1.1	1.4	182	1.0	1.0	0.9
143	0.6	1.2	2.0	163	2.0	1.1	1.4	183	1.4	1.0	1.4
144	3.3	1.6	2.0	164	1.6	1.2	1.2	184	1.2	0.8	1.4
145	1.7	1.9	2.1	165	1.9	1.2	1.2	185	1.2	1.0	1.4
146	1.9	2.3	2.1	166	1.3	1.1	1.3	186	1.2	1.2	1.4
147	2.2	2.3	1.2	167	1.1	1.3	1.2	187	1.6	1.0	1.4
148	1.2	2.6	2.8	168	1.2	1.5	1.0	188	1.5	1.0	1.4
149	1.4	5.1	2.8	169	1.1	1.4	1.4	189	1.2	0.8	1.4
150	2.0	4.6	3.1	170	1.0	1.0	1.0	190	1.5	1.0	1.7
151	4.3	4.6	3.6	171	1.1	1.2	0.9	191	1.4	1.0	1.6
152	4.1	4.8	2.4	172	1.1	1.2	0.8	192	0.6	1.1	1.4
153	4.3	2.6	1.2	173	1.1	0.9	0.9	193	1.0	1.1	1.0
154	2.3	4.2	1.0	174	1.1	1.0	1.0	194	1.1	0.8	1.4
155	2.3	1.0	0.8	175	0.9	1.1	1.0	195	0.6	0.8	1.2
156	2.9	2.0	1.7	176	0.8	1.1	0.9	196	0.6	0.7	1.1
157	2.3	2.2	2.2	177	0.7	1.2	0.9	197	0.5	0.9	1.2
158	2.5	2.0	2.0	178	1.0	0.9	0.8	198	0.6	0.9	1.0
159	2.3	2.0	2.4	179	0.6	1.0	0.9	199	0.6	1.0	0.9

TABLE I-III. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 555
(Concluded)

STA NO	ROW A	ROW B	ROW C
200	1.0	0.9	0.6
201	1.0	1.1	0.8
202	0.9	0.9	1.1
203	1.1	0.7	1.0
204	1.0	1.3	1.0
205	0.7	0.9	0.8
206	0.8	0.9	0.6
207	0.8	0.9	0.6
208	0.8	0.8	0.6
209	0.6	0.9	0.6
210	0.7	0.9	0.5
211	0.7	0.8	0.5
212	0.6	0.9	0.5
213	0.6	0.8	0.5
214	0.6	0.8	0.5
215	0.7	0.8	0.4
216	0.6	0.6	0.4
217	0.8	0.5	0.4
218	0.8	0.5	0.4
219	1.0	0.5	0.4
220	0.6	0.5	0.3
221	0.3	0.4	0.3
222	0.3	0.5	0.3
223	0.1	0.4	0.2
224	0.1	0.4	0.2
225	0.1	0.4	0.2
226	0.2	0.4	0.2
227	0.2	0.2	0.2
228	0.2	0.3	0.2
229	0.1	0.2	0.2
230	0.2	0.3	0.2
231	0.2	0.2	0.2
232	0.2	0.3	0.2
233	0.2	0.2	0.1
234	0.3	0.2	0.1
235	0.2	0.2	0.1
236	0.2	0.2	0.1
237	0.2	0.1	0.1
238	0.2	0.1	0.1
239	0.2	0.1	0.1
240	0.2	0.1	0.1
241	<0.1	0.1	0.1
242	<0.1	<0.1	0.1
243	<0.1	0.1	0.1
244	<0.1	<0.1	0.1
245	<0.1	<0.1	0.1
246	<0.1	<0.1	0.1
247	<0.1	<0.1	<0.1
248	<0.1	<0.1	0.1
249	<0.1	<0.1	<0.1
250	<0.1	0.1	<0.1
251	0.1	0.1	<0.1
252	<0.1	<0.1	<0.1

TABLE I- IV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 323

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
25	0.0	<0.1	0.0	45	0.1	0.1	0.1	65	0.1	0.1	0.2
26	0.0	<0.1	<0.1	46	<0.1	0.1	0.1	66	0.1	0.1	0.2
27	0.0	<0.1	<0.1	47	<0.1	0.1	0.1	67	0.1	0.1	0.1
28	<0.1	<0.1	<0.1	48	<0.1	0.1	0.1	68	0.2	0.1	0.2
29	<0.1	<0.1	<0.1	49	0.1	0.1	0.1	69	0.1	0.1	0.2
30	<0.1	<0.1	<0.1	50	0.1	0.1	0.1	70	0.2	0.1	0.2
31	<0.1	0.1	<0.1	51	0.1	0.1	0.1	71	0.2	0.1	0.2
32	<0.1	0.1	<0.1	52	0.1	0.1	0.1	72	0.2	0.1	0.3
33	<0.1	<0.1	<0.1	53	0.1	0.1	0.1	73	0.2	0.1	0.3
34	<0.1	0.1	0.1	54	0.1	0.1	0.1	74	0.2	0.1	0.3
35	<0.1	0.1	0.1	55	0.1	0.1	0.2	75	0.2	0.1	0.3
36	<0.1	0.1	<0.1	56	0.1	0.1	0.1	76	0.2	0.1	0.4
37	<0.1	<0.1	0.1	57	0.1	0.1	0.2	77	0.2	0.1	0.4
38	<0.1	0.1	0.1	58	0.1	0.1	0.2	78	0.2	0.2	0.4
39	<0.1	0.1	0.1	59	0.1	0.1	0.2	79	0.2	0.1	0.3
40	<0.1	<0.1	0.1	60	0.1	0.1	0.2	80	0.2	0.2	0.2
41	<0.1	<0.1	0.1	61	0.1	0.1	0.2	81	0.1	0.2	0.3
42	<0.1	0.1	0.1	62	0.1	0.1	0.2	82	0.2	0.3	0.3
43	<0.1	0.1	0.1	63	0.1	0.1	0.2	83	0.2	0.2	0.3
44	0.1	0.1	<0.1	64	0.1	0.1	0.2	84	0.2	0.3	0.2

TABLE I-IV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 323
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
85	0.3	0.2	0.2	105	0.6	0.6	0.6	125	0.6	1.2	1.3
86	0.3	0.2	0.3	106	0.6	0.6	0.6	126	0.8	1.2	1.0
87	0.2	0.2	0.3	107	0.9	0.6	0.7	127	0.9	1.4	1.6
88	0.3	0.2	0.3	108	0.6	0.7	0.7	128	0.8	1.2	1.5
89	0.4	0.2	0.3	109	0.5	0.7	0.8	129	0.9	1.2	1.7
90	0.5	0.2	0.4	110	0.8	0.7	0.8	130	0.9	1.1	1.9
91	0.5	0.2	0.4	111	0.9	1.0	0.9	131	0.9	1.1	1.3
92	0.6	0.2	0.5	112	1.1	1.3	0.8	132	0.9	1.4	1.3
93	0.6	0.2	0.4	113	1.1	1.3	1.1	133	0.9	1.5	1.2
94	0.6	0.2	0.4	114	1.4	1.5	1.7	134	0.8	1.5	1.2
95	0.6	0.4	0.4	115	1.7	1.3	1.3	135	0.6	1.4	1.2
96	0.6	0.4	0.4	116	1.4	1.4	0.6	136	0.9	1.7	1.2
97	0.6	0.5	0.4	117	1.1	1.6	0.9	137	0.9	2.1	1.1
98	0.8	0.4	0.5	118	1.1	1.4	1.1	138	1.2	1.9	1.3
99	0.8	0.5	0.5	119	1.1	1.3	1.4	139	1.2	2.2	1.0
100	0.8	0.5	0.5	120	0.8	1.3	1.4	140	1.7	1.8	2.1
101	0.6	0.5	0.5	121	0.7	1.5	1.4	141	2.1	1.9	2.1
102	0.6	0.5	0.5	122	0.7	1.5	1.4	142	3.5	1.3	2.0
103	0.6	0.6	0.5	123	0.6	1.3	1.8	143	2.1	1.2	1.7
104	0.6	0.6	0.4	124	0.6	1.2	1.6	144	1.8	1.3	1.7

TABLE I-IV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 323
(Concluded)

STA NO	ROW A	ROW B	ROW C
145	1.9	1.3	1.4
146	2.0	1.3	1.4
147	1.8	1.3	1.3
148	1.7	1.6	1.6
149	1.7	1.7	1.9
150	2.0	2.1	2.2
151	1.8	2.2	2.4
152	2.2	2.4	2.7
153	2.4	2.3	2.2
154	1.8	2.5	1.9
155	2.2	2.2	1.4
156	2.5	2.7	1.8
157	3.2	3.4	2.7
158	3.5	3.6	2.9
159	3.8	2.9	3.0
160	3.8	2.1	3.0
161	3.5	2.3	3.0
162	3.5	3.1	3.2
163	3.7	0.0	3.7
164	0.4	0.0	0.2

TABLE I-V. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 5040

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
108	<0.1	<0.1	0.1	128	4.1	1.0	3.2	148	1.9	1.2	1.5
109	<0.1	<0.1	0.2	129	2.2	1.2	2.4	149	2.0	2.8	1.6
110	<0.1	<0.1	0.3	130	2.0	1.2	3.4	150	2.0	1.5	2.1
111	<0.1	<0.1	0.3	131	2.2	0.8	2.8	151	1.5	1.6	2.0
112	<0.1	<0.1	0.3	132	2.8	0.9	3.2	152	1.4	1.2	1.7
113	<0.1	<0.1	0.4	133	2.0	1.1	2.5	153	1.7	1.5	2.0
114	0.1	0.2	0.5	134	1.0	1.2	2.5	154	0.9	1.8	1.7
115	<0.1	0.5	0.6	135	0.8	1.6	2.1	155	1.0	1.8	1.2
116	<0.1	1.0	0.8	136	0.8	2.1	1.2	156	2.2	2.2	1.1
117	0.1	0.8	0.7	137	1.2	1.1	0.8	157	2.2	3.0	1.4
118	0.2	1.1	1.1	138	1.1	0.9	1.0	158	1.2	3.2	1.2
119	1.4	2.0	1.1	139	1.2	1.2	1.0	159	2.2	3.6	1.8
120	1.1	2.2	1.0	140	1.6	1.1	1.0	160	2.8	4.8	2.4
121	1.6	2.4	1.0	141	2.0	1.1	1.4	161	4.0	5.5	3.0
122	2.0	2.6	1.1	142	1.5	1.6	1.7	162	4.0	5.4	3.9
123	4.0	2.0	1.2	143	1.7	1.5	2.0	163	3.4	4.2	4.8
124	4.0	1.4	1.5	144	1.5	1.5	1.8	164	3.4	3.8	5.6
125	4.4	1.6	2.0	145	1.2	0.9	1.8	165	4.0	2.6	3.8
126	4.1	1.0	2.6	146	1.5	1.1	1.7	166	3.6	3.8	3.9
127	4.0	0.8	2.6	147	2.8	1.3	1.2	167	2.6	3.0	3.0

TABLE I-V. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 5040
(Concluded)

STA NO	ROW A	ROW B	ROW C
168	1.6	1.0	3.0
169	1.0	0.3	2.0
170	0.6	0.1	1.5
171	0.5	0.1	0.9
172	0.5	<0.1	0.4
173	0.3	<0.1	0.2
174	0.1	<0.1	0.1

TABLE I-VI. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 4035

STA NO	ROW A	ROW B	ROW C
Stations 1 - 18			
Rows A, B, and C			
not hit.			
19	0.0	<0.1	<0.1
Stations 20 -66			
Rows A, B, and C			
<0.1			
67	0.1	<0.1	<0.1
68	0.1	<0.1	<0.1
69	<0.1	<0.1	<0.1
70	0.1	<0.1	<0.1
71	0.1	<0.1	<0.1
72	0.1	<0.1	0.1
73	0.1	<0.1	<0.1
74	0.1	0.1	<0.1
75	0.1	0.1	0.1
76	0.1	0.1	0.1
77	0.1	0.1	0.1
78	0.1	0.1	0.1
79	0.1	0.1	0.1
80	0.1	0.1	0.1
81	0.1	0.1	0.1
82	0.2	0.1	0.1
83	0.2	0.1	0.1
84	0.2	0.1	0.1
85	0.1	0.2	0.1
86	0.2	0.1	0.1
87	0.2	0.2	0.1
88	0.2	0.1	0.1
89	0.2	0.1	0.2
90	0.1	0.1	0.2
91	0.2	0.2	0.2
92	0.1	0.2	0.2
93	0.2	0.1	0.1
94	0.3	0.2	0.2
95	0.3	0.2	0.2
96	0.4	0.2	0.2
97	0.3	0.2	0.2
98	0.3	0.2	0.2
99	0.3	0.2	0.2
100	0.3	0.3	0.2
101	0.3	0.3	0.2
102	0.3	0.3	0.3
103	0.2	0.3	0.2
104	0.3	0.2	0.2
105	0.3	0.3	0.2
106	0.3	0.3	0.2
107	0.4	0.4	0.2
108	0.5	0.4	0.2
109	0.4	0.4	0.2
110	0.3	0.4	0.3
111	0.4	0.5	0.3
112	0.5	0.4	0.3
113	0.3	0.7	0.3
114	1.0	0.8	0.3
115	1.2	1.3	0.3
116	1.3	1.2	0.3
117	1.5	1.3	1.4
118	2.0	1.1	1.7
119	2.2	1.2	2.0

TABLE I-VI. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 4035
(Concluded)

STA NO	ROW A	ROW B	ROW C
120	2.6	1.9	1.7
121	2.0	2.8	2.0
122	2.2	2.2	2.0
123	2.2	2.1	2.6
124	2.4	2.1	3.6
125	2.1	2.4	2.8
126	2.1	2.2	2.4
127	1.7	2.4	2.4
128	1.8	2.5	2.0
129	1.2	2.4	2.0
130	1.0	2.6	2.2
131	1.4	2.2	2.0
132	1.3	2.1	1.8
133	1.4	2.1	1.8
134	1.4	1.8	1.9
135	1.6	1.8	2.0
136	1.2	2.0	1.8
137	1.3	2.0	1.2
138	1.1	1.8	1.6
139	1.0	1.6	1.2
140	1.1	1.1	0.8
141	1.3	1.0	1.0
142	1.9	1.0	1.3
143	1.0	0.9	1.8
144	1.8	1.8	3.0
145	2.1	1.9	3.0
146	2.3	2.2	2.6
147	2.6	2.6	2.6
148	2.6	2.2	2.5
149	2.7	2.2	1.3
150	1.8	3.0	2.0
151	1.6	2.4	4.0
152	2.1	1.8	3.4
153	4.1	2.6	3.0
154	4.0	4.0	2.4
155	3.5	4.2	2.6
156	2.2	2.4	2.6
157	3.2	2.4	2.0
158	3.2	2.2	1.8
159	3.3	2.8	2.0
160	3.8	2.6	3.2
161	2.5	3.6	2.8
162	2.1	3.6	4.8
163	2.0	3.8	3.8
164	0.3	3.4	1.1
165	<0.1	2.8	<0.1
166	0.0	<0.1	0.0
167	0.0	<0.1	0.0

TABLE I-VII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 343

STA NO	ROW A	ROW B	ROW C
1 - 107	0.0	0.0	0.0
108	0.0	0.0	<0.1
109	0.0	<0.1	<0.1
110	0.0	<0.1	<0.1
111	0.0	<0.1	<0.1
112	0.0	<0.1	<0.1
113	0.0	<0.1	<0.1
Stations 114 - 132 less than 0.1 for rows A, B, and C.			
133	<0.1	<0.1	2.9
134	<0.1	4.0	2.3
135	2.1	1.8	2.4
136	3.0	2.2	3.2
137	2.1	1.9	2.1
138	2.5	2.3	1.7
139	1.6	2.0	1.6
140	3.5	2.1	1.2
141	1.9	1.9	1.5
142	1.9	1.5	1.4

STA NO	ROW A	ROW B	ROW C
143	1.6	1.6	2.0
144	1.6	2.2	2.0
145	1.6	1.9	1.7
146	1.2	1.7	1.6
147	1.4	1.6	1.8
148	1.2	1.7	1.6
149	1.7	1.8	2.1
150	1.7	1.7	0.9
151	2.5	1.3	0.8
152	2.1	0.5	0.6
153	1.3	0.4	0.6
154	0.9	0.4	0.5
155	0.5	0.5	0.5
156	0.5	0.5	0.7
157	0.4	0.7	0.6
158	0.4	1.0	0.7
159	0.5	1.1	0.7
160	0.5	1.2	0.7
161	0.6	1.2	0.8
162	0.7	1.4	1.0

STA NO	ROW A	ROW B	ROW C
163	0.8	1.3	1.3
164	0.8	1.4	0.9
165	0.9	1.6	0.9
166	1.1	1.4	1.2
167	1.2	1.6	1.3
168	1.4	1.2	1.2
169	1.6	1.5	1.2
170	1.6	1.5	1.5
171	1.7	1.8	1.7
172	1.9	2.2	1.8
173	2.2	2.0	1.9
174	2.4	1.8	2.2
175	1.8	1.5	1.0
176	2.0	1.2	0.8
177	2.0	1.0	0.2
178	1.7	1.0	0.2
179	1.6	0.7	0.2
180	1.5	0.4	0.1
181	1.1	0.3	0.1
182	0.5	0.2	0.2

TABLE I-VII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 343
(Concluded)

STA NO	ROW A	ROW B	ROW C
183	0.3	0.2	0.1
184	0.3	0.1	0.2
185	0.3	0.2	0.2
186	0.3	0.1	0.2
187	0.3	0.1	0.2
188	0.2	0.1	0.1
189	0.2	0.2	0.1
190	0.1	0.1	0.2
191	0.1	0.1	0.1
192	0.1	0.1	0.2
193	0.1	0.1	0.2
194	0.1	0.1	0.2
195	0.1	0.1	0.2
196	0.1	0.1	0.1
197	0.1	0.1	0.1
198	0.1	<0.1	0.1
199	0.1	<0.1	0.1
200	0.1	<0.1	0.1
201	0.1	<0.1	0.1
202	0.1	0.1	0.1

STA NO	ROW A	ROW B	ROW C
203	0.1	0.1	0.1
204	0.2	<0.1	0.1
205	0.1	<0.1	0.1
206	0.1	<0.1	0.1
207	0.1	0.1	0.1
208	0.1	0.1	0.1
209	0.1	0.1	0.1
210	0.1	0.1	0.1
211	<0.1	0.1	0.1
212	0.1	0.1	0.1
213	0.1	0.1	0.1
214	0.1	0.1	0.1
215	0.1	0.1	0.1
216	0.1	0.1	0.1
217	0.1	0.1	0.1
218	0.1	0.1	0.1
219	0.1	0.1	0.1
220	0.1	0.1	0.1
221	0.1	0.1	0.1
222	0.1	0.1	0.1

STA NO	ROW A	ROW B	ROW C
223	0.1	0.1	0.1
224	0.1	0.1	<0.1
225	0.1	0.1	<0.1
226	<0.1	0.1	0.1
227	<0.1	0.1	0.1
228	<0.1	0.1	0.1
229	<0.1	<0.1	0.1
230	0.1	<0.1	0.1
Stations 231 - 297 less than 0.1 for rows A, B, C.			

