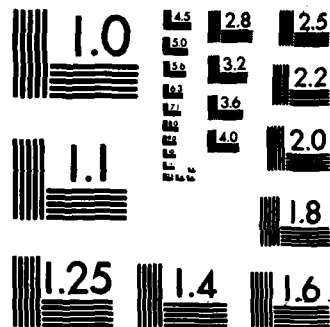


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COMPUTER PROGRAMS FOR PRODUCING SINGLE-EVENT AIRCRAFT
NOISE DATA FOR SPEC. (U) DAYTON UNIV OH RESEARCH INST
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AFAMRL-TR-83-020



**COMPUTER PROGRAMS FOR PRODUCING SINGLE-EVENT
AIRCRAFT NOISE DATA FOR SPECIFIC ENGINE POWER
AND METEOROLOGICAL CONDITIONS FOR USE WITH
USAF COMMUNITY NOISE MODEL (NOISEMAP)**

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APRIL 1983

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routines in each program are documented at a level useful to a programmer working with the code or a reader interested in a general overview of what happens within a specific subroutine. Both programs input normalized, reference aircraft noise data; i.e., data at a standard reference distance from the aircraft, for several fixed engine power settings, a reference airspeed and standard day meteorological conditions. Both programs operate on these normalized, reference data in accordance with user-defined, non-reference conditions to derive single-event noise data for 22 distances (200 to 25,000 feet) in a variety of physical and psycho-acoustic metrics. These outputs are in formats ready for input to NOISEMAP.

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SUMMARY

This report documents the OMEGA 10 and OMEGA 11 programs which were developed to prepare flight and ground run-up noise data for input to NOISEMAP, the Air Force community noise exposure prediction program. All routines in each program are documented at a level useful to a programmer working with the code or a reader interested in a general overview of what happens within a specific subroutine.

Both the OMEGA 10 and the OMEGA 11 programs input reference aircraft noise data from the NOISEFILE 4 database. This NOISEFILE 4 database contains reference datasets for both flyover and ground run-up operations for almost all current military aircraft. There are typically three to six flyover and ground run-up datasets for each aircraft where each dataset defines a different engine power setting. The flyover datasets contain seven mean single event measures plus the mean sound pressure level spectrum of peak perceived noise level (PNLM), all normalized to a minimum slant range of 1000 feet, a surface temperature of 59°F and a surface relative humidity of 70%. Each flyover dataset is also normalized to a specific reference airspeed which varies depending on the type of aircraft and the power condition. The ground run-up datasets contain 19 farfield sound pressure level spectra measured at 10 degree increments at a fixed radial distance around one side of the aircraft. These ground run-up data are normalized to a fixed radial distance of 250 feet and to standard day meteorological conditions (59°F, 29.92 inches Hg, 70% relative humidity). The format and content of these normalized reference flight and ground run-up data are defined in Appendices E and G, respectively.

The OMEGA 10 program inputs reference flyover datasets from NOISEFILE 4 database for a specific aircraft, and extrapolates the reference sound pressure level (SPL) data from the reference minimum slant range (1000 feet) to 22 profile distances (200 to 25000 feet), computes the single event measures at these distances, and then applies the Δ^6 rule to extrapolate or interpolate these single

event versus distance data to produce distance profiles for up to seven single event noise measures at the requested power setting, airspeed, temperature and relative humidity. The seven single event measures are A-weighted overall sound level (ALX), tone-corrected A-weighted overall sound level (ALTX), perceived noise level (PNLX), tone-corrected perceived noise level (PNLTX), sound exposure level (SELX), tone-corrected sound exposure level (SELTX) and effective perceived noise level (EPNLX). In the print mode, the profile data for all seven measures are always computed and printed and, when requested by the IPU flag, the SELX, SELTX and EPNLX data are written on the card image file. In the no-print mode, which is designed primarily to prepare data for input to the NOISEMAP program, only the one SELX, SELTX, or EPNLX measure identified on the code sheet is written to the card image file. The content and format of these flight noise profile datasets in the card image file are given in Appendix F.

The Δ^6 rules referenced in the above paragraph describe the procedure required to interpolate and/or extrapolate the OMEGA 10 profile data from the given reference data. These rules are defined in the documentation for subroutine SETUPD6.