TABLE I-VIII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 5046

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
1 - 132	0.0	0.0	0.0	152	1.4	1.0	1.6	172	1.2	0.6	1.2
133	0.4	0.0	0.4	153	2.1	0.8	1.3	173	0.8	0.6	1.0
134	0.4	0.5	1.5	154	1.4	0.8	0.9	174	0.6	0.6	0.8
135	1.3	1.1	2.2	155	1.5	0.6	1.3	175	0.7	0.8	0.5
136	1.5	1.1	2.2	156	1.0	0.6	1.1	176	0.5	0.7	0.5
137	2.1	2.5	2.2	157	1.0	0.7	0.7	177	0.5	0.7	0.6
138	1.8	2.1	2.2	158	0.4	0.8	0.7	178	0.4	0.9	0.7
139	2.4	2.0	3.0	159	0.4	0.9	0.8	179	0.8	0.6	0.5
140	2.2	2.8	2.2	160	0.3	0.7	1.0	180	0.4	0.8	0.7
141	2.7	2.5	1.9	161	0.3	0.7	0.8	181	0.5	0.9	1.1
142	2.1	1.9	0.7	162	0.6	1.0	0.7	182	0.4	0.8	0.9
143	0.4	0.4	0.5	163	0.8	1.3	0.7	183	0.3	0.6	0.9
144	0.3	0.2	0.5	164	0.7	1.2	1.2	184	0.2	0.5	0.6
145	0.2	0.1	0.4	165	0.7	0.7	0.8	185	0.2	0.4	0.6
146	0.2	0.1	0.4	166	0.8	1.1	0.8	186	0.2	0.5	0.4
147	0.2	0.2	0.5	167	0.9	0.8	1.0	187	0.2	0.5	0.3
148	0.2	0.8	0.7	168	0.7	0.7	0.7	188	0.3	0.4	0.3
149	0.6	1.0	0.8	169	0.6	0.7	0.8	189	0.2	0.3	0.2
150	1.4	1.0	1.0	170	0.6	0.5	1.1	190	0.2	0.3	0.2
151	1.1	1.0	1.4	171	1.0	0.8	1.0	191	0.2	0.3	0.3

TABLE I-VIII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 5046
(Concluded)

STA NO	ROW A	ROW B	ROW C
192	0.1	0.3	0.3
193	0.2	0.3	0.3
194	0.2	0.4	0.2
195	0.2	0.2	0.2
196	0.1	0.2	0.1
197	0.1	0.2	0.1
198	0.2	0.2	0.1
199	0.1	0.1	0.1
200	0.1	0.1	0.1
201	0.1	0.1	0.1
202	0.1	0.1	0.1
203	0.1	0.1	0.1
204	0.1	0.1	0.1
205	0.1	0.1	0.1
206	0.1	0.1	0.1
207	0.1	0.1	0.1
208	0.1	0.1	0.1
209	0.1	0.1	0.1
210	0.1	0.1	0.1
211	0.1	0.1	0.1
212	0.1	0.1	0.1
213	0.1	0.1	0.1

TABLE I-IX. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 505

STA NO	ROW A	ROW B	ROW C
70	0.1	0.1	<0.1
71	0.1	0.1	<0.1
72	0.1	0.1	<0.1
73	0.1	0.1	<0.1
74	0.1	0.1	<0.1
75	0.2	0.1	<0.1
76	0.2	0.1	<0.1
77	0.2	0.1	<0.1
78	0.2	0.1	<0.1
79	0.3	0.1	<0.1
80	0.3	0.2	<0.1
81	0.3	0.2	0.1
82	0.3	0.2	0.1
83	0.3	0.2	0.1
84	0.3	0.3	0.2
85	0.4	0.3	0.1
86	0.3	0.3	0.2
87	0.3	0.3	0.2
88	0.4	0.4	0.2
89	0.3	0.4	0.2
90	0.2	0.5	0.3
91	0.3	0.5	0.3
92	0.2	0.6	0.4
93	0.3	0.7	0.4
94	0.3	0.7	0.5
95	0.4	0.6	0.4
96	0.3	0.7	0.4
97	0.5	0.6	0.4
98	0.5	0.5	0.6
99	0.5	0.6	0.5
100	0.6	0.6	0.7
101	0.6	0.6	0.7
102	0.4	0.8	0.6
103	0.5	0.9	0.6
104	0.4	0.9	0.5
105	0.5	0.9	0.7
106	0.5	0.9	0.6
107	0.5	0.8	0.7
108	0.6	0.8	0.7
109	0.6	0.8	0.8
110	0.6	1.2	1.1
111	0.7	1.2	1.4
112	0.6	1.3	1.3
113	0.6	1.0	1.2
114	0.8	1.3	1.1
115	0.8	1.2	1.0
116	0.9	1.2	1.1
117	0.6	1.2	1.3
118	0.6	1.2	1.2
119	1.2	1.2	1.3
120	0.9	1.2	1.4
121	0.9	1.2	1.7
122	0.9	1.2	1.3
123	0.9	1.7	1.6
124	0.8	1.3	1.5
125	0.7	1.0	1.6
126	0.9	1.2	1.4
127	0.5	0.7	1.0
128	0.6	0.8	0.9
129	0.6	0.9	0.9

TABLE I-IX. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 505
(Concluded)

STA NO	ROW A	ROW B	ROW C
130	0.7	0.8	0.6
131	0.7	0.7	0.7
132	0.4	0.7	0.7
133	0.5	0.7	0.8
134	0.5	0.7	0.8
135	0.4	0.5	0.7
136	0.6	0.7	0.7
137	0.3	0.9	1.2
138	0.8	1.0	0.9
139	0.8	0.9	1.0
140	0.7	0.8	0.8
141	0.7	0.8	0.9
142	0.8	0.7	1.1
143	0.5	0.8	0.9
144	0.6	0.6	0.9
145	0.8	0.7	1.0
146	0.7	0.8	1.0
147	0.6	0.8	1.1
148	0.6	1.0	1.2
149	0.6	1.0	1.2
150	0.7	1.1	1.2
151	0.6	1.0	1.2
152	0.8	1.4	1.2
153	0.9	1.3	1.0
154	1.0	1.8	1.3
155	1.4	1.4	1.1
156	1.4	1.6	1.0
157	1.7	1.4	1.3
158	2.2	1.5	2.0
159	3.0	1.1	2.0
160	3.1	3.0	3.2
161	3.5	2.7	3.3
162	2.9	3.3	2.1
163	2.7	3.1	2.3
164	0.2	1.1	1.8
165	0.1	<0.1	0.5
166	0.1	<0.1	0.2
167	<0.1	<0.1	0.1
168	<0.1	<0.1	0.1

TABLE I-X. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 345

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
1 - 139	0.0	0.0	0.0	159	1.8	1.9	2.1	179	0.7	0.6	0.7
140	0.01	0.02	0.02	160	1.9	1.9	1.9	180	0.7	0.8	0.7
141	0.01	0.01	0.01	161	2.2	2.3	2.6	181	0.8	0.8	0.6
142	0.01	0.01	0.01	162	3.0	2.1	3.2	182	1.1	0.8	0.6
143	0.01	0.01	0.01	163	3.3	2.6	2.0	183	1.0	0.6	0.7
144	0.02	0.01	0.03	164	1.7	3.1	1.8	184	1.0	0.6	0.9
145	0.1	0.1	.06	165	1.1	1.1	1.3	185	0.7	0.6	1.5
146	0.2	0.2	0.5	166	0.8	0.8	1.0	186	0.9	1.1	0.7
147	0.7	1.5	1.8	167	0.7	0.6	0.7	187	0.8	0.6	0.8
148	1.7	0.9	2.4	168	0.8	0.6	0.6	188	0.9	0.6	0.9
149	1.6	1.1	0.7	169	0.9	0.6	0.5	189	0.9	0.8	0.7
150	0.6	0.9	0.8	170	0.7	0.6	0.5	190	0.9	0.6	0.9
151	0.9	1.5	0.9	171	0.6	0.5	0.5	191	1.7	0.6	0.8
152	1.0	1.1	1.0	172	0.7	0.8	0.5	192	0.9	0.5	1.0
153	1.8	1.1	1.8	173	0.7	0.7	0.6	193	0.9	0.5	0.7
154	1.4	1.6	2.2	174	0.7	0.7	0.5	194	1.0	0.6	0.8
155	1.7	1.5	2.4	175	0.8	0.6	0.8	195	0.8	0.7	0.7
156	1.7	1.5	1.9	176	0.6	0.8	0.5	196	1.0	0.6	0.8
157	1.7	1.5	1.7	177	0.7	0.7	0.7	197	1.0	0.6	0.9
158	1.8	1.5	2.1	178	1.0	0.6	0.7	198	1.0	0.7	0.8

TABLE I- X. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 345
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
199	0.9	0.6	0.6	219	0.2	0.3	0.2	239	0.1	0.1	0.1
200	0.8	0.7	0.7	220	0.2	0.3	0.3	240	0.1	0.09	0.1
201	0.9	0.8	0.9	221	0.2	0.2	0.2	241	0.1	0.1	0.1
202	0.8	0.8	0.8	222	0.3	0.2	0.3	242	0.1	0.1	0.1
203	0.5	0.6	0.8	223	0.3	0.3	0.2	243	0.1	0.09	0.1
204	0.4	0.7	0.5	224	0.2	0.2	0.2	244	0.09	0.07	0.1
205	0.5	0.6	0.5	225	0.3	0.2	0.2	245	0.08	0.05	0.1
206	0.4	0.7	0.4	226	0.4	0.2	0.2	246	0.09	0.09	0.09
207	0.4	0.8	0.4	227	0.4	0.1	0.2	247	0.1	0.09	0.09
208	0.4	0.6	0.4	228	0.3	0.1	0.1	248	0.2	0.09	0.09
209	0.4	0.6	0.3	229	0.3	0.1	0.1	249	0.09	0.09	0.1
210	0.6	0.6	0.3	230	0.3	0.1	0.1	250	0.1	0.07	0.07
211	0.5	0.7	0.4	231	0.2	0.09	0.1	251	0.09	0.06	0.06
212	0.5	0.7	0.5	232	0.2	0.09	0.09	252	0.08	0.05	0.04
213	0.4	0.6	0.5	233	0.1	0.09	0.1	253	0.09	0.05	0.05
214	0.4	0.5	0.4	234	0.2	0.09	0.1	254	0.09	0.05	0.03
215	0.4	0.4	0.4	235	0.1	0.1	0.1	255	0.06	0.04	0.03
216	0.2	0.5	0.3	236	0.2	0.1	0.1	256	0.04	0.06	0.02
217	0.1	0.4	0.2	237	0.1	0.1	0.1	257	0.05	0.05	0.03
218	0.1	0.3	0.3	238	0.1	0.1	0.2	258	0.05	0.04	0.02

TABLE I-X. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 345
(Concluded)

STA NO	ROW A	ROW B	ROW C
259	0.06	0.06	0.02
260	0.04	0.04	0.03
261	0.05	0.1	0.03
Stations 262 - 297 less than 0.1 for rows A, B, and C.			

TABLE I-XI. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 758

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
1 - 129	0.0	0.0	0.0	149	2.4	1.3	1.5	169	1.0	1.5	1.5
130	0.0	0.0	0.02	150	2.1	1.4	1.9	170	1.2	1.7	2.1
131	0.0	<0.1	<0.1	151	2.3	1.5	1.8	171	1.2	1.7	2.2
132	0.0	<0.1	<0.1	152	2.6	1.5	2.5	172	1.9	1.9	3.2
133	1.2	0.4	<0.1	153	2.6	2.1	3.0	173	2.4	1.9	1.4
134	1.6	3.7	0.7	154	3.2	3.9	2.4	174	2.5	1.9	1.2
135	2.9	3.7	4.1	155	3.1	1.8	2.1	175	1.8	1.9	1.3
136	2.4	1.4	5.2	156	1.6	1.2	1.2	176	2.0	1.9	1.5
137	2.7	3.2	3.8	157	0.9	0.8	0.9	177	1.8	1.9	1.5
138	2.3	2.7	3.0	158	0.9	0.8	0.8	178	2.1	1.8	1.5
139	1.8	2.6	2.5	159	0.7	0.6	0.8	179	2.4	1.7	1.5
140	1.0	1.7	1.9	160	0.8	0.7	0.7	180	1.7	0.7	1.3
141	1.1	1.5	1.5	161	0.8	0.6	0.6	181	1.5	0.6	1.5
142	1.2	1.4	1.7	162	0.7	0.7	0.5	182	1.0	0.4	1.0
143	1.1	1.3	1.6	163	0.8	0.8	0.6	183	0.7	0.4	0.7
144	1.5	1.2	1.8	164	0.9	0.7	0.7	184	0.5	0.3	0.5
145	1.4	1.3	1.7	165	0.8	0.7	0.8	185	0.4	0.3	0.4
146	1.0	1.2	2.4	166	1.2	0.9	0.9	186	0.4	0.3	0.3
147	1.9	1.2	2.0	167	1.1	1.7	1.4	187	0.3	0.3	0.3
148	1.9	1.3	2.2	168	0.9	1.5	1.4	188	0.3	0.2	0.2

TABLE I-XI. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 758
(Concluded)

STA NO	ROW A	ROW B	ROW C
189	0.3	0.2	0.2
190	0.3	0.2	0.2
191	0.3	0.2	0.2
192	0.3	0.2	0.2
193	0.3	0.2	0.2
194	0.3	0.2	0.2
195	0.2	0.2	0.1
196	0.2	0.2	0.2
197	0.2	0.2	0.1
198	0.2	0.2	0.2
199	0.1	0.2	0.1

STA NO	ROW A	ROW B	ROW C
200	0.2	0.1	0.1
201	0.1	0.1	0.1
202	0.1	0.1	0.1
203	0.1	0.1	0.1
204	0.1	0.1	0.1
205	0.1	0.1	0.1
206	<0.1	0.2	0.1
207	0.1	0.1	0.1
208	0.1	0.2	0.1
209	<0.1	0.1	<0.1
210	<0.1	0.1	<0.1

STA NO	ROW A	ROW B	ROW C
211	0.1	0.1	<0.1
212	<0.1	0.1	<0.1
213	<0.1	0.1	<0.1
214	<0.1	<0.1	<0.1
215	<0.1	0.1	<0.1
216	<0.1	0.1	<0.1
217	<0.1	0.1	<0.1
Stations 218 - 297 less than 0.1 for rows A, B, and C.			

TABLE I-XII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 247

STA NO	ROW A	ROW B	ROW C
1 - 104	0.0	0.0	0.0
105	0.0	<0.1	0.0
106	0.0	<0.1	0.0
107	0.0	<0.1	<0.1
108	<0.1	<0.1	<0.1
Stations 109 - 122 less than 0.1 for rows A, B, and C:			
123	<0.1	0.1	<0.1
124	<0.1	0.1	<0.1
125	0.1	0.1	<0.1
126	0.1	0.1	0.2
127	0.2	0.1	0.4
128	0.3	0.2	0.8
129	0.5	0.1	0.7
130	0.7	0.6	0.7
131	0.9	1.1	1.1
132	1.2	1.5	1.3
133	1.2	2.6	1.2
134	0.9	2.0	1.6
135	1.2	1.7	1.5
136	1.1	2.0	2.4
137	1.1	1.3	1.6
138	1.5	1.1	1.5
139	1.6	1.0	1.6
140	1.3	0.9	1.1
141	1.3	0.9	1.3
142	0.8	0.8	0.9
143	0.7	0.7	0.9
144	0.5	0.9	0.9
145	0.4	0.9	0.9
146	0.3	0.9	1.2
147	0.4	0.9	1.2
148	0.4	0.8	1.4
149	0.8	1.1	0.9
150	1.0	1.1	1.3
151	1.1	1.1	0.9
152	1.1	0.8	1.0
153	1.0	1.2	1.1
154	1.1	1.3	0.9
155	1.2	1.2	1.1
156	1.1	1.2	0.6
157	1.2	1.3	0.6
158	0.8	1.4	0.4
159	0.6	1.4	0.5
160	0.8	1.1	0.5
161	1.2	1.3	0.3
162	1.1	0.9	0.4
163	0.9	1.2	0.4
164	1.0	0.8	0.7
165	0.9	0.8	0.8
166	1.3	0.6	0.9
167	1.2	0.7	1.0
168	1.6	1.2	1.0
169	1.8	1.7	1.1
170	1.6	1.6	1.3
171	1.2	1.4	1.2
172	1.5	1.5	1.0
173	2.1	1.1	1.1
174	1.3	1.2	1.6

TABLE I-XII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 247
(Concluded)

STA NO	ROW A	ROW B	ROW C
175	1.1	1.2	1.1
176	0.7	1.2	0.5
177	1.1	1.7	0.5
178	0.5	1.7	0.4
179	0.3	1.2	0.4
180	0.2	1.2	0.4
181	0.3	1.2	0.3
182	0.4	1.4	0.5
183	0.3	1.2	0.4
184	0.3	1.3	0.4
185	0.2	1.3	0.7
186	0.4	1.0	0.5
187	0.3	0.5	0.5
188	0.4	0.3	0.7
189	0.4	0.2	0.9
190	0.3	0.2	0.8
191	0.4	0.2	0.7
192	0.3	0.2	0.7
193	0.2	0.2	0.5
194	0.3	0.1	0.3
195	0.3	0.1	0.3
196	0.3	0.2	0.3
197	0.2	0.2	0.2
198	0.2	0.2	0.2
199	0.1	0.2	0.1
200	0.2	0.2	0.1
201	0.1	0.2	0.1
202	0.1	0.2	0.2
203	0.1	0.1	0.1
204	0.1	0.1	<0.1
205	0.1	0.1	<0.1
206	0.1	0.1	<0.1
207	0.1	0.1	<0.1
208	0.1	0.1	<0.1
209	0.1	<0.1	<0.1
210	0.1	<0.1	<0.1
211	0.1	<0.1	<0.1

TABLE I-XIII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 440

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
1-12	0.0	0.0	0.0	34	1.3	1.8	1.6	54	1.1	1.3	1.0
13-15	0.0	0.0	<0.1	35	1.4	1.7	1.6	55	0.9	1.2	0.9
16	<0.1	<0.1	0.2	36	1.2	1.6	1.6	56	1.0	1.0	0.9
17	<0.1	0.1	0.2	37	1.3	1.4	1.5	57	0.9	0.9	0.8
18	0.1	0.2	0.3	38	1.4	1.2	1.5	58	1.0	1.0	0.7
19	0.1	0.1	0.3	39	1.4	1.4	1.6	59	0.9	0.9	0.8
20	0.2	0.3	0.3	40	1.3	1.4	1.5	60	1.0	1.0	0.8
21	0.2	0.2	0.5	41	1.4	1.2	1.5	61	1.1	1.0	0.8
22	0.1	0.1	0.4	42	1.3	1.2	1.3	62	1.1	1.1	0.7
23	0.2	0.2	0.9	43	1.3	1.1	1.3	63	1.2	0.9	0.7
24	0.3	0.3	0.8	44	1.4	1.1	1.6	64	1.2	0.8	0.7
25	0.4	0.4	0.8	45	1.5	1.0	1.4	65	1.0	0.9	0.8
26	0.5	0.5	1.0	46	1.5	1.1	1.4	66	1.1	0.9	0.8
27	0.7	0.1	1.3	47	1.5	1.1	1.4	67	0.9	0.8	0.7
28	0.9	1.1	1.1	48	1.7	1.3	1.6	68	0.9	0.9	0.7
29	0.8	1.1	1.2	49	1.6	1.4	1.6	69	0.8	0.8	0.6
30	0.8	1.1	1.6	50	1.8	1.7	1.4	70	0.8	0.8	0.7
31	1.2	1.2	1.4	51	1.4	1.3	1.3	71	0.6	0.9	0.7
32	1.2	1.7	1.6	52	1.3	1.5	1.2	72	0.6	0.8	0.5
33	1.1	1.6	1.6	53	1.7	1.3	1.2	73	0.4	0.8	0.5

TABLE I-XIII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 440
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
74	0.6	0.8	0.5	94	0.9	0.8	0.4	114	0.4	0.3	0.2
75	0.5	0.9	0.5	95	0.8	0.7	0.5	115	0.3	0.4	0.2
76	0.6	0.7	0.4	96	0.9	0.8	0.4	116	0.3	0.4	0.2
77	0.8	0.7	0.5	97	0.8	0.9	0.4	117	0.3	0.4	0.2
78	0.7	0.7	0.4	98	0.8	0.9	0.5	118	0.2	0.4	0.3
79	0.7	0.7	0.7	99	1.0	0.9	0.5	119	0.2	0.4	0.3
80	0.7	0.6	0.6	100	0.7	0.9	0.5	120	0.2	0.4	0.3
81	0.7	0.6	0.7	101	0.6	0.9	0.4	121	0.2	0.4	0.3
82	0.9	0.5	0.6	102	0.5	0.8	0.3	122	0.2	0.4	0.2
83	0.8	0.5	0.8	103	0.5	0.7	0.4	123	0.2	0.5	0.2
84	0.9	0.5	0.9	104	0.5	0.6	0.3	124	0.2	0.4	0.2
85	0.8	0.5	0.8	105	0.4	0.5	0.4	125	0.1	0.4	0.2
86	0.9	0.6	0.7	106	0.3	0.5	0.3	126	0.1	0.4	0.2
87	0.9	0.6	0.7	107	0.3	0.4	0.2	127	0.1	0.4	0.3
88	0.9	0.7	0.6	108	0.3	0.3	0.2	128	0.1	0.4	0.2
89	0.9	0.9	0.6	109	0.3	0.3	0.2	129	0.1	0.4	0.2
90	0.9	0.9	0.7	110	0.3	0.3	0.2	130	0.1	0.4	0.2
91	1.0	0.9	0.5	111	0.4	0.3	0.2	131	0.1	0.3	0.2
92	0.9	0.9	0.5	112	0.3	0.3	0.2	132	0.1	0.3	0.2
93	0.9	0.8	0.5	113	0.3	0.3	0.2	133	0.1	0.3	0.2

TABLE I-XIII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 440
(Concluded)

STA NO	ROW A	ROW B	ROW C
134	0.1	0.3	0.2
135	0.1	0.2	0.2
136	0.1	0.2	0.2
137	0.1	0.2	0.2
138	0.1	0.2	0.2
139	0.1	0.2	0.2
140	0.1	0.2	0.2
141	0.1	0.2	0.2
142	0.1	0.2	0.2
143	0.1	0.2	0.2
144	0.1	0.2	0.2
145	0.1	0.2	0.1
146	0.2	0.2	0.2
147	0.2	0.2	0.1
148	0.1	0.2	0.1
149	0.1	0.1	0.1
150	0.1	0.1	0.1
151	0.1	0.2	0.2
152	0.1	0.2	0.2
153	0.1	0.1	0.2
154	0.1	0.1	0.2
155	<0.1	0.1	0.1
156	<0.1	0.1	0.1
157	<0.1	0.1	0.1
158	<0.1	0.1	0.1
159	<0.1	0.1	0.1
160	<0.1	0.1	0.1
161	<0.1	<0.1	0.1
162	<0.1	0.1	0.2
163	<0.1	0.1	0.1
164	<0.1	0.1	0.2
165	<0.1	<0.1	0.1
166	<0.1	<0.1	0.2
167	<0.1	<0.1	0.1
168	<0.1	<0.1	0.1
169	<0.1	<0.1	0.1
170	<0.1	0.1	0.1
171	<0.1	0.1	<0.1
172	<0.1	0.1	<0.1
173	<0.1	0.1	<0.1
174	<0.1	0.1	<0.1
175	<0.1	0.1	0.1
176	<0.1	0.1	0.1
177	0.1	0.1	<0.1
178	0.1	0.1	<0.1
179	<0.1	0.1	<0.1
Stations 180 - 253 less than 0.1 for rows A, B, and C.			