The OMEGA 11 program inputs reference ground run-up datasets from the NOISEFILE 4 database for a specific aircraft, extrapolates these SPL spectra from the reference distance (250 feet) to each of the 22 profile distances, computes the AL, ALT, PNL and PNLTX single event measures for each spectrum at each distance, and then interpolates these reference data to generate similar distance profiles for ALX, ALTX, PNLX, and PNLTX at the requested temperature, relative humidity, barometric pressure and aircraft engine power setting. As in the OMEGA 10 program above, print and punch flags are defined to control the type and quantity of data printed on the output and card image files. The format and content of these ground run-up noise profile data are described in Appendix H.

The profile datasets written in the card image files as described in the above programs are the primary aircraft noise data used by the NOISEMAP program to generate noise profiles around a specific airbase. With these programs these noise data can be tailored to the specific weather and aircraft flight and ground run-up power conditions for that airbase which will, in turn, improve the accuracy of the noise contours produced by the NOISEMAP program.

The remaining appendices in this report contain the following items for both the OMEGA 10 and OMEGA 11 programs:

- (a) a complete source listing as well as a super index which lists all variable names and the routines in which they are used;
- (b) the program code sheet and the procedure for setup and execution of the program;
- (c) a complete sample run including a listing of all input and output data.

PREFACE

This report documents the OMEGA 10 and OMEGA 11 computer programs which were developed to prepare aircraft flyover and ground run-up data for input to the NOISEMAP program. This work was performed for the Air Force Aerospace Medical Research Laboratory at Wright-Patterson Air Force Base, Ohio. The contract monitor for this effort was Mr. John N. Cole.

Special thanks are due to Mr. John Cole and Mr. Jerry Speakman for their guidance and assistance in this effort.

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INTRODUCTION

This report contains the complete documentation of the OMEGA 10 and OMEGA 11 programs. Included in Appendices are the program source listings with a symbol versus reference listing at the end of each program (Super Index), input parameter code sheets with standard procedures for setup and execution of each program, format descriptions for all card input and output, and input and output sample test data. Both programs were written in CDC FORTRAN Extended (FORTRAN IV) for the CDC CYBER 74 and CYBER 750 in the ASD Computer Center at Wright-Patterson Air Force Base. Several non-ANSI standard features of FORTRAN Extended were used throughout both programs, for example, asterisks were used as Hollerith delimiter in format statements; however, most of the coding is in standard FORTRAN.

These programs were developed by the University of Dayton Research Institute (UDRI) and the Air Force Aerospace Medical Research Laboratory (AFAMRL) to prepare flight (OMEGA 10) and ground run-up (OMEGA 11) noise data for input to NOISEMAP, the Air Force community noise exposure prediction program. Both programs input reference datasets from the NOISEFILE 4 database and interpolate or extrapolate the profile measure data at the requested power settings and meteorological conditions. These flight and ground run-up reference data in NOISEFILE 4 were computed by the OMEGA 6 and 8 programs, respectively. Some of the analysis procedures used in these programs are described in AMRL-TR-73-107.⁽¹⁾

The OMEGA 10 program inputs all flight noise reference datasets from file TAPE7 for the aircraft being analyzed. File TAPE7 was set up from NOISEFILE 4 with a CDC UPDATE run. These flight reference datasets contain seven mean single event measures plus the mean sound pressure level spectrum of perceived noise level (PNLM), all normalized to 1000 feet minimum slant range at standard day meteorological conditions (59°F and 70% relative humidity). A description of the format and content of these reference datasets

is given in Appendix E. These reference data are used to compute the ALX, ALTX, PNLX, PNLTX, EPNLX, SELX, and/or SELTX profile data at the reference power setting for the profile output meteorological conditions. These reference power profile data are then used to interpolate and/or extrapolate the profile data to the requested power setting and airspeed. These final profile data are printed in tabular form on the OUTPUT file and/or written on file TAPE3 in the format required by the NOISEMAP program. Since only the SELTX, SELX, or EPNLX data are used by the NOISEMAP program, only these profile datasets can be written to file TAPE3. A description of the format and content of this TAPE3 file is given in Appendix F. A complete sample problem with a listing of all input and output data is given in Appendix C.

The OMEGA 11 program inputs all ground run-up noise reference datasets for the aircraft being analyzed from file TAPE7 which was also set up from NOISEFILE 4 with a CDC UPDATE run. These reference datasets contain spectral data at 10° angular increments for angles 0 to 180 degrees at a specific power setting and standard reference distance (250 feet) and for standard day meteorological conditions (59°F, 70% relative humidity, and 29.92 in. Hg.). The format and content of these reference datasets are described in Appendix G. These reference SPL spectra are then used to extrapolate spectral data for the same angles at 22 standard profile distances for any reasonable meteorological conditions, all at the reference power settings. These extrapolated spectral data are used to derive PNLX, PNLTX, ALX and ALTX data for each angle and profile distance. These PNLTX, ALX and ALTX data for two power settings are then used to interpolate the final ground run-up noise profile data required by the NOISEMAP program; they are written on file TAPE2 in the format described in Appendix H. A complete sample problem with a listing of all input and output are given in Appendix D.

The profile datasets written in the TAPE2 and TAPE3 files as described in the above programs are the primary aircraft noise data used by the NOISEMAP program to generate noise profiles around a specific airbase. With these programs these noise data can be

tailored to the specific weather and aircraft flight and ground run-up power conditions for that airbase which will, in turn, improve the accuracy of the final noise contours.

These OMEGA 10 and 11 programs will probably be modified and combined into one program (NOISECALL) which will be part of a larger NOISEMAP preprocessor program.

GENERAL OVERVIEW OF THE OMEGA 10 PROGRAM

The OMEGA 10 program, hereafter referred to as simply the "program", is designed to compute descriptions of the noise of an aircraft in terms of A-weighted overall sound level (ALX), tone-corrected A-weighted overall sound level (ALTX), perceived noise level (PNLX), tone-corrected perceived noise level (PNLT), effective perceived noise level (EPNLX), sound exposure level (SELX), and tone-corrected sound exposure level (SELTX) as a function of slant distance to the aircraft, aircraft power setting, and aircraft air-speed. These noise measure data (profile datasets) are computed for aircraft flyover tests as outlined in AMRL-TR-73-107.⁽¹⁾ The EPNLX, SELX and/or SELTX profile datasets are required as input to the NOISEMAP noise exposure forecast program and also are the fly-over part of the NOISEFILE 3 database.

To compute the above integrated noise measures at the requested meteorological conditions and for each power setting (PSC) and airspeed requested on the code sheet, the program first reads in all reference file datasets for aircraft ACC. A description of these reference datasets is given in Appendix E. Each reference SPL spectrum is then extrapolated to each of the 22 standard slant distances and to the requested temperature and relative humidity from which PNLX, PNLTX, ALX and ALTX noise measures are determined. These four extrapolated noise measures as well as the mean PNLA, PNLTA, ALA, and ALTA data computed from the mean reference spectrum and the mean EPNLA, SELA, and SELTA data from the reference dataset are used to compute the PNLX, PNLTX, PLX and ALTX single event measures and the EPNLX, SELX and SELTX integrated measures at each distance, power setting, and airspeed. The final profile noise measures are then interpolated or extrapolated from these single event noise data using the Δ^6 rules.

The program prints plots and/or listings of almost all of the above input and computed data. The following is a summary of the program operations:

(1) The program reads the code sheet input data and all reference datasets for aircraft ACC and initializes numerous test variables.

(2) The program (subroutine SETUPD6) determines which reference file datasets are required to compute the requested profile data at each power setting.

(3) The cover page is printed when $IPR > 0$.

(4) The PNLA, PNLTZ, ALA and/or ALTA data are computed from each reference spectrum used in the analysis.

(5) A tab plot of the reference spectrum is printed on page G ($IPR > 0$).

(6) The PNLX through SELX (7 measures) single event noise measures are computed from the 22 extrapolated SPL spectra for air-to-ground and ground-to-ground propagation for the reference dataset power setting and program reference airspeed (250 knots). Computer listings of the SPL spectra plus these seven single event measures at each distance and tab plots of these single event measures, all at the reference file power setting and airspeed, are printed only when $IPR > 0$ for the NP=0 option.

(7) The Δ^6 rules are then applied to compute the final profile data for one ($IPR=0$) or all ($IPR=1$) single event measures at each power setting (PSC). Computer listings and plots of these profile data are printed only when IPR equal one.

(8) These EPNLX, SELX and/or SELTX profile data are written on file TAPE3 when IPU is greater than zero. A complete description of these profile datasets is given in Appendix F. Since the remaining PNLTX, PNLX, AL and ALTX single event measures are not used as input to the NOISEMAP program, they are not written on file TAPE3.

(9) The final summary page is always printed.