TABLE I-XIV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 147

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
19	<0.1	0.0	0.0	39	0.5	0.2	0.4	59	0.7	0.5	1.1
20	<0.1	0.0	0.0	40	0.5	0.3	0.6	60	0.9	0.6	1.0
21	<0.1	0.0	0.0	41	0.4	0.3	0.5	61	0.8	0.5	1.1
22	<0.1	0.0	0.0	42	0.4	0.4	0.4	62	0.9	0.4	1.1
23	<0.1	0.0	0.0	43	0.5	0.4	0.7	63	1.0	0.5	1.0
24	<0.1	0.0	0.0	44	0.8	0.5	0.6	64	0.9	0.4	1.2
25	<0.1	<0.1	<0.1	45	0.8	0.6	0.7	65	0.8	0.5	0.7
26	<0.1	<0.1	<0.1	46	0.8	0.5	0.8	66	0.9	0.5	0.8
27	<0.1	<0.1	0.0	47	0.9	0.5	0.8	67	0.6	0.5	0.7
28	<0.1	<0.1	0.0	48	0.8	0.5	0.7	68	0.7	0.6	0.8
29	<0.1	<0.1	<0.1	49	1.0	0.5	0.8	69	0.6	0.7	0.7
30	0.1	<0.1	<0.1	50	1.0	0.5	0.7	70	0.7	0.7	0.7
31	0.1	<0.1	0.1	51	1.2	0.5	1.0	71	0.9	0.9	0.7
32	0.1	<0.1	0.1	52	1.1	0.6	0.9	72	1.0	0.9	0.8
33	0.2	<0.1	0.1	53	0.9	0.6	1.1	73	0.8	0.9	0.9
34	0.2	0.1	0.2	54	1.0	0.8	1.1	74	0.8	0.9	0.8
35	0.3	0.1	0.2	55	1.2	0.7	0.8	75	0.9	0.8	0.8
36	0.4	0.2	0.2	56	0.8	0.7	0.7	76	1.0	0.9	0.7
37	0.3	0.1	0.3	57	0.8	0.5	0.9	77	0.9	0.9	0.7
38	0.4	0.2	0.4	58	0.7	0.4	0.9	78	0.7	0.8	0.8

TABLE I-XIV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 147
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
79	0.7	0.6	0.9	99	0.7	0.4	0.4	119	0.6	0.2	0.2
80	0.7	0.7	0.9	100	0.7	0.4	0.4	120	0.5	0.3	0.2
81	0.7	0.8	0.9	101	0.7	0.5	0.4	121	0.7	0.4	0.2
82	0.6	0.6	0.9	102	0.7	0.5	0.4	122	0.5	0.3	0.2
83	0.6	0.7	0.9	103	0.7	0.5	0.5	123	0.4	0.3	0.3
84	0.7	0.7	0.9	104	0.7	0.4	0.3	124	0.5	0.3	0.3
85	0.7	0.7	0.8	105	0.6	0.4	0.3	125	0.4	0.3	0.3
86	0.6	0.7	0.8	106	0.5	0.4	0.4	126	0.4	0.3	0.3
87	0.6	0.6	0.8	107	0.6	0.3	0.3	127	0.3	0.3	0.4
88	0.7	0.5	0.7	108	0.6	0.4	0.3	128	0.4	0.2	0.2
89	0.7	0.5	0.8	109	0.7	0.3	0.2	129	0.4	0.3	0.3
90	0.8	0.5	0.7	110	0.6	0.4	0.3	130	0.3	0.2	0.3
91	0.7	0.5	0.7	111	0.6	0.4	0.4	131	0.3	0.3	0.2
92	0.6	0.4	0.5	112	0.5	0.4	0.3	132	0.3	0.3	0.2
93	0.5	0.3	0.5	113	0.7	0.3	0.3	133	0.3	0.3	0.2
94	0.6	0.3	0.5	114	0.5	0.3	0.2	134	0.2	0.3	0.3
95	0.5	0.5	0.5	115	0.6	0.4	0.2	135	0.2	0.4	0.3
96	0.6	0.4	0.5	116	0.6	0.4	0.2	136	0.2	0.3	0.3
97	0.7	0.4	0.5	117	0.6	0.3	0.2	137	0.2	0.3	0.2
98	0.7	0.4	0.4	118	0.5	0.4	0.3	138	0.2	0.4	0.3

TABLE I-XIV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 147
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
139	0.2	0.4	0.3	159	0.2	0.3	0.2	179	0.1	<0.1	<0.1
140	0.2	0.4	0.2	160	0.2	0.2	0.2	180	0.1	<0.1	<0.1
141	0.2	0.3	0.3	161	0.2	0.2	0.2	181	0.1	<0.1	<0.1
142	0.2	0.3	0.3	162	0.1	0.1	0.2	182	<0.1	<0.1	<0.1
143	0.2	0.3	0.2	163	0.1	0.2	0.2	183	<0.1	<0.1	<0.1
144	0.2	0.3	0.3	164	0.2	0.2	0.2	184	<0.1	<0.1	<0.1
145	0.2	0.2	0.2	165	0.2	0.1	0.2	185	<0.1	<0.1	<0.1
146	0.2	0.3	0.2	166	0.3	0.1	0.2	186	<0.1	<0.1	<0.1
147	0.1	0.3	0.2	167	0.2	0.2	0.1	187	<0.1	<0.1	<0.1
148	0.1	0.2	0.2	168	0.2	0.1	0.1	188	<0.1	<0.1	0.1
149	0.2	0.3	0.3	169	0.2	0.1	0.1	189	<0.1	<0.1	0.1
150	0.2	0.2	0.2	170	0.2	0.1	0.1	190	<0.1	<0.1	0.1
151	0.2	0.2	0.2	171	0.2	0.1	0.1	191	<0.1	<0.1	<0.1
152	0.1	0.2	0.2	172	0.1	0.1	0.1	192	0.1	<0.1	0.1
153	0.1	0.2	0.3	173	0.2	0.1	<0.1	193	0.1	<0.1	<0.1
154	0.2	0.2	0.3	174	0.2	0.1	<0.1	194	0.1	0.1	<0.1
155	0.2	0.2	0.3	175	0.1	0.1	<0.1	195	<0.1	0.1	<0.1
156	0.2	0.2	0.3	176	0.1	<0.1	<0.1	196	0.1	<0.1	<0.1
157	0.2	0.2	0.2	177	0.1	0.1	0.1	197	0.1	<0.1	<0.1
158	0.3	0.2	0.2	178	0.1	<0.1	0.1	198	0.1	0.1	<0.1

TABLE I- XIV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 147
(Concluded)

STA NO	ROW A	ROW B	ROW C
199	0.1	0.1	< 0.1
200	0.1	< 0.1	< 0.1
201	0.1	< 0.1	< 0.1
202	0.1	0.1	< 0.1
203	< 0.1	< 0.1	< 0.1
204	0.1	< 0.1	< 0.1
205	0.1	< 0.1	< 0.1
206	0.1	< 0.1	< 0.1
207	0.1	< 0.1	< 0.1
208	0.2	< 0.1	< 0.1
209	0.1	< 0.1	< 0.1
210	0.1	< 0.1	< 0.1
211	0.1	< 0.1	< 0.1
212	0.1	< 0.1	< 0.1

TABLE I-XV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 227

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
19	<0.1	<0.1	0.1	39	0.6	0.5	0.7	59	1.1	0.7	0.7
20	0.0	<0.1	0.0	40	0.8	0.5	0.6	60	1.3	0.7	0.6
21	<0.1	<0.1	0.3	41	1.0	0.4	1.4	61	1.2	1.1	1.0
22	<0.1	<0.1	0.3	42	1.1	0.5	1.0	62	1.0	1.2	0.9
23	<0.1	<0.1	0.3	43	1.2	0.4	1.5	63	0.7	1.0	0.8
24	0.1	0.2	0.4	44	1.9	0.4	1.7	64	0.9	1.0	1.0
25	0.3	0.2	0.5	45	2.0	0.7	1.1	65	0.9	1.0	1.1
26	0.3	<0.1	0.4	46	1.6	0.5	1.3	66	0.9	0.8	1.4
27	0.2	0.1	0.5	47	1.1	0.6	1.0	67	1.0	0.6	1.0
28	0.2	0.2	0.7	48	0.9	0.5	1.0	68	1.1	0.8	0.9
29	0.1	0.2	0.5	49	1.0	0.7	0.9	69	0.8	1.1	1.0
30	0.2	0.2	0.5	50	1.1	0.8	1.1	70	0.9	1.2	1.0
31	0.3	0.1	0.6	51	0.7	0.9	1.6	71	0.6	1.2	0.7
32	0.4	0.5	0.4	52	0.9	0.9	1.4	72	0.9	1.2	0.8
33	0.6	0.6	0.4	53	1.0	0.9	1.4	73	1.1	1.1	0.9
34	0.5	0.6	0.6	54	1.0	0.8	1.3	74	1.3	1.0	1.0
35	0.4	0.5	0.5	55	1.1	0.7	1.1	75	0.9	1.2	0.8
36	0.5	0.6	0.7	56	1.2	0.9	1.1	76	1.1	1.0	0.8
37	0.4	0.5	0.6	57	1.3	0.8	1.0	77	0.8	1.1	0.7
38	0.6	0.5	0.8	58	1.0	0.7	1.1	78	0.9	1.2	0.8

TABLE I-XV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 227
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
79	0.8	1.0	0.9	99	0.9	0.8	0.5	119	0.2	0.3	0.4
80	0.9	1.1	0.8	100	1.0	0.7	0.3	120	0.2	0.2	0.5
81	1.1	1.1	1.1	101	0.9	0.6	0.5	121	0.4	0.2	0.4
82	1.3	0.9	0.8	102	0.9	0.8	0.7	122	0.4	0.2	0.4
83	0.9	1.1	0.8	103	0.5	0.9	0.6	123	0.4	0.3	0.3
84	0.9	1.1	0.9	104	0.4	1.1	0.7	124	0.3	0.2	0.3
85	0.6	1.1	0.8	105	0.5	1.0	0.6	125	0.3	0.2	0.3
86	1.0	1.0	0.8	106	0.6	0.8	0.5	126	0.2	0.3	0.1
87	0.9	0.9	0.8	107	0.7	0.6	0.6	127	0.3	0.2	0.1
88	0.9	0.7	0.7	108	0.6	0.6	0.6	128	0.4	0.2	0.2
89	1.0	0.6	0.7	109	0.8	0.2	0.5	129	0.4	0.2	0.3
90	1.2	0.7	0.7	110	1.6	0.2	0.6	130	0.3	0.2	0.2
91	1.0	0.9	0.5	111	0.7	0.1	0.6	131	0.3	0.2	0.2
92	1.1	0.9	0.4	112	0.5	0.1	0.5	132	0.3	0.3	0.3
93	1.0	0.9	0.3	113	0.3	0.1	0.7	133	0.3	0.3	0.2
94	1.1	0.9	0.4	114	0.2	0.1	0.5	134	0.2	0.3	0.2
95	1.1	0.8	0.4	115	0.2	0.2	0.5	135	0.2	0.3	0.3
96	0.9	0.9	0.4	116	0.3	0.2	0.4	136	0.3	0.2	0.2
97	1.0	0.8	0.4	117	0.3	0.2	0.3	137	0.2	0.2	0.2
98	1.0	1.0	0.4	118	0.3	0.3	0.5	138	0.2	0.2	0.2

TABLE I-XV. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 227
(Concluded)

STA NO	ROW A	ROW B	ROW C
139	0.2	0.1	0.2
140	0.2	0.1	0.2
141	0.3	0.2	0.2
142	0.4	0.1	0.2
143	0.4	0.1	0.2
144	0.4	0.1	0.2
145	0.3	0.1	0.3
146	0.4	0.1	0.2
147	0.4	0.1	0.2
148	0.5	0.1	0.2
149	0.4	0.1	0.1
150	0.4	0.2	0.1
151	0.4	0.2	0.1
152	0.3	0.2	<0.1
153	0.3	0.2	<0.1
154	0.2	0.2	<0.1
155	0.2	0.2	<0.1
156	0.1	0.3	<0.1
157	0.1	0.2	<0.1
158	0.1	0.2	<0.1
159	0.1	0.2	<0.1
160	0.1	0.1	<0.1
161	<0.1	0.1	<0.1

TABLE I-XVI. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 141

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
1-19	0.0	0.0	0.0	39	<0.1	0.8	0.3	59	0.7	1.2	0.9
20	0.0	<0.1	<0.1	40	<0.1	0.5	0.5	60	0.7	1.1	0.8
21	0.0	<0.1	<0.1	41	0.1	0.6	0.6	61	0.9	0.9	0.8
22	<0.1	<0.1	<0.1	42	0.1	0.6	0.6	62	1.0	0.8	0.7
23	<0.1	<0.1	<0.1	43	0.2	0.6	0.7	63	0.7	0.7	0.8
24	<0.1	<0.1	<0.1	44	0.2	0.7	1.0	64	1.0	0.7	0.9
25	<0.1	<0.1	<0.1	45	0.4	0.8	0.9	65	0.9	1.1	1.0
26	<0.1	<0.1	<0.1	46	0.3	0.8	1.1	66	1.0	0.8	1.2
27	<0.1	<0.1	<0.1	47	0.5	0.7	0.9	67	1.0	0.9	1.4
28	<0.1	0.2	<0.1	48	0.4	0.7	1.0	68	0.9	0.9	1.1
29	<0.1	0.1	<0.1	49	0.5	0.6	0.9	69	0.9	0.8	1.1
30	<0.1	0.2	<0.1	50	0.8	0.4	1.0	70	1.0	0.8	1.2
31	<0.1	0.3	0.1	51	0.8	0.9	1.1	71	1.0	0.8	1.4
32	0.1	0.2	0.2	52	1.0	1.1	1.2	72	0.6	0.7	1.1
33	0.1	0.2	0.1	53	0.6	1.2	0.8	73	0.7	0.5	1.1
34	0.1	0.2	0.4	54	0.7	1.1	0.9	74	0.7	0.6	1.5
35	<0.1	0.9	0.6	55	0.6	1.2	0.8	75	0.6	0.6	1.4
36	0.1	0.8	1.1	56	0.6	1.2	0.8	76	0.8	0.6	1.3
37	0.1	0.8	1.7	57	0.5	0.9	0.9	77	0.8	0.6	1.4
38	<0.1	0.8	0.5	58	0.9	1.1	0.7	78	0.8	0.6	1.3

TABLE I-XVI. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 141
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
79	0.7	0.5	0.9	99	0.6	0.4	0.3	119	0.5	0.6	0.3
80	0.8	0.4	1.2	100	0.6	0.4	0.3	120	0.4	0.4	0.3
81	0.9	0.3	1.2	101	0.6	0.6	0.3	121	0.4	0.4	0.3
82	0.7	0.3	1.1	102	0.7	0.9	0.5	122	0.2	0.4	0.2
83	0.8	0.3	1.1	103	0.7	0.7	0.5	123	0.1	0.4	0.2
84	0.9	0.4	1.0	104	0.7	1.0	0.5	124	0.3	0.4	0.1
85	0.6	0.4	1.4	105	0.6	0.7	0.4	125	0.3	0.4	0.2
86	0.7	0.3	1.1	106	0.6	0.9	0.4	126	0.2	0.3	0.2
87	0.8	0.4	1.1	107	0.8	0.7	0.3	127	0.3	0.2	0.2
88	0.8	0.3	0.8	108	0.7	0.4	0.2	128	0.3	0.2	0.3
89	1.0	0.3	0.8	109	0.5	0.5	0.3	129	0.3	0.2	0.2
90	1.1	0.3	0.6	110	0.6	0.3	0.3	130	0.3	0.2	0.3
91	1.1	0.3	0.4	111	0.7	0.2	0.2	131	0.3	0.2	0.2
92	1.0	0.2	0.5	112	0.6	0.5	0.2	132	0.3	0.2	0.3
93	1.0	0.4	0.5	113	0.5	0.4	0.4	133	0.3	0.2	0.3
94	0.9	0.3	0.5	114	0.6	0.5	0.3	134	0.3	0.1	0.2
95	0.8	0.4	0.6	115	0.6	0.3	0.3	135	0.4	0.2	0.2
96	0.6	0.4	0.5	116	0.9	0.5	0.4	136	0.4	0.2	0.1
97	0.6	0.4	0.4	117	0.5	0.4	0.3	137	0.4	0.2	<0.1
98	0.6	0.7	0.3	118	0.6	0.5	0.2	138	0.3	0.3	<0.1

TABLE I-XVI. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 141
(Concluded)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
139	0.2	0.4	< 0.1	159	0.1	0.2	0.2
140	0.2	0.4	< 0.1	160	0.1	0.2	0.3
141	0.3	0.3	< 0.1	161	0.2	0.2	0.3
142	0.3	0.2	< 0.1	162	0.2	0.3	0.2
143	0.2	0.3	< 0.1	163	0.2	0.3	0.1
144	0.2	0.3	< 0.1	164	0.1	0.1	< 0.1
145	0.2	0.3	< 0.1	165	0.2	0.1	< 0.1
146	0.2	0.3	< 0.1	166	0.1	0.1	< 0.1
147	0.1	0.2	< 0.1	167	0.1	0.1	< 0.1
148	0.1	0.3	< 0.1	168	0.1	0.2	0.1
149	0.1	0.3	< 0.1	169	0.1	0.1	< 0.1
150	0.1	0.2	< 0.1	170	0.1	0.1	< 0.1
151	0.1	0.4	< 0.1	171	0.1	0.2	< 0.1
152	< 0.1	0.2	< 0.1	172	0.1	0.2	0.1
153	< 0.1	0.3	< 0.1	173	0.2	0.2	< 0.1
154	< 0.1	0.2	0.1	174	0.1	0.1	< 0.1
155	< 0.1	0.3	0.1	175	< 0.1	0.1	< 0.1
156	< 0.1	0.2	0.2	176	0.1	0.1	< 0.1
157	0.1	0.2	0.2	177	< 0.1	0.1	< 0.1
158	0.2	0.3	0.3	178	< 0.1	0.1	< 0.1

TABLE I-XVII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 139

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
1 - 16	0.0	0.0	0.0	36	1.0	0.2	0.4	56	0.8	0.9	0.4
17	<0.1	0.0	0.0	37	1.0	0.2	0.5	57	0.8	0.8	0.4
18	<0.1	0.0	0.0	38	0.9	0.2	0.4	58	0.7	1.0	0.5
19	<0.1	0.0	0.0	39	1.0	0.2	0.5	59	0.7	0.8	0.4
20	<0.1	0.0	0.0	40	1.1	0.2	0.4	60	0.6	0.8	0.4
21	0.2	0.0	0.0	41	1.0	0.3	0.4	61	0.7	0.9	0.4
22	0.3	0.0	0.0	42	1.1	0.2	0.4	62	0.6	1.0	0.4
23	0.3	0.0	<0.1	43	1.1	0.2	0.5	63	0.9	0.7	0.5
24	0.2	0.0	<0.1	44	1.1	0.2	0.5	64	0.9	0.8	0.5
25	0.2	0.0	<0.1	45	1.1	0.2	0.7	65	1.2	0.6	0.4
26	0.2	<0.1	<0.1	46	1.1	0.4	0.8	66	0.8	0.6	0.4
27	0.3	<0.1	<0.1	47	0.8	0.5	0.7	67	0.9	0.6	0.6
28	0.6	<0.1	<0.1	48	0.7	1.1	0.5	68	0.9	0.6	0.5
29	1.1	<0.1	<0.1	49	1.0	0.7	0.3	69	0.9	0.6	0.6
30	0.8	<0.1	0.1	50	1.1	0.8	0.4	70	0.8	0.7	0.7
31	1.0	0.1	<0.1	51	1.1	1.2	0.4	71	0.8	0.7	0.6
32	0.7	0.1	0.2	52	1.0	1.2	0.3	72	0.7	0.8	0.5
33	0.6	0.1	0.2	53	1.3	1.7	0.4	73	0.7	0.6	0.6
34	0.6	0.1	0.3	54	1.0	1.9	0.4	74	0.8	0.7	0.6
35	1.2	0.2	0.3	55	1.0	1.2	0.5	75	0.7	0.6	0.7

TABLE I-XVII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 139
(Continued)

STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C	STA NO	ROW A	ROW B	ROW C
76	0.9	0.6	1.0	96	0.8	0.6	0.8	116	0.3	0.4	0.2
77	0.9	0.7	0.8	97	1.2	0.6	0.7	117	0.3	0.3	0.2
78	0.8	0.8	1.0	98	0.8	0.7	0.7	118	0.3	0.4	0.2
79	0.6	0.6	0.7	99	1.2	0.5	0.7	119	0.3	0.3	0.1
80	0.5	0.6	0.8	100	0.9	0.4	0.6	120	0.3	0.4	0.2
81	0.6	0.7	1.2	101	0.7	0.6	0.8	121	0.5	0.3	0.2
82	0.5	0.5	1.0	102	0.7	0.4	0.8	122	0.3	0.3	0.2
83	0.5	0.4	0.8	103	0.6	0.4	0.6	123	0.2	0.4	0.1
84	0.4	0.4	0.8	104	0.6	0.2	0.6	124	0.1	0.4	0.1
85	0.4	0.5	0.8	105	0.7	0.4	0.4	125	0.1	0.4	0.1
86	0.3	0.6	1.0	106	0.6	0.4	0.6	126	0.2	0.4	0.1
87	0.5	0.6	0.9	107	0.7	0.4	0.4	127	0.1	0.5	0.2
88	0.4	0.5	1.1	108	0.8	0.7	0.5	128	0.1	0.4	0.1
89	0.7	0.7	1.0	109	0.5	0.8	0.9	129	0.2	0.3	0.1
90	0.8	0.7	0.6	110	0.4	1.0	0.9	130	0.2	0.3	0.2
91	0.5	0.8	0.7	111	0.6	1.0	0.9	131	0.1	0.6	0.1
92	0.5	0.5	0.7	112	0.4	1.1	0.5	132	<0.1	0.5	0.2
93	0.6	0.6	0.8	113	0.3	0.6	0.4	133	0.1	0.7	0.1
94	0.6	0.9	1.0	114	0.3	0.6	0.3	134	0.1	0.5	0.2
95	0.7	0.8	0.9	115	0.3	0.4	0.3	135	<0.1	0.6	0.2

TABLE I-XVII. TEST TRIAL DEPOSITION DATA IN GPA FOR MISSION 139
(Concluded)

STA NO	ROW A	ROW B	ROW C
136	0.1	0.6	0.1
137	<0.1	0.5	0.2
138	<0.1	0.5	0.1
139	0.1	0.5	0.1
140	0.1	0.4	0.2
141	0.1	0.4	0.2
142	0.1	0.3	0.3
143	<0.1	0.3	0.3
144	0.1	0.3	0.3
145	0.3	0.3	0.2
146	0.1	0.3	0.3
147	0.2	0.2	0.3
148	0.2	0.2	0.3
149	0.2	0.2	0.3
150	0.2	0.2	0.2
151	0.1	0.1	0.2
152	0.1	0.1	0.2
153	<0.1	0.2	0.2
154	0.1	0.1	0.1
155	0.1	<0.1	0.1
156	0.2	<0.1	0.1
157	0.1	<0.1	<0.1
158	0.1	<0.1	<0.1
159	0.1	0.2	<0.1
160	0.1	0.1	0.1
161	0.1	0.1	0.1
162	0.1	0.1	0.1
163	<0.1	0.1	0.1
164	0.1	<0.1	0.1
165	<0.1	0.1	0.2
166	<0.1	<0.1	0.1
167	<0.1	<0.1	0.1
168	<0.1	<0.1	<0.1
Stations 169 - 253 less than 0.1 for rows A, B, and C.			

(The reverse of this page is blank)

APPENDIX II

DEFOL DEPOSITION DATA

Appendix II contains figures that present the output of the DEFOL simulation for each of the seventeen test trials. The figures are graphs of the deposition in gallons per acre versus the target grid location in feet.

LIST OF FIGURES

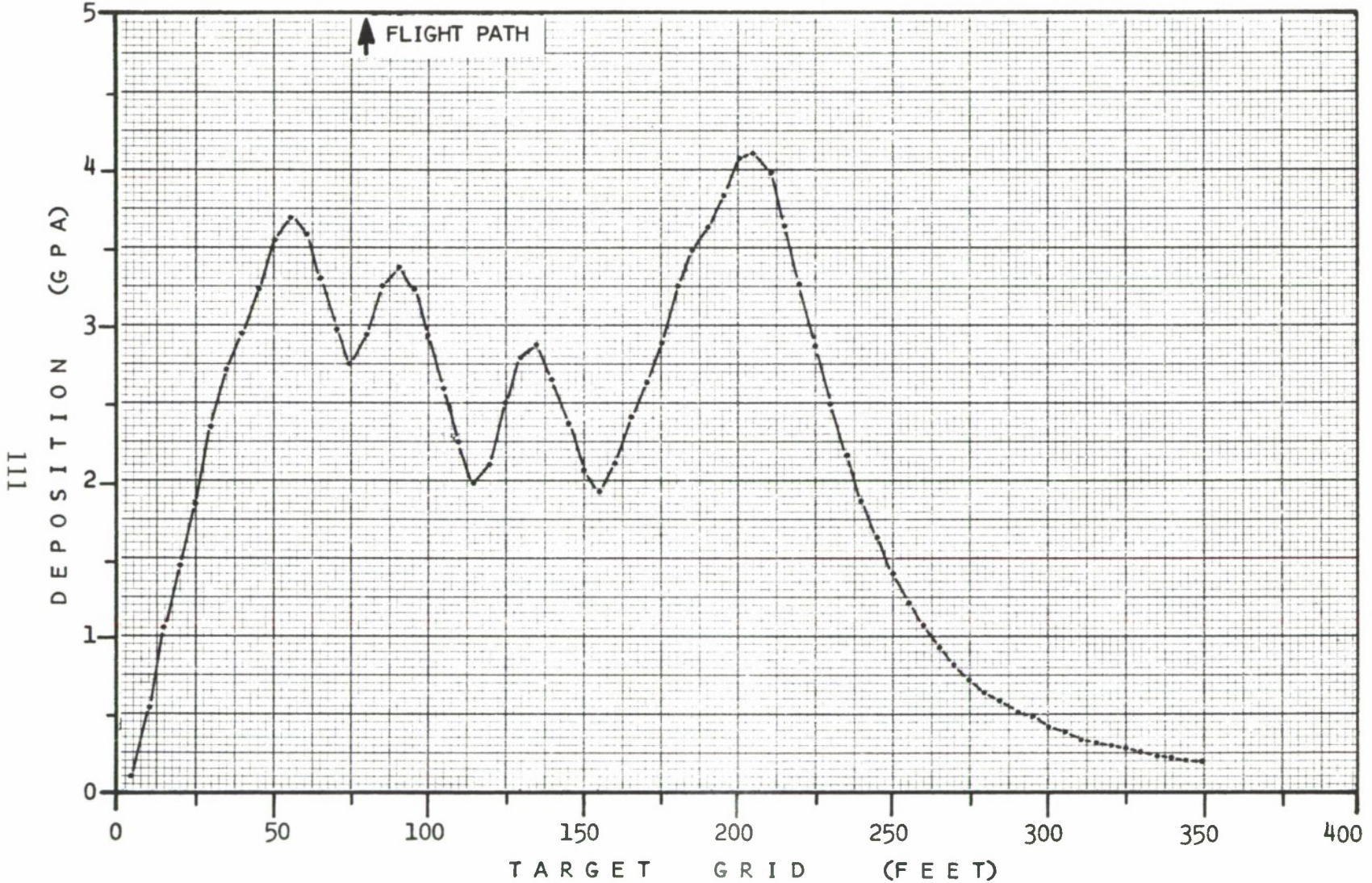


Figure II-1. DEFOL Simulation of Mission 49

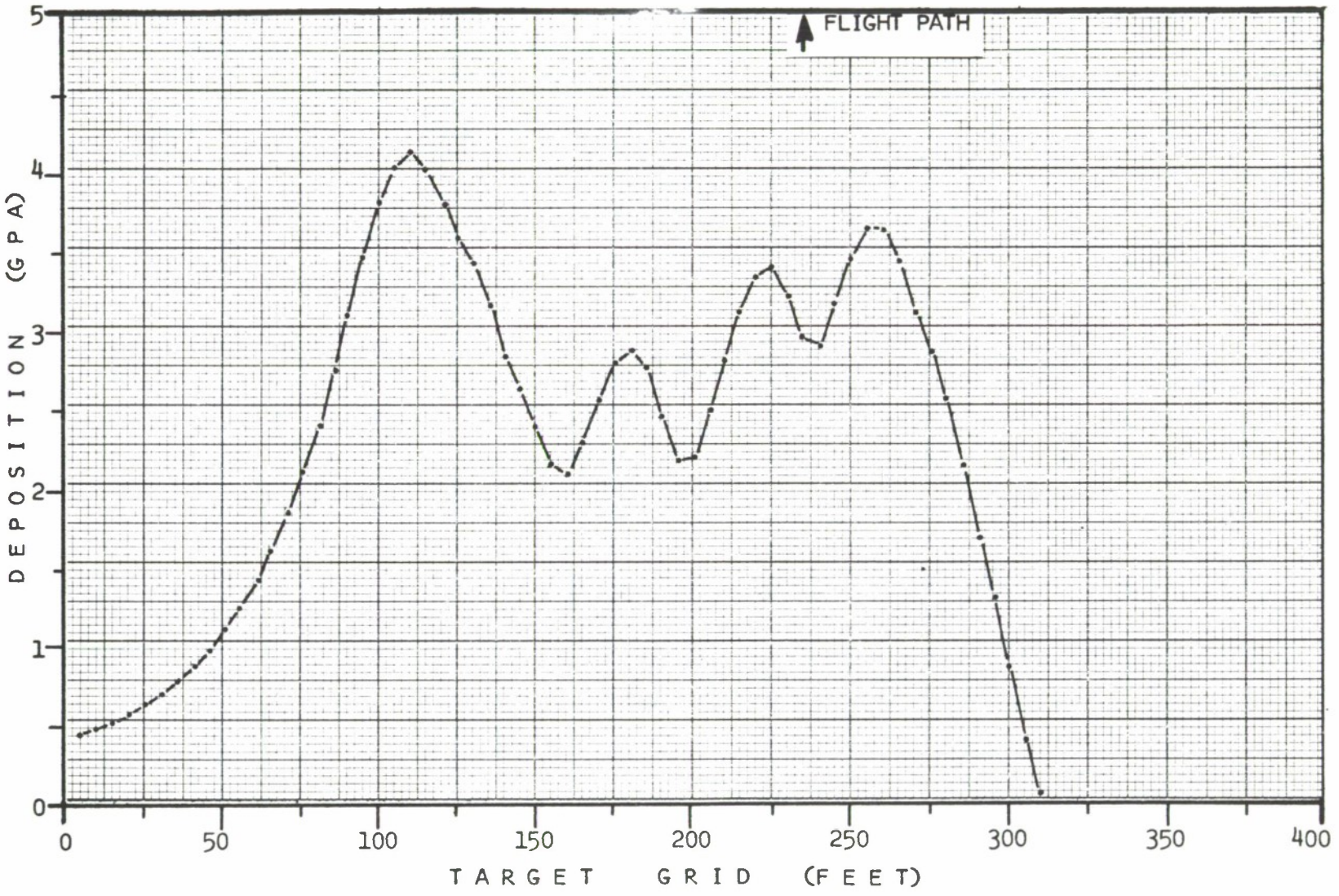


Figure II-2. DEFOL Simulation of Mission 602

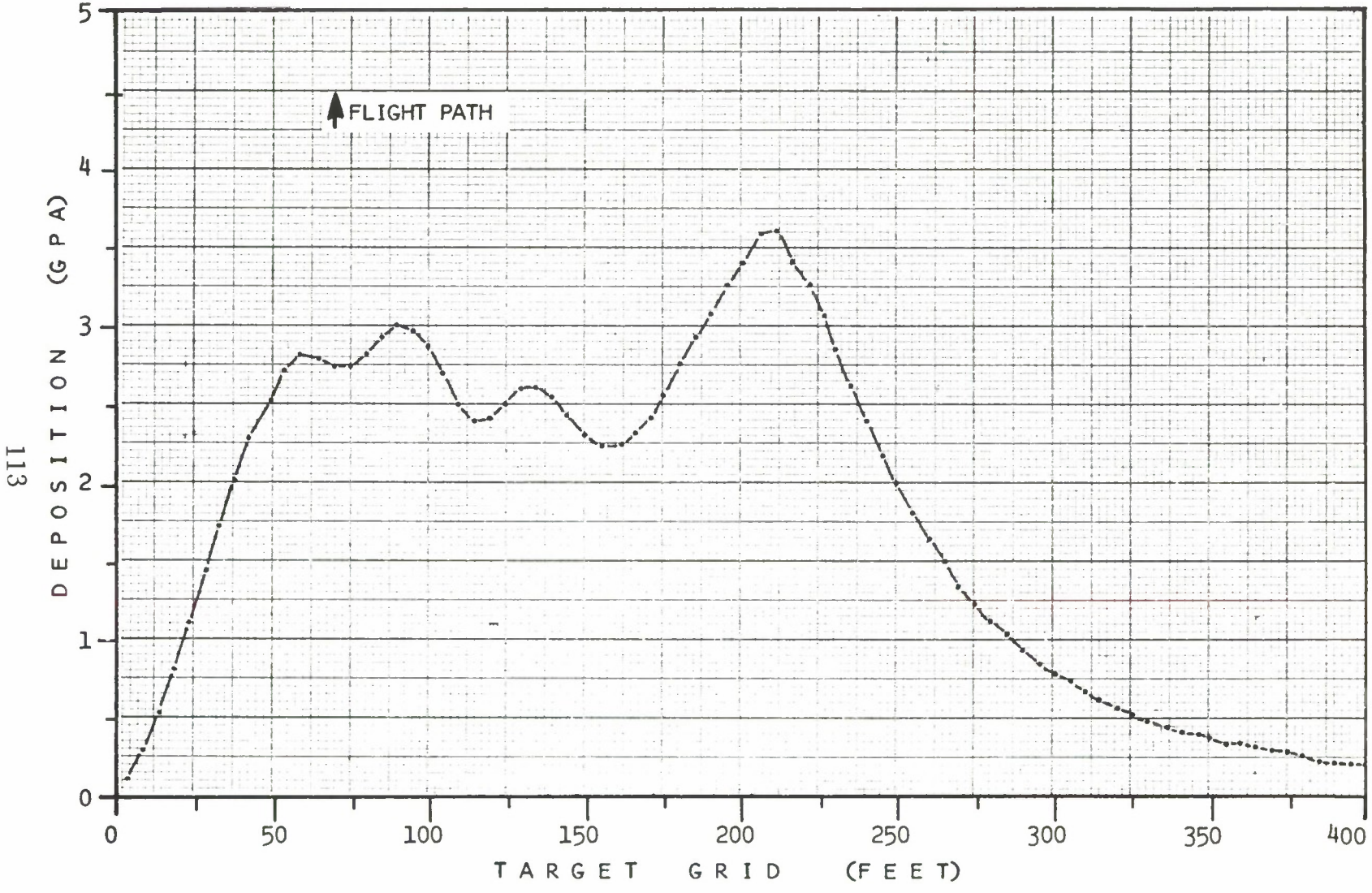


Figure II-3. DEFOL Simulation of Mission 555

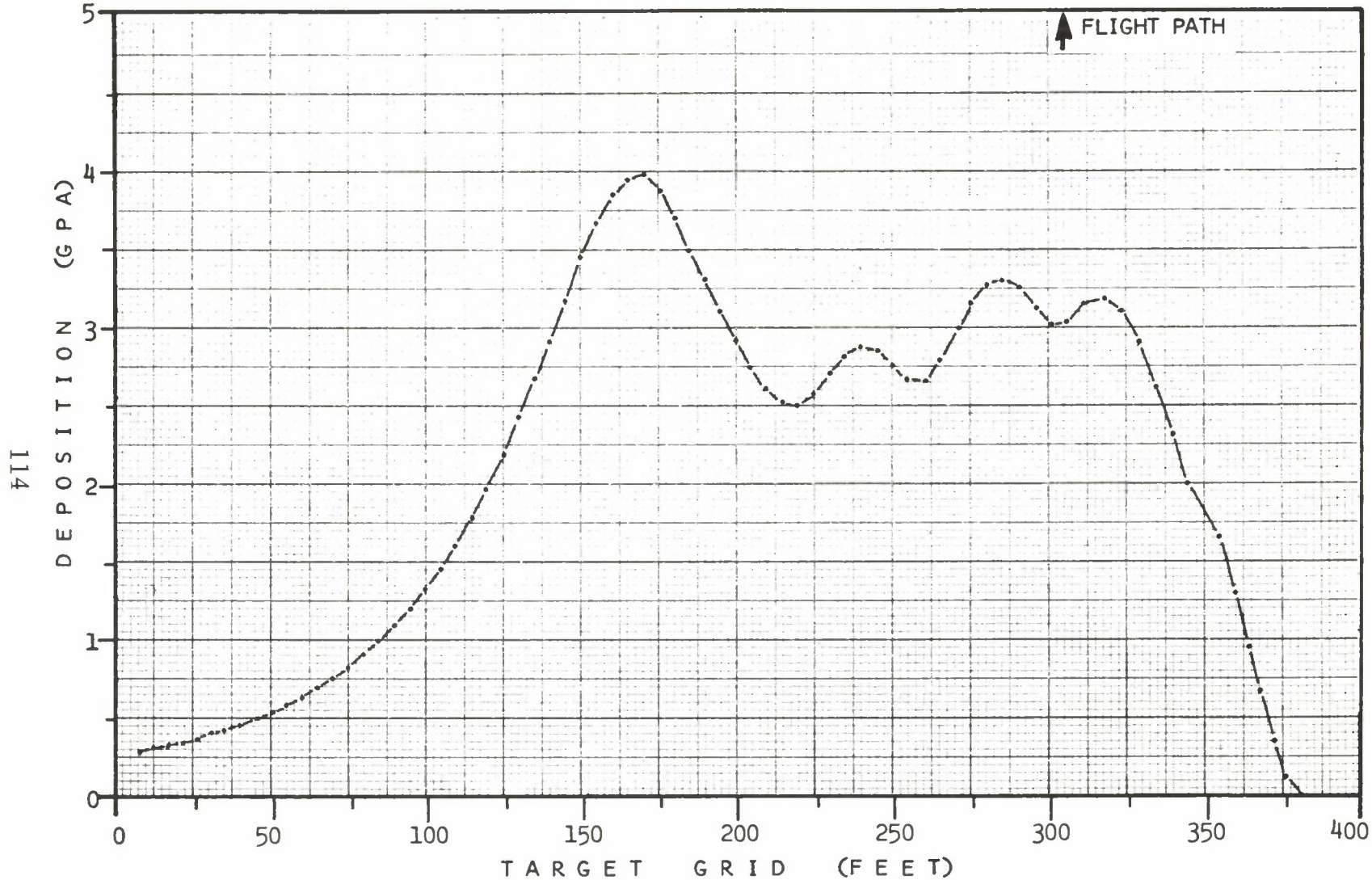


Figure II-4. DEFOL Simulation of Mission 323

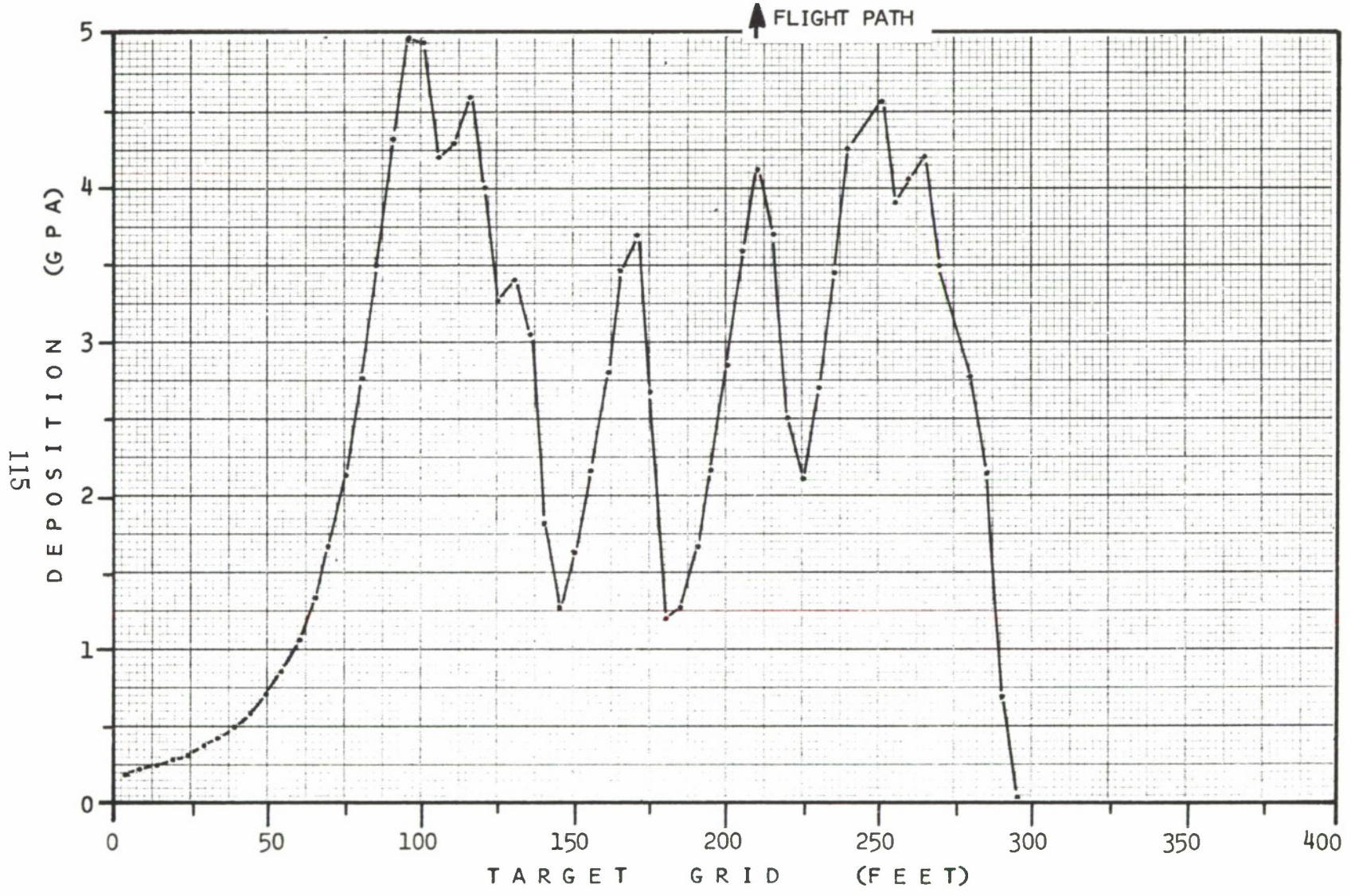