Examples of all the above tab plots and listings are presented with the sample problem in Appendix C. When IPR is less than one, only the summary page plus any error messages are printed on the OUTPUT file. For IPR greater than zero, all single event measures are always computed (all MEAS are set equal to one), while, for IPR equal to zero, only one requested measure ($MEAS > 0$), is computed (default in SELX).

The CDC FORTRAN Extended (FORTRAN IV) computer language was used for the entire program. The common and subroutine features of the language were used extensively throughout the program to save computer time and core.

The following sections describe the detailed tasks accomplished by the program. It is intended to document the procedures within each subroutine at a level useful to either a programmer reading this while working with the code or a reader simply interested in what happens with a specific subroutine. The algorithms used to compute the noise measures are described in detail in the individual subroutines.

GENERAL ORGANIZATION OF THE OMEGA 10 PROGRAM

The general organization of the entire program is shown in Figure 1. The arrows indicate access to the various routines rather than program flow; for example, MAIN calls subroutine CDIST which in turn calls subroutines CPNL, CPTC and CAL and subroutine CPNL calls function FNOY. Function ICV is called numerous times from the MAIN routine and subroutines OUTG, OUTH, OUTJ, DELTA6, and SETUPD6. The circled numbers indicate the input (TAPE5) and output (TAPE3 and TAPB6) files.

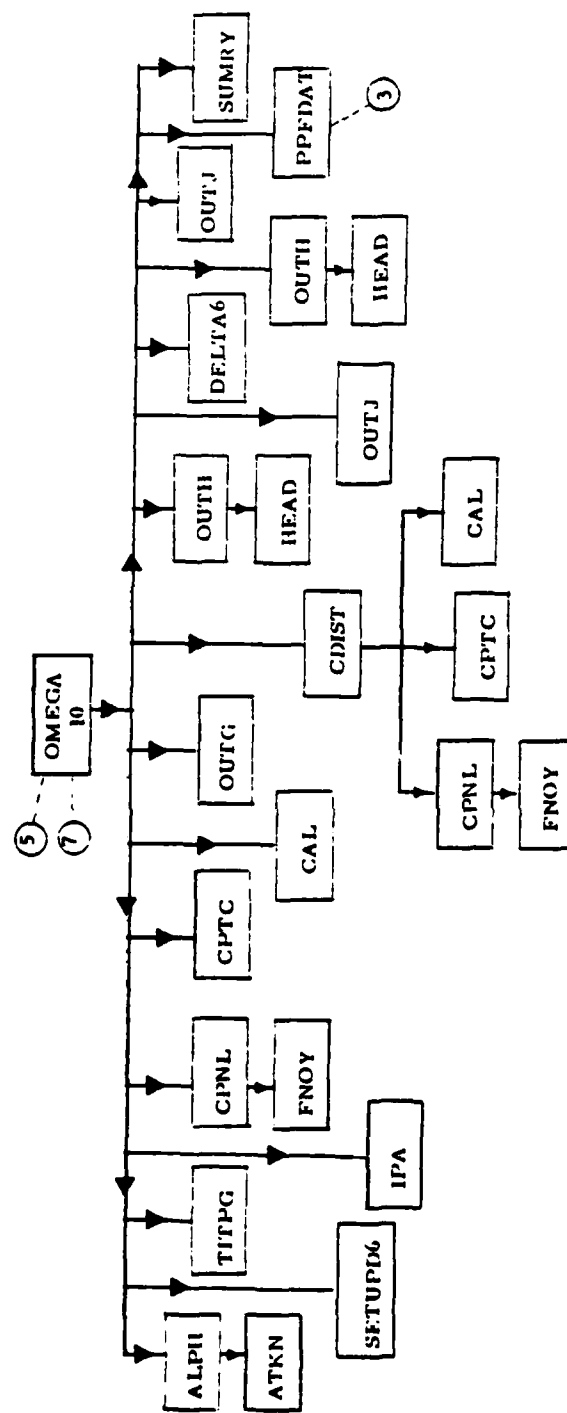
Using Figure 1 as a guide, this section summarizes in very general terms the functions performed by the entire program. This is meant to serve as an introduction for the reader to the functions of the individual subroutines.

The control routine, MAIN, reads the job control card, the aircraft code sheet card, and the operation power information card (or cards). For non-standard temperature and humidity, subroutine ALPH is called to compute the atmospheric absorption data. Numerous program and test variables are initialized at the beginning of the MAIN routine.