Figure II-5. DEFOL Simulation of Mission 5040

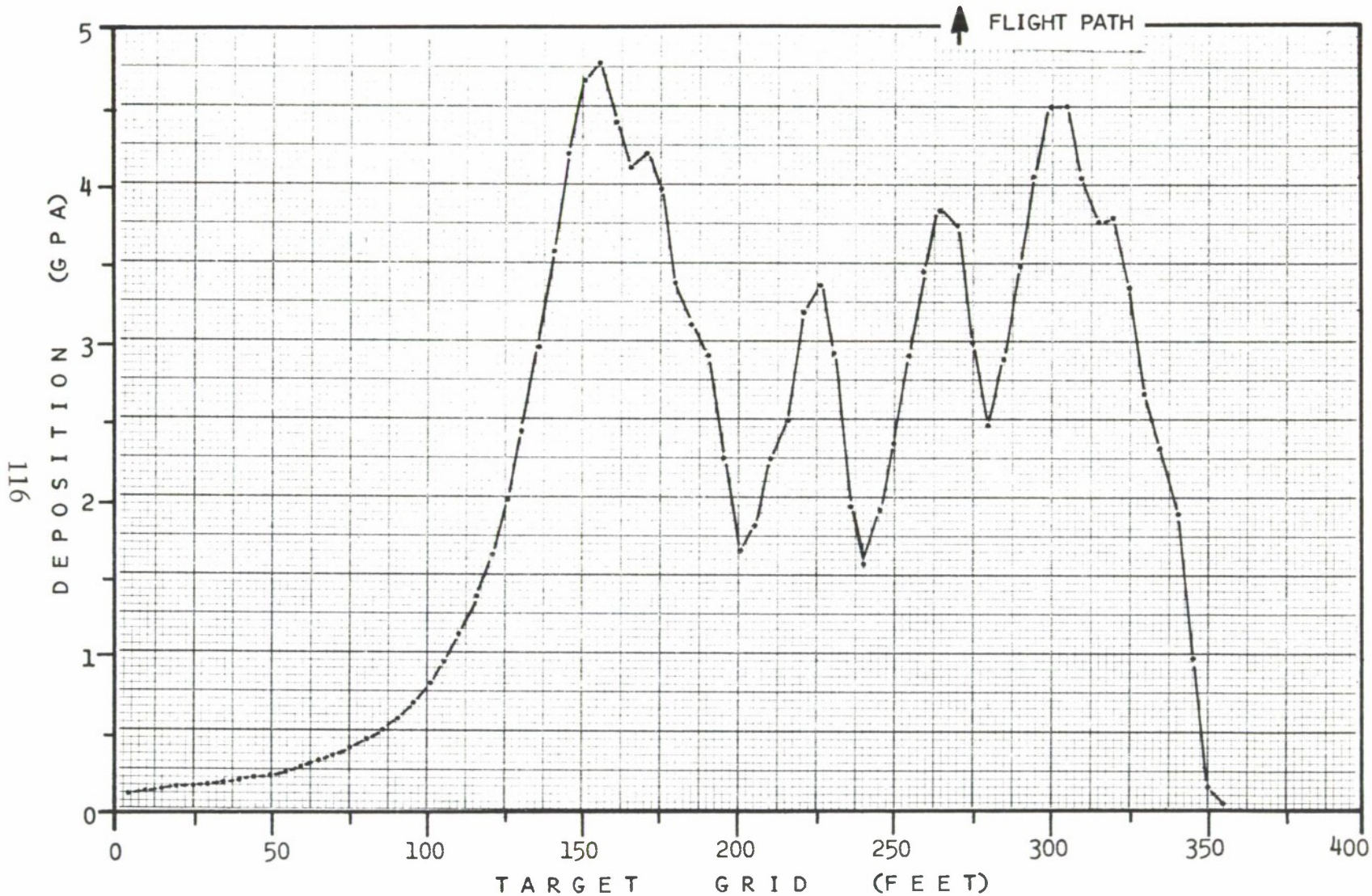


Figure II-6. DEFOL Simulation of Mission 4035

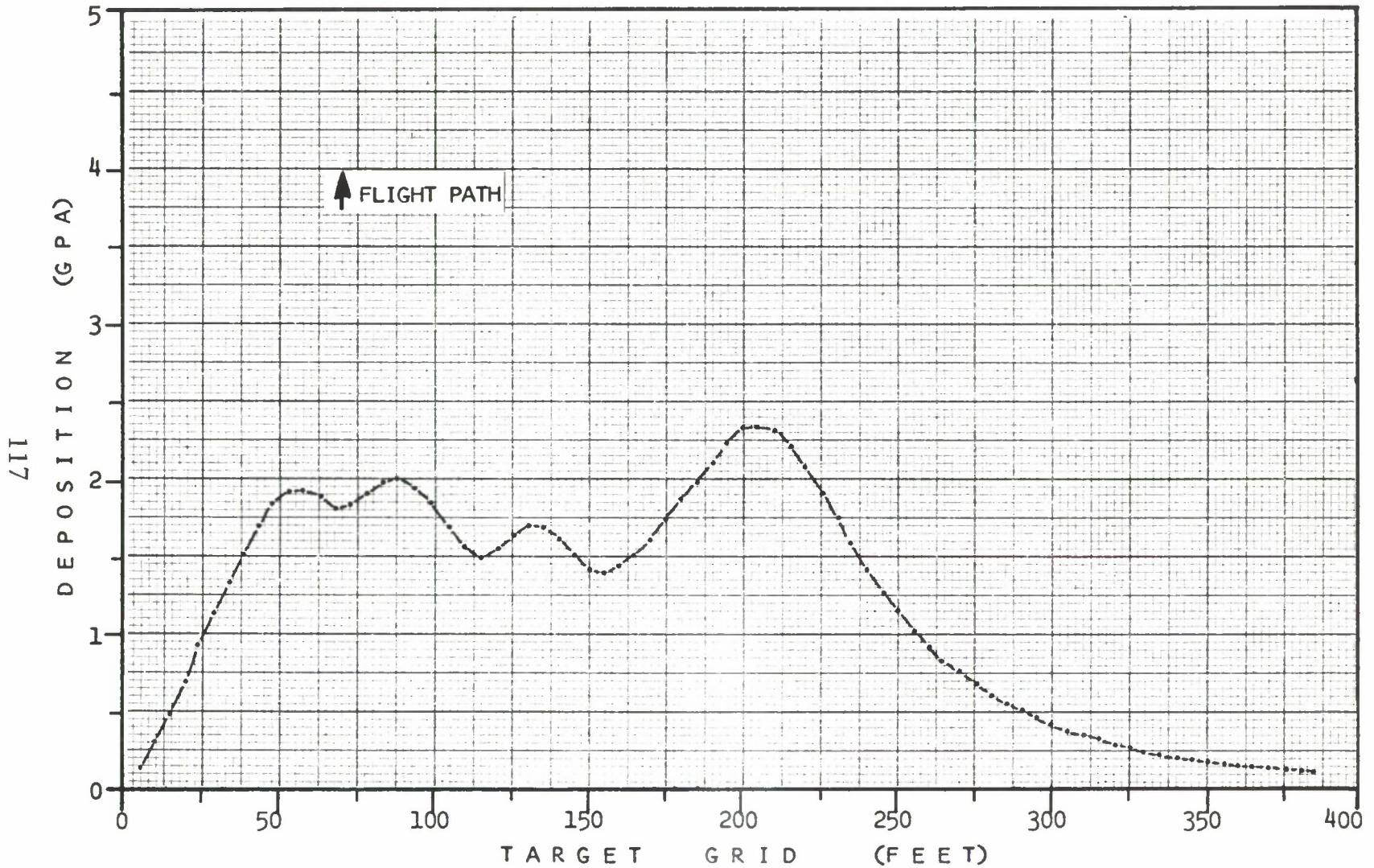


Figure II-7. DEFOL Simulation of Mission 343

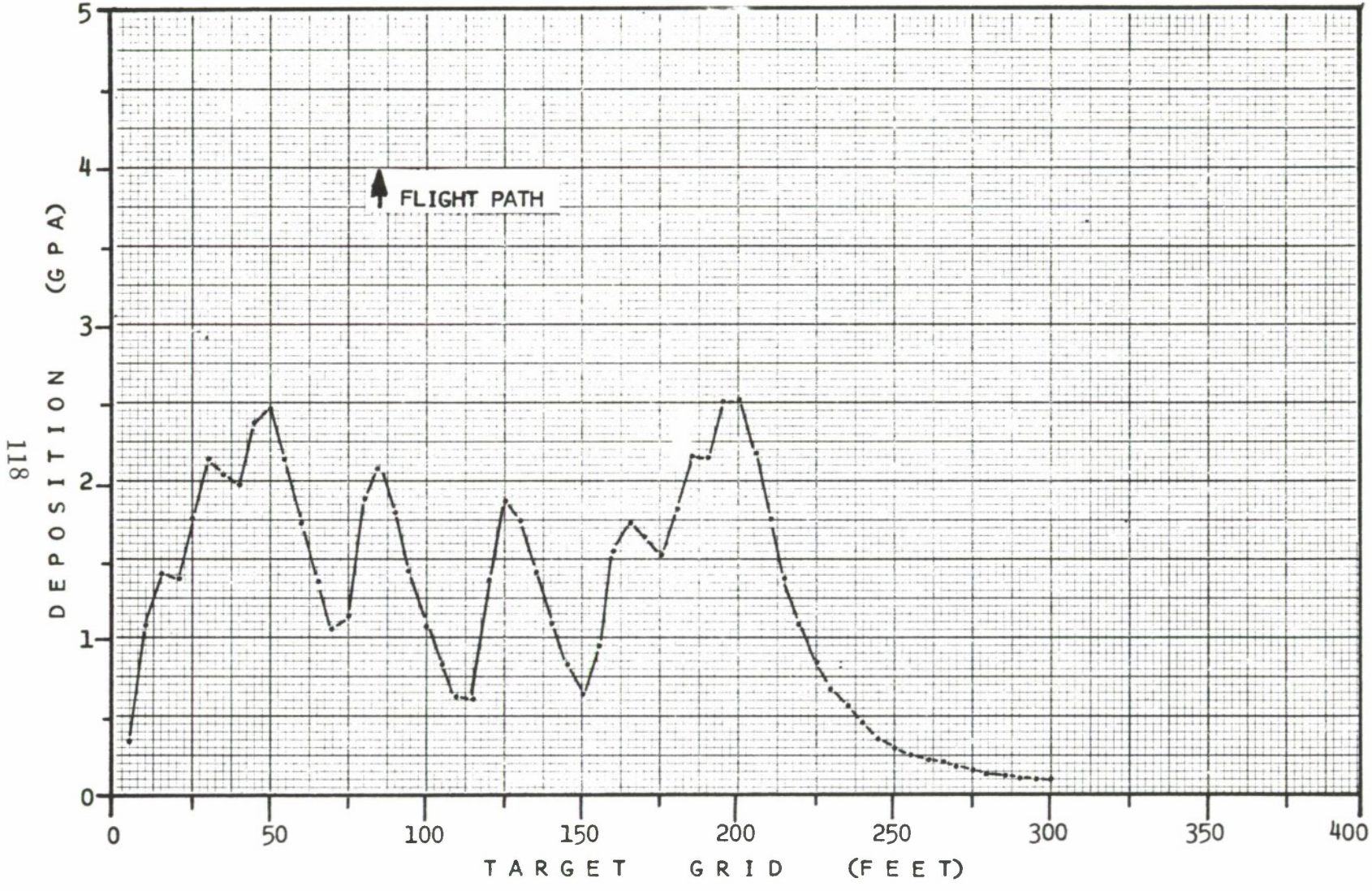


Figure II-8. DEFOL Simulation of Mission 5046

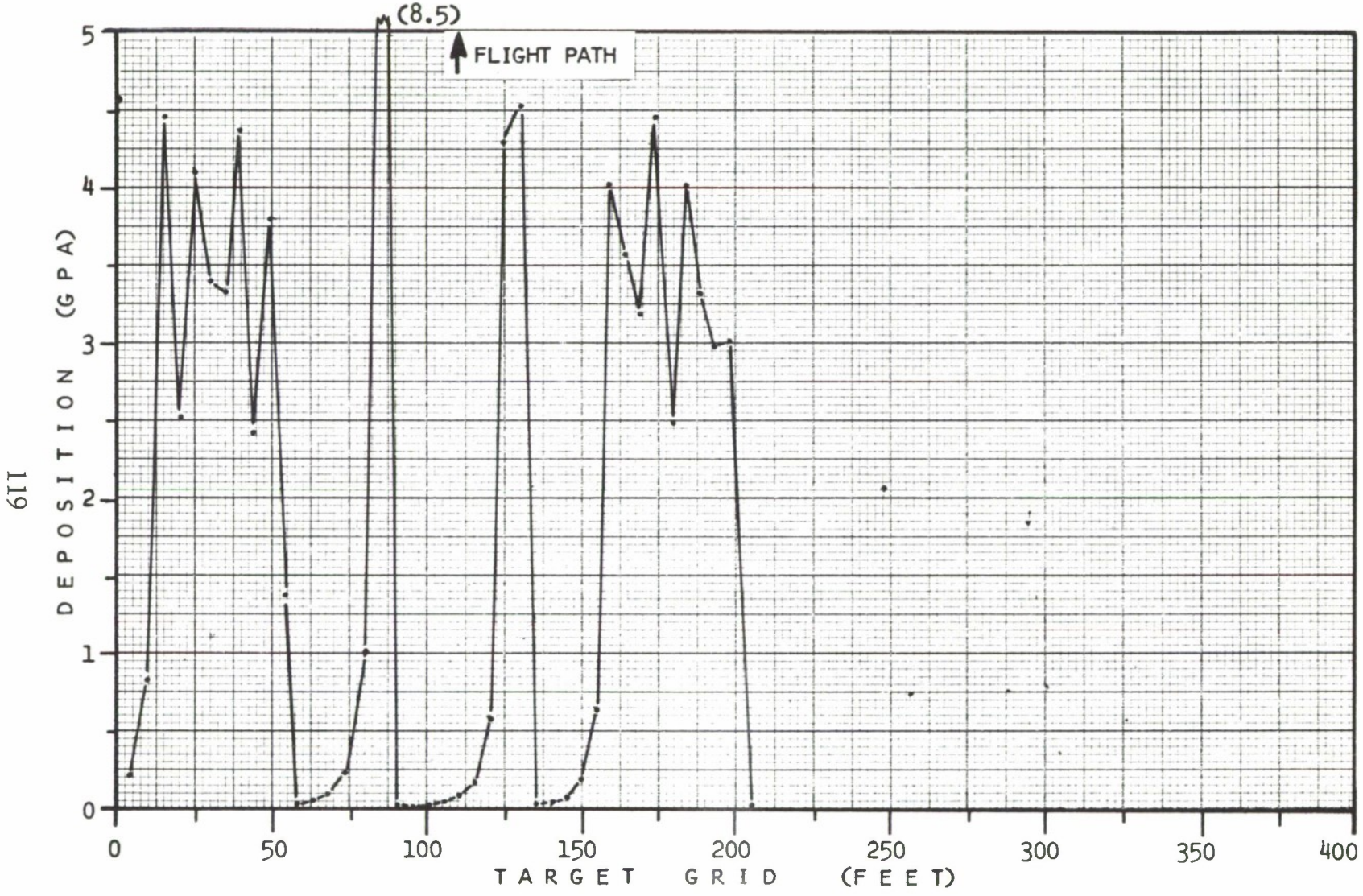


Figure II-9. DEFOL Simulation of Mission 505

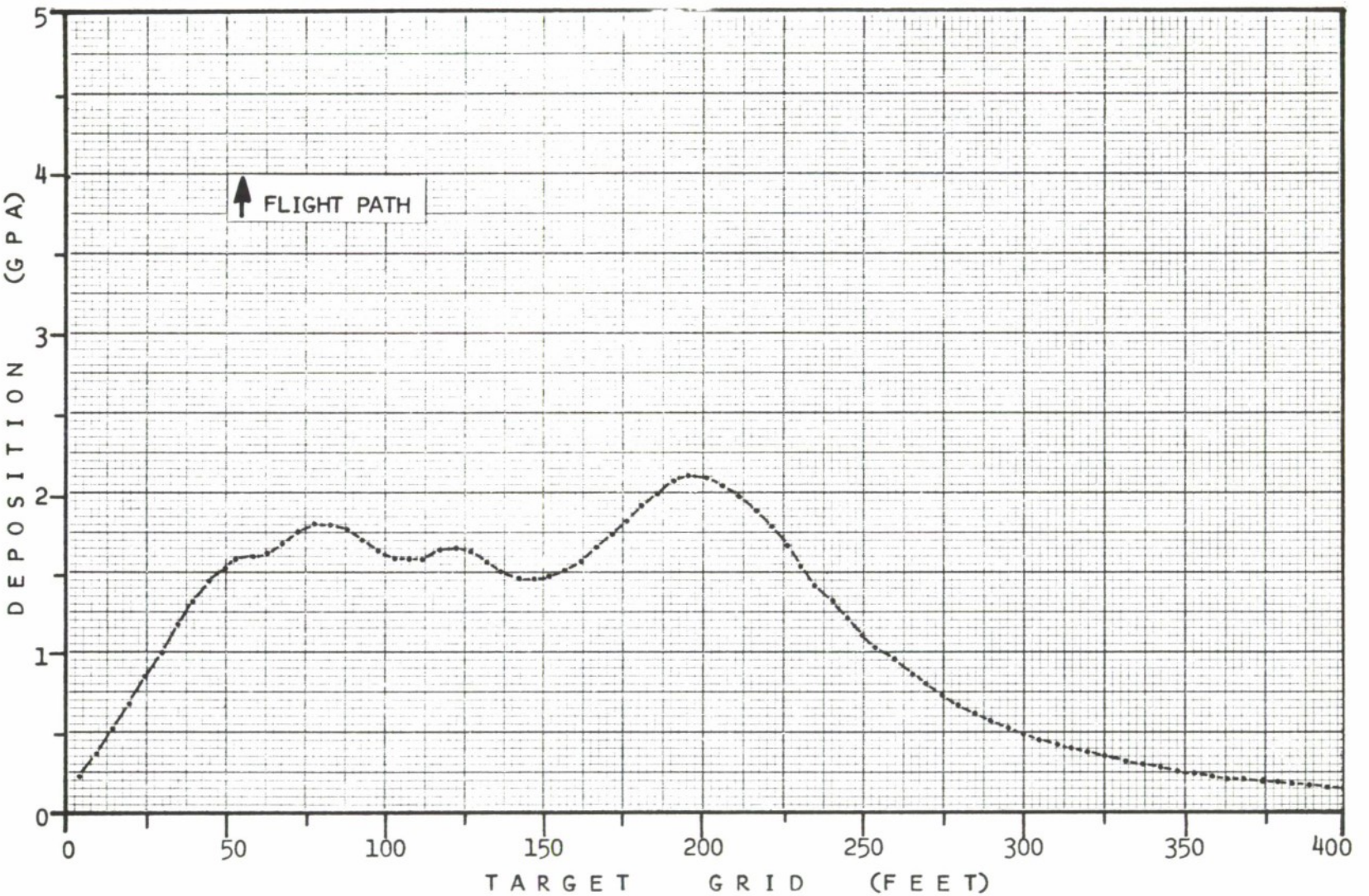


Figure II-10. DEFOL Simulation of Mission 345

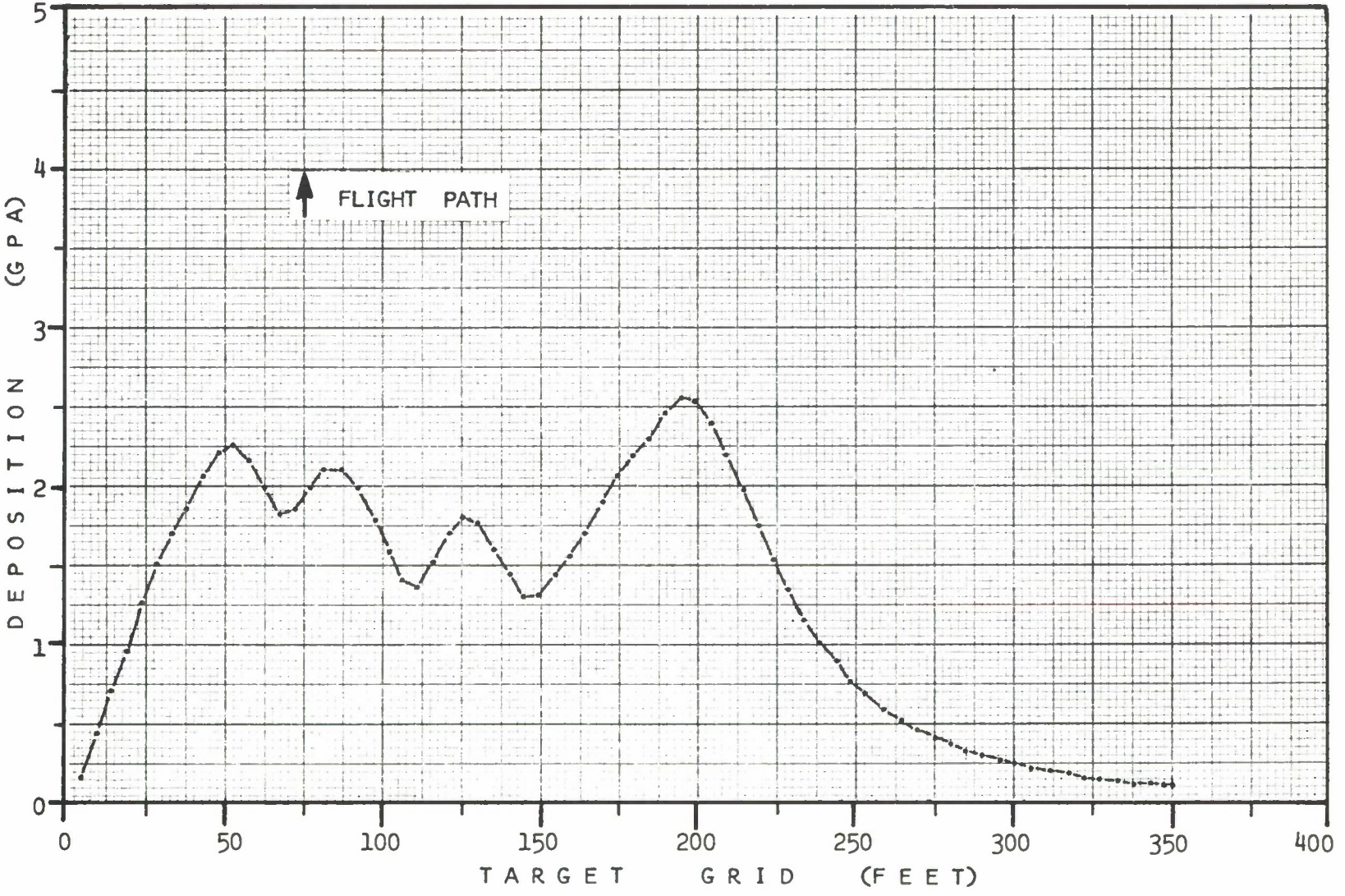


Figure II-11. DEFOL Simulation of Mission 758

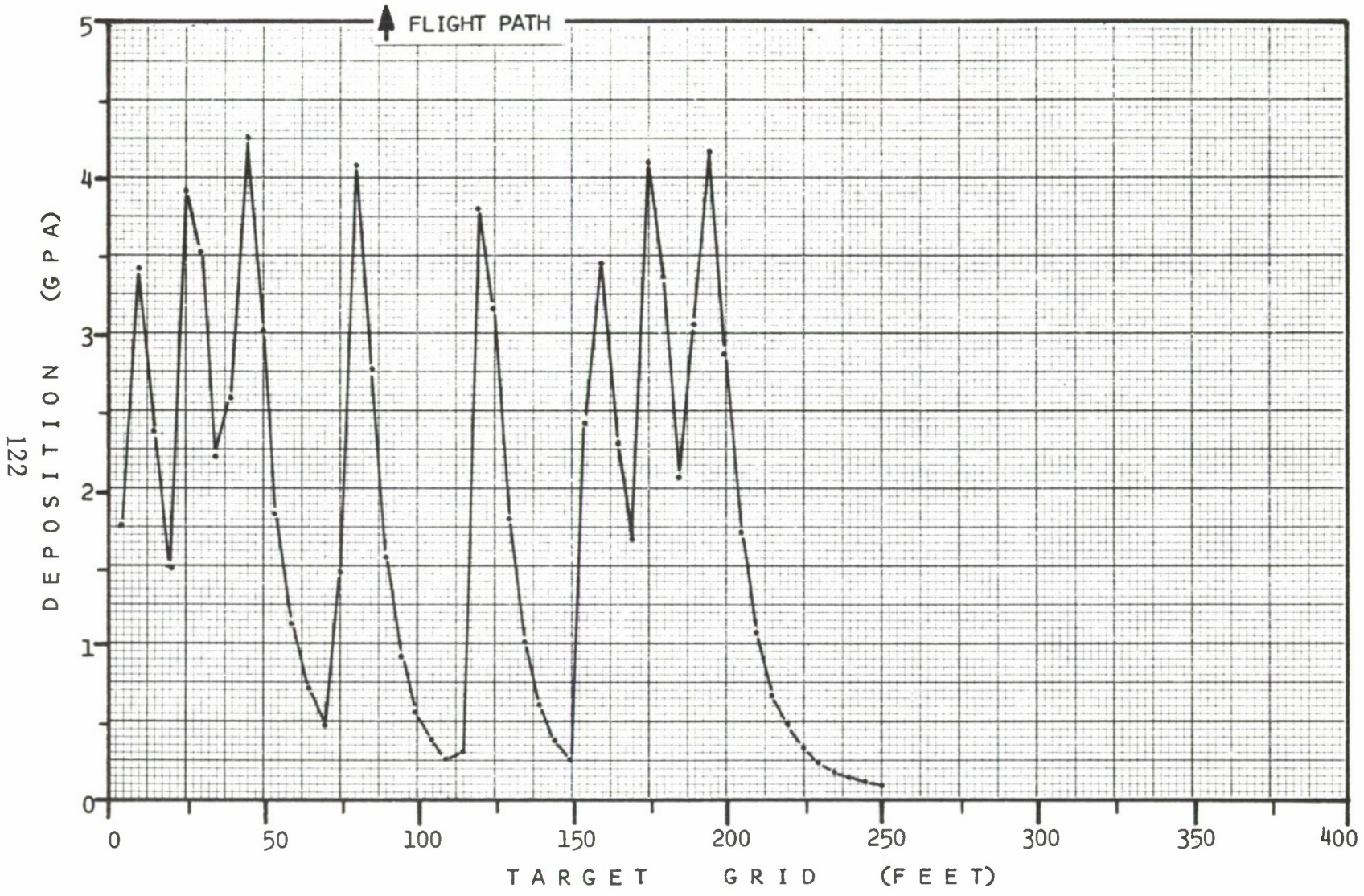


Figure II-12. DEFOL Simulation of Mission 247

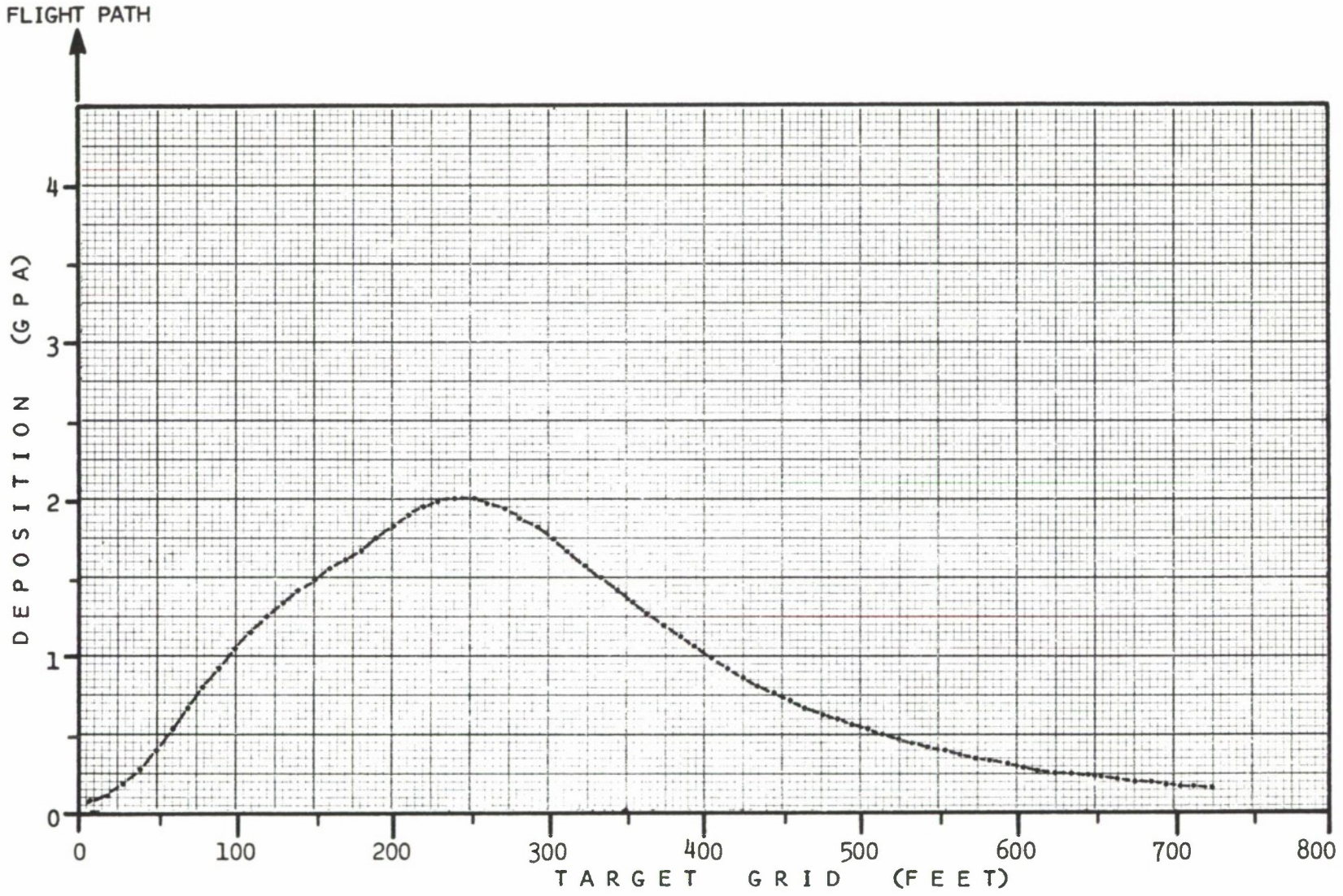


Figure II-13. DEFOL Simulation of Mission 440

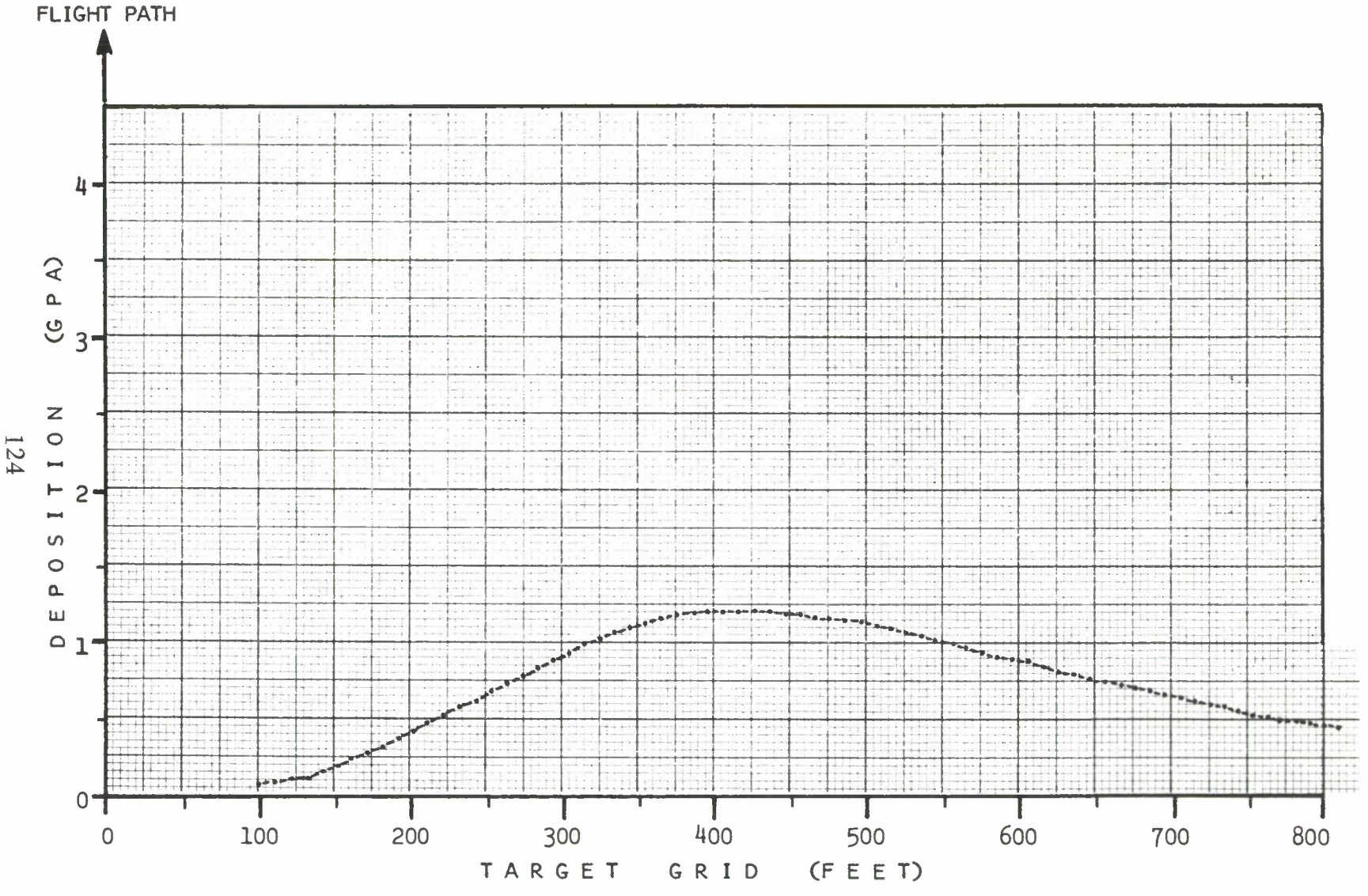


Figure II-14. DEFOL Simulation of Mission 147

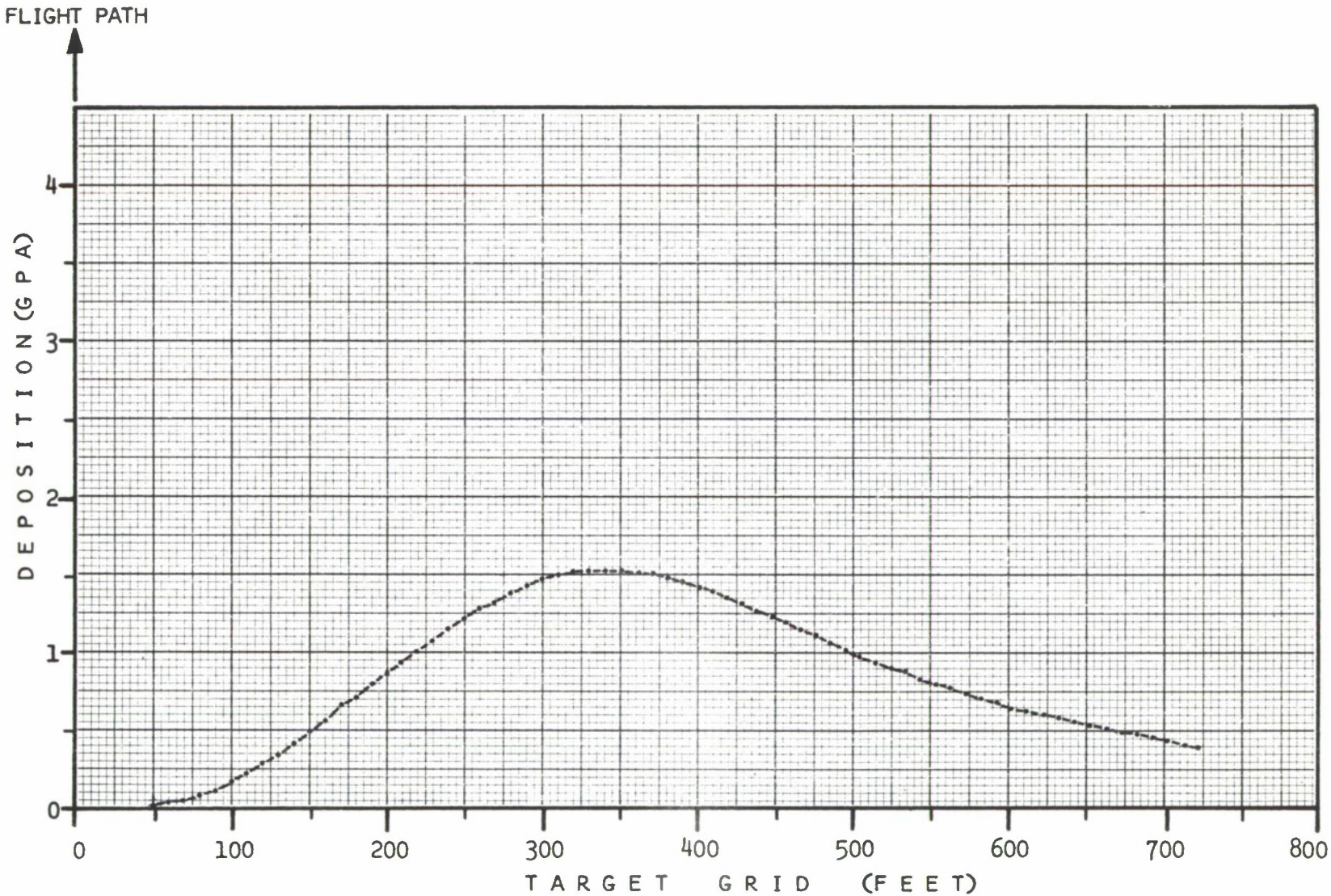


Figure II-15. DEFOL Simulation of Mission 227

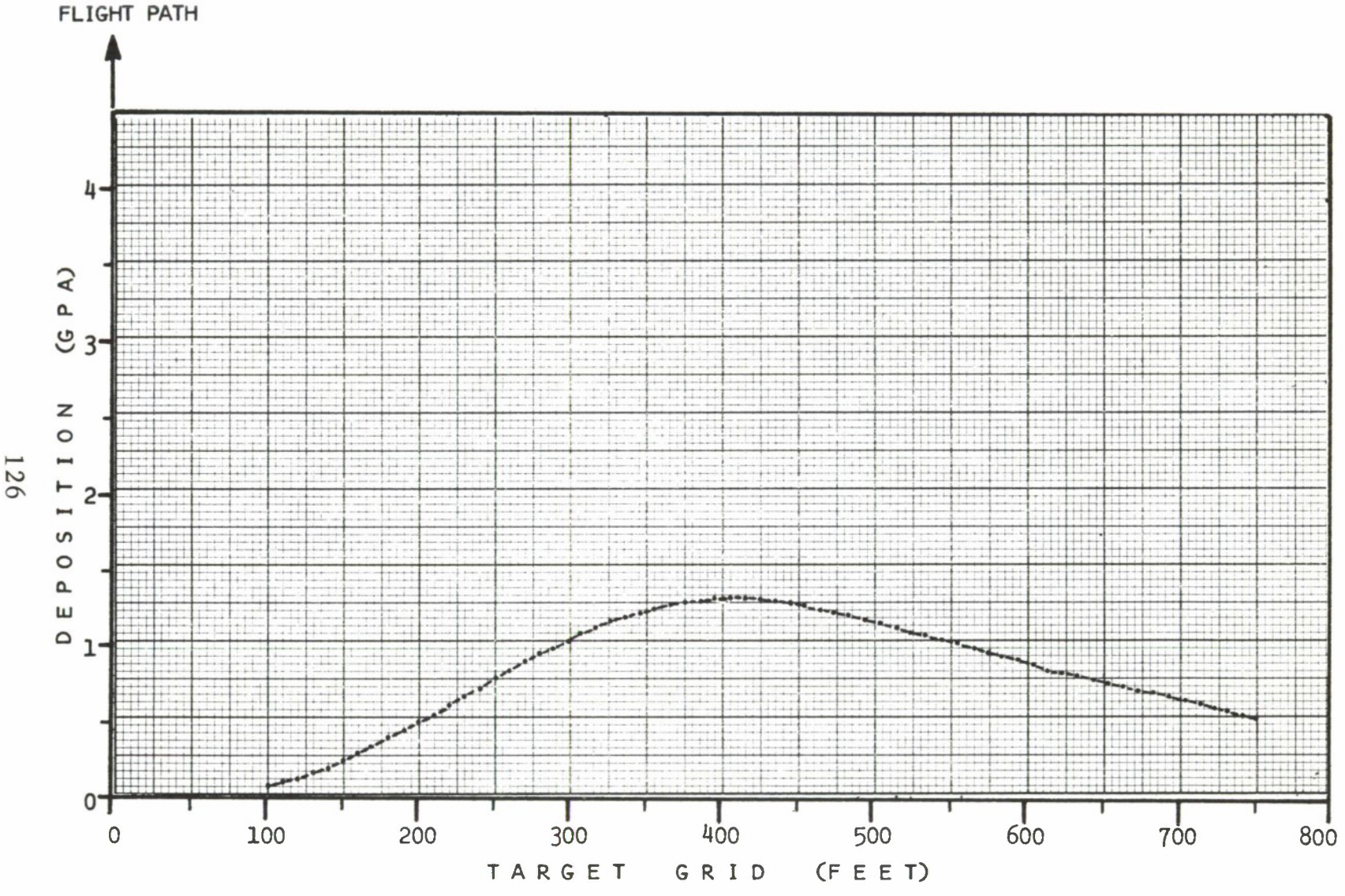


Figure II-16. DEFOL Simulation of Mission 141

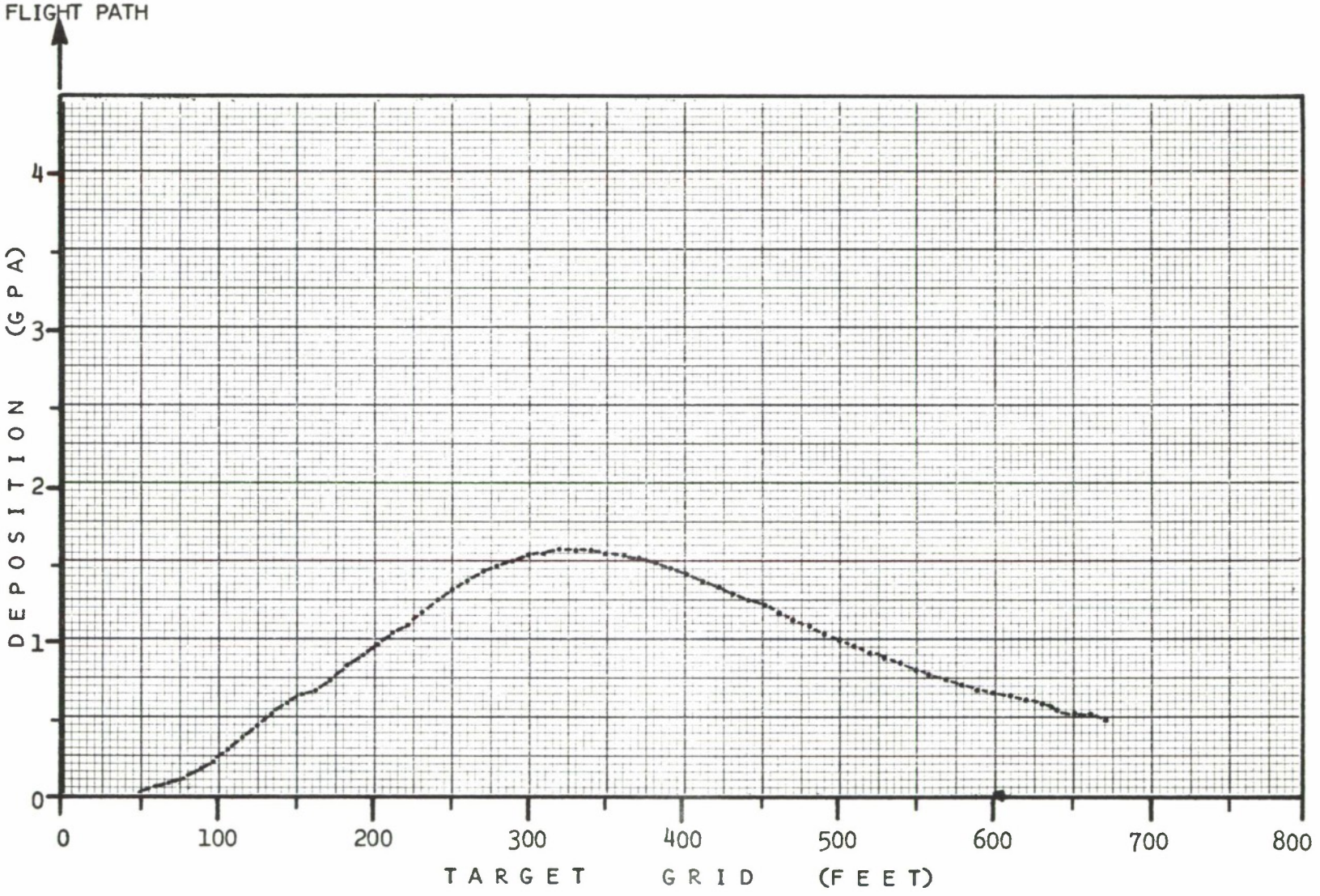


Figure II-17. DEFOL Simulation of Mission 139

(The reverse of this page is blank)

APPENDIX III

SWATH WIDTH RANGES

Appendix III contains tables that display ranges of swath widths in feet for selected deposition levels in gallons per acre. These swath width ranges are given for applicable flow rates simulated.

LIST OF TABLES

LIST OF TABLES (Concluded)

TABLE III-1. RANGE OF INWIND SWATH WIDTHS FOR 1.0 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	265	250
602	245 - 265	250
555	240 - 280	265
323	255 - 260	270
5040	255 - 265	230
4035	240 - 255	235

TABLE III-II. RANGE OF INWIND SWATH WIDTHS FOR 0.9 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	265 - 285	255
602	245 - 265	255
555	240 - 285	270
323	255 - 265	280
5040	255 - 270	235
4035	240 - 255	245

TABLE III-III. RANGE OF INWIND SWATH WIDTHS FOR 0.8 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	280 - 300	260
602	245 - 270	265
555	240 - 375	285
323	262 - 290	290
5040	255 - 279	235
4035	240 - 257	250

TABLE III-IV. RANGE OF INWIND SWATH WIDTHS FOR 0.7 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	290 - 300	265
602	245 - 285	275
555	255 - 375	290
323	270 - 315	295
5040	255 - 282	245
4035	240 - 260	255

TABLE III-V. RANGE OF INWIND SWATH WIDTHS FOR 0.6 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	295 - 301	275
602	245 - 288	280
555	265 - 383	305
323	299 - 360	310
5040	257 - 283	250
4035	241 - 263	260

TABLE III-VI. RANGE OF INWIND SWATH WIDTHS FOR 0.5 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	298 - 309	290
602	245 - 288	290
555	362 - 400	320
323	307 - 369	325
5040	268 - 296	255
4035	242 - 266	265

TABLE III-VII. RANGE OF INWIND SWATH WIDTHS FOR 0.4 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	303 - 315	300
602	255 - 295	305
555	389 - 430	340
323	340 - 380	350
5040	270 - 297	265
4035	243 - 269	275

TABLE III-VIII. RANGE OF INWIND SWATH WIDTHS FOR 1.0 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	215 - 235	230
5046	60 - 115	215
505	50 - 275	190
345	90 - 100	240
758	230 - 250	230
247	225 - 280	210

TABLE III-IX. RANGE OF INWIND SWATH WIDTHS FOR 0.9 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	215 - 235	240
5046	90 - 115	215
505	55 - 310	190
345	95 - 270	250
758	230 - 250	235
247	225 - 280	210

TABLE III-X. RANGE OF INWIND SWATH WIDTHS FOR 0.8 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	215 - 235	250
5046	100 - 115	220
505	60 - 315	195
345	100 - 275	255
758	230 - 250	240
247	235 - 280	210

TABLE III-XI. RANGE OF INWIND SWATH WIDTHS FOR 0.7 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	220 - 235	260
5046	170 - 205	225
505	130 - 360	195
345	180 - 385	270
758	235 - 255	250
247	240 - 280	215

TABLE III-XII. RANGE OF INWIND SWATH WIDTHS FOR 0.6 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	220 - 235	270
5046	205 - 260	225
505	320 - 365	195
345	280 - 385	280
758	240 - 255	260
247	240 - 285	215

TABLE III-XIII. RANGE OF INWIND SWATH WIDTHS FOR 0.5 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	220 - 240	285
5046	215 - 260	230
505	335 - 375	195
345	330 - 395	300
758	240 - 260	270
247	250 - 330	220

TABLE III-XIV. RANGE OF INWIND SWATH WIDTHS FOR 0.4 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	222 - 240	300
5046	250 - 275	235
505	345 - 385	200
345	355 - 445	320
758	250 - 270	285
247	290 - 335	220

TABLE III-XV. RANGE OF INWIND SWATH WIDTHS FOR 0.3 GPA AND LOW FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	224 - 260	325
5046	255 - 305	250
505	380 - 425	200
345	385 - 480	345
758	270 - 310	300
247	295 - 350	225

TABLE III-XVI. RANGE OF CROSSWIND SWATH WIDTHS FOR 1.0 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	145 - 180	315
147	0 - 35	250
227	110 - 150	315
141	45 - 115	280
139	55 - 135	315

TABLE III-XVII. RANGE OF CROSSWIND SWATH WIDTHS FOR 0.9 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	155 - 190	345
147	20 - 70	310
227	150 - 310	350
141	55 - 220	330
139	70 - 205	360

TABLE III-XVIII. RANGE OF CROSSWIND SWATH WIDTHS FOR 0.8 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	195 - 240	370
147	40 - 170	370
227	235 - 315	395
141	105 - 230	390
139	70 - 215	405

TABLE III-XIX. RANGE OF CROSSWIND SWATH WIDTHS FOR 0.7 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	245 - 380	405
147	65 - 235	435
227	275 - 360	445
141	145 - 235	450
139	140 - 255	445

TABLE III-XX. RANGE OF CROSSWIND SWATH WIDTHS FOR 0.6 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	340 - 385	435
147	100 - 395	510
227	285 - 385	495
141	225 - 345	490
139	215 - 275	500

TABLE III-XXI. RANGE OF CROSSWIND SWATH WIDTHS FOR 0.5 GPA AND HIGH FLOW RATES

MISSION NUMBER	SWATH WIDTH (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	355 - 395	480
147	240 - 400	585
227	325 - 460	560
141	225 - 365	505
139	250 - 410	520

APPENDIX IV

SWATH WIDTH DISPLACEMENTS

Appendix IV contains tables that display ranges of swath width displacements in feet for selected deposition levels in gallons per acre. These swath width displacements are given for applicable flow rates simulated.

LIST OF TABLES

LIST OF TABLES (Concluded)

TABLE IV-I. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 1.0 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	(-50) - (-60)	-65
602	(-150) - (-165)	-185
555	(-25) - (-40)	-45
323	65 - 70	45
5040	95 - 105	80
4035	70 - 80	75

TABLE IV-II. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.9 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	(-50) - (-60)	-65
602	(-150) - (-165)	-190
555	(-25) - (-40)	-45
323	65 - 70	50
5040	95 - 110	80
4035	70 - 80	75

TABLE IV-III. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.8 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	(-50) - (-60)	-65
602	(-150) - (-170)	-195
555	(-25) - (-40)	-50
323	65 - 70	50
5040	95 - 110	80
4035	70 - 80	75

TABLE IV-IV. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.7 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	(-50) - (-60)	-65
602	(-150) - (-185)	-205
555	(-25) - (-40)	-50
323	65 - 70	50
5040	95 - 110	85
4035	70 - 80	75

TABLE IV-V. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.6 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	(-50) - (-60)	-65
602	(-150) - (-185)	-210
555	(-30) - (-40)	-50
323	65 - 70	55
5040	95 - 110	85
4035	70 - 80	75

TABLE IV-VI. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.5 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	(-50) - (-60)	-70
602	(-165) - (-185)	-220
555	(-30) - (-40)	-55
323	65 - 70	55
5040	95 - 110	85
4035	70 - 80	75

TABLE IV-VII. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.4 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
49	(-50) - (-60)	-70
602	(-180) - (-195)	-240
555	(-30) - (-40)	-55
323	65 - 70	60
5040	95 - 115	85
4035	70 - 80	75

TABLE IV-VIII. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 1.0 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-40
5046	(-70) - (-75)	-75
505	70 - 75	90
345	(-5) - (-10)	-25
758	(-70) - (-80)	-55
247	(-85) - (-90)	-85

TABLE IV-IX. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.9 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-45
5046	(-70) - (-75)	-75
505	70 - 75	90
345	(-5) - (-10)	-30
758	(-70) - (-80)	-55
247	-90	-85

TABLE IV-X. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.8 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-45
5046	(-70) - (-75)	-75
505	70 - 75	90
345	(-5) - (-10)	-30
758	(-70) - (-80)	-55
247	-90	-85

TABLE IV-XI. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.7 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-50
5046	(-70) - (-75)	-75
505	70 - 75	90
345	-10	-35
758	(-75) - (-80)	-60
247	(-90) - (-105)	-85

TABLE IV-XII. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.6 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-50
5046	(-70) - (-75)	-75
505	70 - 75	90
345	-10	-35
758	(-75) - (-80)	-60
247	(-95) - (-105)	-85

TABLE IV-XIII. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.5 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-55
5046	(-70) - (-75)	-75
505	70 - 80	90
345	(-10) - (-15)	-40
758	(-75) - (-80)	-65
247	(-100) - (-105)	-85

TABLE IV-XIV. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.4 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-55
5046	(-75) - (-80)	-75
505	70 - 80	95
345	(-10) - (-15)	-45
758	-80	-65
247	(-100) - (-110)	-85

TABLE IV-XV. RANGE OF INWIND SWATH WIDTH DISPLACEMENTS FOR 0.3 GPA AND LOW FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
343	(-70) - (-80)	-60
5046	(-75) - (-80)	-80
505	70 - 80	95
345	(-10) - (-15)	-45
758	-80	-65
247	(-100) - (-110)	-85

TABLE IV-XVI. RANGE OF CROSSWIND SWATH WIDTH DISPLACEMENTS FOR 1.0 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	130 - 155	90
147	245 - 255	300
227	205 - 305	195
141	220 - 310	280
139	145 - 380	195

TABLE IV-XVII. RANGE OF CROSSWIND SWATH WIDTH DISPLACEMENTS FOR 0.9 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	115 - 140	85
147	235 - 355	285
227	205 - 255	190
141	220 - 290	270
139	145 - 240	185

TABLE IV-XVIII. RANGE OF CROSSWIND SWATH WIDTH DISPLACEMENTS FOR 0.8 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	115 - 140	80
147	220 - 355	265
227	190 - 250	175
141	220 - 250	250
139	145 - 380	170

TABLE IV-XIX. RANGE OF CROSSWIND SWATH WIDTH DISPLACEMENTS FOR 0.7 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	115 - 140	70
147	215 - 345	245
227	180 - 205	160
141	215 - 250	235
139	145 - 350	160

TABLE IV-XX. RANGE OF CROSSWIND SWATH WIDTH DISPLACEMENTS FOR 0.6 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	115 - 140	65
147	215 - 340	225
227	165 - 180	150
141	205 - 250	215
139	140 - 335	145

TABLE IV-XXI. RANGE OF CROSSWIND SWATH WIDTH DISPLACEMENTS FOR 0.5 GPA AND HIGH FLOW RATES

MISSION NUMBER	DISPLACEMENT (FEET)	
	FIELD TRIALS	PROGRAM DEFOL
440	105 - 130	55
147	195 - 220	210
227	125 - 160	135
141	200 - 235	200
139	140 - 235	130

APPENDIX V

FIELD DATA SWATH WIDTHS

Appendix V contains tables that present swath widths determined from the field data. These tables are used to present a comparison of the variability in the swaths among the three rows of any given test trial. Interpretation of Tables V-I, V-II, and V-III has been discussed in Section II. 5. a. of this volume. Similarly, the swath width displacements determined from the field data are presented in Tables V-IV, V-V, and V-VI. Swath width displacements are distances that determine the start of a swath relative to the flight path of the aircraft. A negative sign indicates that the swath started on the windward side of the flight path and, similarly, a positive sign indicates that the swath started on the leeward side of the flight path.

Missions were conducted with high flow rates ranging from 220 to 240 GPM and with low flow rates ranging from 110 to 140 GPM. These missions are identified in the tables of this appendix. Flow rates for specific missions may be found in Tables II, III, and IV of the main body of this volume.

Tables V-VII, V-VIII, and V-IX present the 95 percent confidence interval for each mission swath width over given deposition levels. The DEFOL predictions of swath width are presented in the same tables. The 95 percent confidence interval for each mission swath width displacement over given deposition levels are presented in Tables V-X, V-XI, and V-XII. The DEFOL predictions of swath width displacement are also presented in the same tables.

LIST OF TABLES

LIST OF TABLES (Concluded)

TABLE V-I. TEST TRIAL INWIND SWATH WIDTHS FOR HIGH FLOW RATES

MISSION NUMBER	ROW	1.0 GPA DEPOSITION			0.9 GPA DEPOSITION			0.8 GPA DEPOSITION			0.7 GPA DEPOSITION		
		LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA
49	A	265	5.7	0.8	265	1.1	0.8	300	3.3	0.7	300	0.0	--
	B	265	7.5	0.9	280	0.0	--	280	0.0	--	295	1.6	0.6
	C	265	3.8	0.9	285	0.0	--	290	0.0	--	290	0.0	--
602	A	260	3.8	0.8	265	1.1	0.8	270	0.0	--	270	0.0	--
	B	245	0.0	--	245	0.0	--	245	0.0	--	245	0.0	--
	C	265	9.4	0.8	265	5.7	0.8	270	0.0	--	285	0.0	--
555	A	240	12.5	0.6	240	10.4	0.6	240	8.3	0.6	255	3.9	0.6
	B	265	7.5	0.8	265	3.8	0.8	375	2.7	0.7	375	0.0	--
	C	280	17.9	0.7	285	7.0	0.7	315	3.1	0.6	315	1.6	0.6
323	A	260	34.6	0.6	265	19.0	0.6	270	11.1	0.6	270	7.4	0.6
	B	260	0.0	--	260	0.0	--	262	0.0	--	274	0.0	--
	C	255	3.9	0.6	255	2.0	0.6	290	1.7	0.6	300	1.7	0.6
5040	A	255	5.9	0.8	255	3.9	0.8	255	0.0	--	255	0.0	--
	B	255	9.8	0.8	255	3.9	0.8	265	0.0	--	266	0.0	--
	C	265	1.1	0.8	270	1.9	0.8	279	0.0	--	282	0.0	--
4035	A	250	0.0	--	250	0.0	--	250	0.0	--	251	0.0	--
	B	255	2.0	0.9	255	0.0	--	257	0.0	--	260	0.0	--
	C	240	2.1	0.8	240	0.0	--	240	0.0	--	240	0.0	--

TABLE V-I. TEST TRIAL INWIND SWATH WIDTHS FOR HIGH FLOW RATES (Concluded)

MISSION NUMBER	ROW	0.6 GPA DEPOSITION			0.5 GPA DEPOSITION			0.4 GPA DEPOSITION		
		LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA
49	A	301	0.0	--	309	0.0	--	315	0.0	--
	B	299	0.0	--	309	0.0	--	315	0.0	--
	C	295	0.0	--	298	0.0	--	303	0.0	--
602	A	271	0.0	--	273	0.0	--	283	0.0	--
	B	245	0.0	--	245	0.0	--	255	0.0	--
	C	288	0.0	--	288	0.0	--	295	0.0	--
555	A	265	0.0	--	387	0.0	--	389	0.0	--
	B	383	0.0	--	400	0.0	--	430	0.0	--
	C	337	0.0	--	362	0.0	--	392	0.0	--
323	A	360	1.4	0.5	369	0.0	--	375	0.0	--
	B	299	0.0	--	319	0.0	--	340	0.0	--
	C	300	0.0	--	307	0.0	--	380	0.0	--
5040	A	257	0.0	--	268	0.0	--	270	0.0	--
	B	268	0.0	--	270	0.0	--	271	0.0	--
	C	283	0.0	--	296	0.0	--	297	0.0	--
4035	A	252	0.0	--	252	0.0	--	253	0.0	--
	B	263	0.0	--	266	0.0	--	269	0.0	--
	C	241	0.0	--	242	0.0	--	243	0.0	--

TABLE V-II. TEST TRIAL INWIND SWATH WIDTHS FOR LOW FLOW RATES

MISSION NUMBER	ROW	1.0GPA DEPOSITION			0.9 GPA DEPOSITION			0.8 GPA DEPOSITION			0.7 GPA DEPOSITION		
		LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA
343	A	235	25.5	0.4	235	21.3	0.4	235	17.0	0.4	235	14.9	0.4
	B	225	13.3	0.4	225	13.3	0.4	225	13.3	0.4	230	10.9	0.4
	C	215	32.6	0.4	215	25.6	0.5	215	25.6	0.5	220	11.4	0.5
5046	A	115	30.4	0.2	115	30.4	0.2	115	30.4	0.2	170	35.3	0.2
	B	90	33.3	0.1	90	33.3	0.1	100	25.0	0.1	175	20.0	0.1
	C	60	66.7	0.4	115	34.8	0.4	115	30.4	0.4	205	12.2	0.4
505	A	50	0.0	--	55	0.0	--	60	0.0	--	130	23.7	0.5
	B	275	36.0	0.5	310	30.6	0.5	315	15.8	0.5	360	11.1	0.5
	C	275	25.4	0.6	275	14.5	0.6	280	8.9	0.6	325	7.6	0.5
345	A	90	11.1	0.6	270	35.1	0.6	275	21.8	0.6	280	5.3	0.6
	B	95	10.5	0.9	95	0.0	--	130	19.2	0.5	180	8.3	0.6
	C	100	15.0	0.7	100	10.0	0.7	100	5.0	0.7	385	14.2	0.5
758	A	250	20.0	0.7	250	12.0	0.7	250	4.0	0.7	255	0.0	--
	B	230	21.7	0.6	230	19.5	0.6	230	13.0	0.6	235	4.2	0.6
	C	240	20.8	0.5	240	16.6	0.5	240	10.4	0.5	250	6.0	0.5
247	A	230	32.6	0.3	235	25.5	0.3	235	17.0	0.3	240	12.5	0.3
	B	280	26.7	0.6	280	14.2	0.6	280	5.3	0.6	280	1.7	0.6
	C	225	40.0	0.3	225	22.2	0.3	240	22.9	0.3	240	16.6	0.3

TABLE V-II. TEST TRIAL INWIND SWATH WIDTHS FOR LOW FLOW RATES
(Concluded)

MISSION NUMBER	ROW	0.6 GPA DEPOSITION			0.5 GPA DEPOSITION			0.4 GPA DEPOSITION			0.3 GPA DEPOSITION		
		LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA
343	A	235	12.8	0.4	240	4.2	0.4	240	0.0	--	260	0.0	--
	B	230	10.9	0.4	230	4.3	0.4	235	0.0	--	240	0.0	--
	C	220	4.5	0.5	220	0.0	--	222	0.0	--	224	0.0	--
5046	A	205	26.8	0.2	215	23.2	0.2	250	14.0	0.2	255	7.8	0.2
	B	245	12.2	0.1	255	9.8	0.1	275	7.3	0.1	305	6.6	0.1
	C	260	15.4	0.4	260	3.8	0.4	270	0.0	--	305	0.0	--
505	A	320	20.3	0.3	335	7.4	0.3	345	2.8	0.3	425	2.3	0.2
	B	365	2.7	0.5	375	0.0	--	385	0.0	--	405	0.0	--
	C	335	2.9	0.5	360	8.3	0.4	370	0.0	--	380	0.0	--
345	A	280	0.0	--	330	7.5	0.4	405	12.3	0.1	420	7.1	0.1
	B	335	2.9	0.5	350	1.4	0.4	355	0.0	--	385	2.5	0.2
	C	385	7.7	0.5	395	0.0	--	445	2.2	0.3	480	3.1	0.2
758	A	255	0.0	--	260	0.0	--	270	0.0	--	310	0.0	--
	B	240	0.0	--	240	0.0	--	250	0.0	--	270	0.0	--
	C	250	2.0	0.5	255	0.0	--	260	0.0	--	270	0.0	--
247	A	240	10.4	0.3	250	8.0	0.3	315	14.2	0.2	345	4.3	0.2
	B	285	0.0	--	290	0.0	--	290	0.0	--	295	0.0	--
	C	240	12.5	0.3	330	15.1	0.3	335	2.9	0.3	350	0.0	--

TABLE V-III. TEST TRIAL CROSSWIND SWATH WIDTHS FOR HIGH FLOW RATES

MISSION NUMBER	ROW	1.0 GPA DEPOSITION			0.9 GPA DEPOSITION			0.8 GPA DEPOSITION			0.7 GPA DEPOSITION		
		LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA
440	A	180	8.3	0.9	190	0.0	--	215	0.0	--	340	8.8	0.4
	B	175	5.7	0.9	180	0.0	--	240	0.0	--	380	10.5	0.5
	C	145	0.0	--	155	0.0	--	195	2.6	0.7	245	2.0	0.6
147	A	35	14.3	0.9	35	0.0	--	170	17.6	0.6	190	5.0	0.6
	B	0	0.0	--	20	0.0	--	40	0.0	--	65	0.0	--
	C	30	0.0	--	70	14.3	0.7	70	7.0	0.7	235	0.0	--
227	A	110	13.6	0.7	310	11.2	0.6	315	6.3	0.6	360	9.7	0.4
	B	130	15.3	0.6	230	28.2	0.6	250	16.0	0.6	290	5.1	0.6
	C	150	20.0	0.6	150	10.0	0.6	235	8.5	0.6	275	5.4	0.6
141	A	50	40.0	0.7	55	9.0	0.7	175	25.7	0.6	190	7.8	0.6
	B	45	11.1	0.9	55	0.0	--	105	9.5	0.7	145	6.8	0.4
	C	115	4.3	0.9	220	18.1	0.7	230	4.3	0.7	235	0.0	--
139	A	135	25.9	0.6	205	34.1	0.6	215	20.9	0.6	255	5.8	0.6
	B	55	36.3	0.7	75	33.3	0.7	155	45.1	0.6	155	25.8	0.6
	C	70	50.0	0.7	70	42.8	0.7	70	7.1	0.7	140	7.1	0.6

TABLE V-III. TEST TRIAL CROSSWIND SWATH WIDTHS FOR HIGH FLOW RATES
(Concluded)

MISSION NUMBER	ROW	0.6 GPA DEPOSITION			0.5 GPA DEPOSITION			0.4 GPA DEPOSITION			0.3 GPA DEPOSITION		
		LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA	LTH(FT)	%	L/GPA
440	A	375	2.7	0.4	395	1.3	0.4	400	0.0	--	465	0.0	--
	B	385	5.2	0.5	395	0.0	--	398	0.0	--	534	0.0	--
	C	340	10.3	0.4	355	2.8	0.4	398	0.0	--	435	0.0	--
147	A	395	3.8	0.5	400	0.0	--	455	0.0	--	490	0.0	--
	B	100	0.0	--	240	6.3	0.4	250	0.0	--	395	0.0	--
	C	245	0.0	--	290	1.7	0.4	297	0.0	--	356	0.0	--
227	A	370	4.0	0.4	400	2.5	0.4	405	0.0	--	440	2.2	0.2
	B	385	1.2	0.5	460	3.2	0.4	460	0.0	--	460	0.0	--
	C	285	1.7	0.5	325	3.0	0.4	495	0.0	--	525	0.0	--
141	A	345	5.7	0.5	365	1.3	0.4	380	1.3	0.3	485	5.1	0.1
	B	225	8.8	0.4	225	2.2	0.4	455	14.2	0.2	460	1.0	0.2
	C	250	0.0	--	315	4.7	0.3	365	6.8	0.3	385	1.2	0.2
139	A	275	1.8	0.5	410	4.8	0.3	425	1.1	0.3	480	0.0	--
	B	255	9.8	0.4	275	5.4	0.4	480	7.2	0.2	505	0.9	0.2
	C	215	9.3	0.4	250	8.0	0.4	390	2.5	0.3	410	0.0	--

TABLE V-IV. TEST TRIAL INWIND SWATH WIDTH DISPLACEMENTS IN FEET FOR HIGH FLOW RATES

GPA	ROW	MISSION NUMBER					
		49	602	555	323	5040	4035
1.0	A	-60	-160	-25	70	100	70
	B	-55	-150	-40	65	95	80
	C	-50	-165	-30	70	105	75
0.9	A	-60	-165	-25	70	100	70
	B	-55	-150	-40	65	95	80
	C	-50	-165	-30	70	110	75
0.8	A	-60	-170	-25	70	100	70
	B	-55	-150	-40	65	95	80
	C	-50	-170	-30	70	110	75
0.7	A	-60	-170	-25	70	100	70
	B	-55	-150	-40	65	95	80
	C	-50	-185	-30	70	110	75
0.6	A	-60	-170	-30	70	105	70
	B	-55	-150	-40	65	95	80
	C	-50	-185	-30	70	110	75
0.5	A	-60	-170	-30	70	115	70
	B	-55	-165	-40	65	95	80
	C	-50	-185	-30	70	110	75
0.4	A	-60	-180	-30	70	115	70
	B	-55	-180	-40	65	95	80
	C	-50	-195	-30	70	115	75
0.3	A	-60	-180	-30	70	120	75
	B	-55	-190	-40	65	100	80
	C	-50	-195	-30	70	115	75

TABLE V-V. TEST TRIAL INWIND SWATH WIDTH DISPLACEMENTS IN FEET FOR LOW FLOW RATES

GPA	ROW	MISSION NUMBER					
		343	5046	505	345	758	247
1.0	A	-70	-70	70	- 5	-80	-85
	B	-75	-70	75	-10	-75	-90
	C	-80	-75	75	-10	-70	-90
0.9	A	-70	-70	70	- 5	-80	-90
	B	-75	-70	75	-10	-75	-90
	C	-80	-75	75	-10	-70	-90
0.8	A	-70	-70	70	- 5	-80	-90
	B	-75	-70	75	-10	-75	-90
	C	-80	-75	75	-10	-70	-90
0.7	A	-70	-70	70	-10	-80	-95
	B	-75	-70	75	-10	-75	-90
	C	-80	-75	75	-10	-75	-105
0.6	A	-70	-70	70	-10	-80	-95
	B	-75	-70	75	-10	-75	-100
	C	-80	-75	75	-10	-75	-105
0.5	A	-70	-70	70	-10	-80	-100
	B	-75	-75	75	-10	-75	-100
	C	-80	-75	80	-15	-75	-105
0.4	A	-70	-80	70	-10	-80	-100
	B	-75	-75	75	-10	-80	-100
	C	-80	-80	80	-15	-80	-110
0.3	A	-70	-80	70	-10	-80	-105
	B	-75	-75	75	-10	-80	-100
	C	-80	-80	80	-15	-80	-110

TABLE V-VI. TEST TRIAL CROSSWIND SWATH WIDTH DISPLACEMENTS IN FEET FOR HIGH FLOW RATES

GPA	ROW	MISSION NUMBER				
		440	147	227	141	139
1.0	A	155	245	205	310	145
	B	140	---	305	260	240
	C	130	255	205	220	380
0.9	A	140	235	205	290	145
	B	140	355	255	255	240
	C	115	255	205	220	380
0.8	A	140	220	200	250	145
	B	140	355	250	225	240
	C	115	230	190	220	380
0.7	A	135	220	200	250	145
	B	140	345	205	220	240
	C	115	215	180	215	350
0.6	A	135	220	165	250	140
	B	140	340	180	205	240
	C	115	215	170	205	335
0.5	A	130	195	160	235	140
	B	130	220	160	200	235
	C	105	200	125	200	215
0.4	A	125	180	160	220	140
	B	110	210	160	200	230
	C	105	190	120	170	180
0.3	A	120	175	160	220	130
	B	100	200	160	200	230
	C	90	185	105	170	170

TABLE V-VII. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTHS AT HIGH FLOW RATES VERSUS PREDICTED VALUES

MISSION NO	LIMITS *	1.0 GPA DEPOSITION		0.9 GPA DEPOSITION		0.8 GPA DEPOSITION		0.7 GPA DEPOSITION	
		FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL
49	LOWER	265.00	250	250.83	255	265.17	260	282.59	265
	UPPER	265.00		302.51		314.83		307.41	
602	LOWER	230.83	250	229.67	255	225.83	265	216.50	275
	UPPER	282.51		287.00		297.50		316.83	
555	LOWER	211.50	265	207.36	270	142.08	285	166.04	290
	UPPER	311.83		319.31		477.92		463.96	
323	LOWER	251.17	270	247.59	280	238.20	290	240.89	295
	UPPER	265.50		272.41		309.80		321.77	
5040	LOWER	244.00	230	238.50	235	236.40	235	233.96	245
	UPPER	272.67		281.50		296.26		301.37	
4035	LOWER	229.37	235	229.37	245	227.79	250	225.47	255
	UPPER	267.29		267.29		270.21		275.20	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-VII. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTHS AT HIGH FLOW RATES VERSUS PREDICTED VALUES (Concluded)

MISSION NO	LIMITS *	0.6 GPA DEPOSITION		0.5 GPA DEPOSITION		0.4 GPA DEPOSITION	
		FIELD DATA	DEFOL	FIELD DATA	DEFOL	FIELD DATA	DEFOL
49	LOWER	290.75	275	289.57	290	293.80	300
	UPPER	305.92		321.10		328.20	
602	LOWER	214.24	280	214.48	290	226.71	305
	UPPER	321.76		322.85		328.63	
555	LOWER	180.68	305	335.05	320	346.93	340
	UPPER	475.99		430.95		460.41	
323	LOWER	232.94	310	250.03	325	310.89	350
	UPPER	406.39		413.30		419.11	
5040	LOWER	236.93	250	239.22	255	241.33	265
	UPPER	301.73		316.78		317.34	
4035	LOWER	224.69	260	223.40	265	222.44	275
	UPPER	279.31		283.26		287.56	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-VIII. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTHS AT LOW FLOW RATES VERSUS PREDICTED VALUES

MISSION NO	LIMITS *	1.0GPA DEPOSITION		0.9 GPA DEPOSITION		0.8 GPA DEPOSITION		0.7 GPA DEPOSITION	
		FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL
343	LOWER	200.17	230	200.17	240	200.17	250	209.37	260
	UPPER	249.83		249.83		249.83		247.29	
5046	LOWER	19.97	215	70.83	215	88.50	220	136.34	225
	UPPER	156.70		142.50		131.50		230.33	
505	LOWER	-122.50	190	-129.84	190	-124.84	195	-36.00	195
	UPPER	522.50		556.51		561.51		579.33	
345	LOWER	82.59	240	-92.33	250	-64.00	255	27.17	270
	UPPER	107.41		402.33		400.67		536.16	
758	LOWER	215.17	230	215.17	235	215.17	240	220.83	250
	UPPER	264.83		264.83		264.83		272.57	
247	LOWER	169.49	210	173.93	210	190.43	210	196.00	215
	UPPER	320.51		319.40		312.90		310.67	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-VIII. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTHS AT LOW FLOW RATES VERSUS PREDICTED VALUES (Concluded)

MISSION NO	LIMITS *	0.6 GPA DEPOSITION		0.5 GPA DEPOSITION		0.4GPA DEPOSITION		0.3 GPA DEPOSITION	
		FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL
343	LOWER	209.37	270	205.17	285	209.27	300	196.55	325
	UPPER	247.29		254.83		255.40		286.11	
5046	LOWER	166.08	225	182.10	230	232.16	235	216.67	250
	UPPER	307.25		304.57		297.84		360.00	
505	LOWER	283.12	195	306.50	195	316.50	200	347.36	200
	UPPER	396.88		406.83		416.83		459.31	
345	LOWER	202.95	280	275.68	300	289.72	320	309.06	345
	UPPER	463.72		440.98		513.61		547.61	
758	LOWER	229.37	260	225.83	270	235.17	285	226.00	300
	UPPER	267.29		277.51		284.83		340.67	
247	LOWER	190.50	215	190.70	220	257.36	220	254.94	225
	UPPER	319.50		389.30		369.31		405.51	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-IX. 95% CONFIDENCE INTERVALS FOR CROSSWIND SWATH WIDTHS AT HIGH FLOW RATES VERSUS PREDICTED VALUES

MISSION NO	LIMITS *	1.0 GPA DEPOSITION		0.9 GPA DEPOSITION		0.8 GPA DEPOSITION	
		FIELD DATA	DEFOL	FIELD DATA	DEFOL	FIELD DATA	DEFOL
440	LOWER	119.67	315	130.24	345	160.69	370
	UPPER	213.66		219.76		272.64	
147	LOWER	-20.07	250	-22.03	310	-75.65	370
	UPPER	65.40		105.37		262.32	
227	LOWER	80.35	315	31.39	350	161.10	395
	UPPER	179.65		428.61		372.24	
141	LOWER	-26.95	280	-126.50	330	14.47	390
	UPPER	166.95		346.50		325.53	
139	LOWER	-18.90	315	-73.35	360	-34.21	405
	UPPER	192.24		306.68		327.55	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-IX. 95% CONFIDENCE INTERVALS FOR CROSSWIND SWATH WIDTHS AT HIGH FLOW RATES VERSUS PREDICTED VALUES (Concluded)

MISSION NO	LIMITS *	0.7 GPA DEPOSITION		0.6 GPA DEPOSITION		0.5 GPA DEPOSITION	
		FIELD DATA	DEFOL	FIELD DATA	DEFOL	FIELD DATA	DEFOL
440	LOWER	149.52	405	308.00	435	324.33	480
	UPPER	493.82		425.33		439.00	
147	LOWER	-55.34	435	-119.54	510	106.79	585
	UPPER	382.00		612.87		513.21	
227	LOWER	195.70	445	212.78	495	227.08	560
	UPPER	420.97		480.55		562.92	
141	LOWER	78.28	450	116.16	490	125.54	505
	UPPER	301.71		430.51		477.80	
139	LOWER	28.13	445	172.49	500	97.98	520
	UPPER	338.54		324.18		525.35	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-X. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTH DISPLACEMENTS AT HIGH FLOW RATES VERSUS PREDICTED VALUES

MISSION NO	LIMITS *	1.0 GPA DEPOSITION		0.9 GPA DEPOSITION		0.8 GPA DEPOSITION		0.7 GPA DEPOSITION	
		FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL
49	LOWER	-67.41	-65	-67.41	-65	-67.41	-65	-67.41	-65
	UPPER	-42.59		-42.59		-42.59		-42.59	
602	LOWER	-177.29	-185	-181.50	-190	-192.00	-195	-211.93	-205
	UPPER	-139.37		-138.50		-134.67		-124.74	
555	LOWER	-50.63	-45	-50.63	-45	-50.63	-50	-50.63	-50
	UPPER	-12.71		-12.71		-12.71		-12.71	
323	LOWER	61.17	45	61.17	50	61.17	50	61.17	50
	UPPER	75.50		75.50		75.50		75.50	
5040	LOWER	87.59	80	82.71	80	82.71	80	82.71	85
	UPPER	112.41		120.63		120.63		120.63	
4035	LOWER	62.59	75	62.59	75	62.59	75	62.59	75
	UPPER	87.41		87.41		87.41		87.41	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-X. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTH DISPLACEMENTS AT HIGH FLOW RATES VERSUS PREDICTED VALUES (Concluded)

MISSION NO	LIMITS *	0.6 GPA DEPOSITION		0.5 GPA DEPOSITION		0.4 GPA DEPOSITION	
		FIELD DATA	DEFOL	FIELD DATA	DEFOL	FIELD DATA	DEFOL
49	LOWER	-67.41	-65	-67.41	-70	-67.41	-70
	UPPER	-42.59		-42.59		-42.59	
602	LOWER	-211.93	-210	-199.17	-220	-206.50	-240
	UPPER	-124.74		-147.49		-163.50	
555	LOWER	-47.67	-50	-47.67	-55	-47.67	-55
	UPPER	-19.00		-19.00		-19.00	
323	LOWER	61.17	55	61.17	55	61.17	60
	UPPER	75.50		75.50		75.50	
5040	LOWER	84.37	85	80.83	85	79.67	85
	UPPER	122.29		132.51		137.00	
4035	LOWER	62.59	75	62.59	75	62.59	75
	UPPER	87.41		87.41		87.41	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-XI. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTH DISPLACEMENTS AT LOW FLOW RATES VERSUS PREDICTED VALUES

MISSION NO	LIMITS *	1.0 GPA DEPOSITION		0.9 GPA DEPOSITION		0.8 GPA DEPOSITION		0.7 GPA DEPOSITION	
		FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL
343	LOWER	-87.41	-40	-87.41	-45	-87.41	-45	-87.41	-50
	UPPER	-62.59		-62.59		-62.59		-62.59	
5046	LOWER	-78.83	-75	-78.83	-75	-78.83	-75	-78.83	-75
	UPPER	-64.50		-64.50		-64.50		-64.50	
505	LOWER	66.17	90	66.17	90	66.17	90	66.17	90
	UPPER	80.50		80.50		80.50		80.50	
345	LOWER	-15.50	-25	-15.50	-30	-15.50	-30	-10.00	-35
	UPPER	-1.17		-1.17		-1.17		-10.00	
758	LOWER	-87.41	-55	-87.41	-55	-87.41	-55	-83.83	-60
	UPPER	-62.59		-62.59		-62.59		-69.50	
247	LOWER	-95.50	-85	-90.00	-85	-90.00	-85	-115.63	-85
	UPPER	-81.17		-90.00		-90.00		-77.71	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-XI. 95% CONFIDENCE INTERVALS FOR INWIND SWATH WIDTH DISPLACEMENTS AT LOW FLOW RATES VERSUS PREDICTED VALUES (Concluded)

MISSION NO	LIMITS *	0.6 GPA DEPOSITION		0.5 GPA DEPOSITION		0.4 GPA DEPOSITION		0.3 GPA DEPOSITION	
		FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL	FLD DATA	DEFOL
343	LOWER	-87.41	-50	-87.41	-55	-87.41	-55	-87.41	-60
	UPPER	-62.59		-62.59		-62.59		-62.59	
5046	LOWER	-78.83	-75	-80.50	-75	-85.50	-75	-85.50	-80
	UPPER	-64.50		-66.17		-71.17		-71.17	
505	LOWER	66.17	90	62.59	90	62.59	95	62.59	95
	UPPER	80.50		87.41		87.41		87.41	
345	LOWER	-10.00	-35	-18.83	-40	-18.83	-45	-18.83	-45
	UPPER	-10.00		- 4.50		- 4.50		- 4.50	
758	LOWER	-83.83	-60	-83.83	-65	-80.00	-65	-80.00	-65
	UPPER	-69.50		-69.50		-80.00		-80.00	
247	LOWER	-112.41	-85	-108.83	-85	-117.67	-85	-117.67	-85
	UPPER	-87.59		-94.50		-89.00		-92.59	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-XII. 95% CONFIDENCE INTERVALS FOR CROSSWIND SWATH WIDTH DISPLACEMENTS AT HIGH FLOW RATES VERSUS PREDICTED VALUES

MISSION NO	LIMITS *	1.0 GPA DEPOSITION		0.9 GPA DEPOSITION		0.8 GPA DEPOSITION	
		FIELD DATA	DEFOL	FIELD DATA	DEFOL	FIELD DATA	DEFOL
440	LOWER	110.43	90	95.83	85	95.83	80
	UPPER	172.91		167.50		167.50	
147	LOWER	186.45	300	122.06	285	80.28	265
	UPPER	313.55		441.28		456.38	
227	LOWER	97.08	195	150.00	190	133.53	175
	UPPER	380.92		293.33		293.14	
141	LOWER	151.39	280	168.11	270	191.76	250
	UPPER	375.28		341.89		271.51	
139	LOWER	-38.48	195	-38.48	185	-38.48	170
	UPPER	548.48		548.48		548.48	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

TABLE V-XII. 95% CONFIDENCE INTERVALS FOR CROSSWIND SWATH WIDTH DISPLACEMENTS AT HIGH FLOW RATES VERSUS PREDICTED VALUES (Concluded)

MISSION NO	LIMITS *	0,7 GPA DEPOSITION		0.6 GPA DEPOSITION		0.5 GPA DEPOSITION	
		FIELD DATA	DEFOL	FIELD DATA	DEFOL	FIELD DATA	DEFOL
440	LOWER	97.16	70	97.16	65	85.83	55
	UPPER	162.84		162.84		157.50	
147	LOWER	77.14	245	82.64	225	172.16	210
	UPPER	442.86		434.03		237.84	
227	LOWER	162.16	160	152.71	150	98.17	135
	UPPER	227.84		190.63		198.50	
141	LOWER	181.34	235	155.50	215	161.50	200
	UPPER	275.33		284.50		261.83	
139	LOWER	-38.48	160	-37.47	145	72.33	130
	UPPER	548.48		480.41		321.00	

* INDICATES UPPER AND LOWER CONFIDENCE INTERVALS

REFERENCES

1. House, W. B., et al., Assessment of Ecological Effects of Extensive or Repeated Use of Herbicides, MRI Project No. 3103-B, Midwest Research Institute, Kansas City, Missouri, 15 August - 1 December 1967, Unclassified.

2. Unofficial Log, Special Aerial Spray Flight, 309th ACS, 315th ACG (Unpublished).

3. Calder, Kenneth L., The Numerical Solution of Atmospheric Diffusion Equations by Finite-Difference Methods, Technical Memorandum 138, Department of the Army, Aerobiology and Evaluation Laboratory, Fort Detrick, Maryland, May 1969, Unclassified.

4. Smith, Theodore B., and Miller, Robert L., Victoria Diffusion Trials, Volume I, MRI66 FR-374, Meteorology Research, Inc., Altadena, California, May 1966, Unclassified.

5. Ettenheim, G. P., Jr., and Crum, C. L., Matagorda Deposition Trials, MRI67 FR-468, Meteorology Research, Inc., Altadena, California, January 31, 1967, Unclassified.

6. McCall, C. H., et al., Critical Review of Current and Planned Protective Procedures, Final Report for Task No. 31 on Collective Protection Against CB Agents, Book 3: Weapon Systems Effectiveness, FILIS-A Computer Module, CB-67-2378-7.3, AiResearch Manufacturing Company, Los Angeles, California, October 1968, Unclassified.

7. Milly, George H., Atmospheric Diffusion and Generalized Munitions Expenditures, ORG No. 17, U.S. Army Chemical Corps, Operations Research Group, Army Chemical Center, Maryland, May 1, 1958, Unclassified.

8. Pre-publication data sheets for defoliation trials, Project 5172W3, Eglin Air Force Base, Florida, Unclassified.

9. Joint Munitions Effectiveness Manual (Air to Surface), Weapon Effectiveness, Selection and Requirements (Defoliants), Air Force TH 61A1-1-1-4, April 5, 1968, Confidential.

(The reverse of this page is blank)

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)
Booz, Allen Applied Research, Inc.
P. O. Box 1797
Eglin Air Force Base, Florida 32542

2a. REPORT SECURITY CLASSIFICATION
UNCLASSIFIED

2b. GROUP

3. REPORT TITLE
METHODS FOR PREDICTING CONTAMINATION DENSITY AND OFF-TARGET DRIFT OF DEFOLIANT MATERIALS. VOLUME I, METHODOLOGY AND SUMMARY OF RESULTS.

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)
Final Report - 1 September 1968 through 31 August 1969.

5. AUTHOR(S) (First name, middle initial, last name)
Nolan E. Taconi, Jr.
Joseph M. Jones

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
March 1970	201	9

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
F08635-68-C-0015	
b. PROJECT NO.	
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d.	AFATL-TR-70-26, Vol. I

10. DISTRIBUTION STATEMENT
This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of the Air Force Armament Laboratory (ATM), Eglin AFB, Florida 32542.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	Air Force Armament Laboratory Air Force Systems Command Eglin Air Force Base, Florida 32542

13. ABSTRACT

This report describes the results achieved for the study titled "Methods for Predicting Contamination Density and Off-Target Drift of Defoliant Materials." Although several mathematical models presently exist which calculate contamination density under a variety of variable conditions, no one model is suitable for the calculation of contamination density and off-target drift of defoliant material when released from the aircraft internal defoliant dispenser A/A45Y-1. In response to this deficiency, methodology has been developed which enables the prediction of target contamination levels and estimation of off-target drift of defoliant material.

The report consists of two volumes. Volume I provides a detailed description of the methodology. This includes a brief description of the computerized DEFOL program. The model can simulate combinations of defoliation missions which utilize multiple aircraft, different meteorological conditions, different aircraft delivery modes, and different defoliation agents. The methodology was applied to seventeen different test trials, the analysis of which is included in Volume I. Recommendations are made regarding the future utilization of this methodology.

Volume II is a programmer's manual. It contains information needed to properly use the model. Input requirements and a description of output parameters are discussed in detail. Also included is a program listing of DEFOL.

DD FORM 1 NOV 65 1473

UNCLASSIFIED

Security Classification

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Defoliation						
Simulation						
External Spray System						
Deposition Prediction						
Computer Program						