Next the program reads all reference datasets for aircraft ACC from the reference file (TAPE7). These datasets are checked for errors which will result in the aircraft data being deleted from the job. At the end of the dataset input, subroutine SETUPD6 is called to determine which datasets are required to compute the profile data at each requested output power setting (PSC).

Subroutines TITLE and IPA are called (for IPR>0) to print the cover page and initialize plot arrays used in subroutines OUTG and OUTJ.

Subroutines CPNL, CPTC and CAL are called to compute the PNLA, C and ALA data for each reference spectrum; the PNLTA and ALTA data are then computed in the MAIN routine. Subroutine CPNL uses function FNOY to compute the noy data for each SPL level. These data



NOTE: Function ICV is used in numerous routines throughout the program. Also data are written on file TAPE6 by many routines (TAPE6 is the OUTPUT file).

Figure 1. General Organization of the OMEGA 10 Program.

as well as a plot and listing of the reference SPL spectrum are printed on output page G by subroutine OUTG (IPR>0).

Subroutine CDIST is called for each reference power setting (reference dataset) and each type propagation (air-to-ground and ground-to-ground) to extrapolate the SPL reference spectrum to 22 standard profile distances at a selected temperature and humidity, compute PNLX, PNLTX, ALX, ALTX and C for each extrapolated spectrum, compute the SELX, SELTX and EPNLX measures for each distance at the reference file airspeed, and finally compute the smoothed EPNLX, SELTX, PNLTX and ALTX data. These final EPNLX, SELX and SELTX profile data are adjusted to the program reference airspeed (250 knots). Then all seven profile measures are stored in arrays PRDA (air-to-ground) and PRDG (ground-to-ground). This subroutine calls subroutines CPNL, CPTC, and CAL to compute the above PNLX, C and ALX data. Subroutine CPNL also uses function FNOY to compute the noy data required by the PNLX algorithm.

When the program is in the print mode (IPR>0) with the NP=0 option in effect, listings of the extrapolated SPL spectra and the single event data (PNL etc.) for each distance are printed by subroutine OUTH. The SPL spectra are printed on output pages H and L for air-to-ground and ground-to-ground, respectively; the single event data are, likewise, printed on pages I and M. Subroutine OUTH calls subroutine HEAD to print each page header block. Also tab plots of these same single event data are printed by subroutine OUTJ. The air-to-ground PNLTX, PNLX, ALX and ALTX single event data are plotted on output page J and the SELTX, SELX and EPNLX, single event data on page K. The corresponding ground-to-ground single event data are plotted on pages N and O. All these data are computed at the reference power setting and airspeed.

When the program is in the print mode but with NP>0, the final profile data for the seven single event measures for each requested power setting (PSC) and airspeed (VX) are computed by subroutine DELTA6. These data are computed by applying the Δ^6 rules to extrapolate or interpolate these data from the reference

data. Once again, listings and plots of these single event measures are printed by subroutines OUTH and OUTJ, respectively.

In the no print mode (IPR=0) for all NP, the program only computes the one single event measure requested by the MEAS code sheet parameter plus all other data required to compute this requested measure. No plots or listings are printed and subroutines OUTH and OUTJ are not called.

Next, when the program is in the punch mode (IPU 0), subroutine PPFDAT is called to write either one measure (IPR=0) or all three EPNLX, SELX and SELTX single event measures (IPR>0) on file TAPE3 in the standard profile dataset format (Appendix F). Finally, the summary page is printed and program control is returned to label 10 to begin the next aircraft analysis or terminate the job. Note that the PNLTX, PNLX, ALX, and ALTX single event measures can not be written to file TAPE3.

DEFINITIONS OF SYMBOLS AND TERMINOLOGY
USED IN THE OMEGA 10 PROGRAM

The symbols defined here are used in this report and/or in the OMEGA 10 program source listing. They are a subset of the complete symbol versus reference list given in the SUPER INDEX in Appendix I. Many of the symbols given in the SUPER INDEX are really dummy variables used in only one or two routines and redefined in each routine; most of these symbols are not included in this list of symbol definitions. Symbols which are arrays will be listed with their array dimensions. Variables I, J, and L are usually (but not always) used as array subscripts as follows:

- (1) The subscript "I" is a running index associated with any one spectrum or standard profile distance.
- (2) The subscript "J" is a running index associated with any one band in the set of 1/3 octave frequency bands.
- (3) The subscript "L" is a running index associated with any one power setting.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
AC	Aircraft name (10 characters or less).
ACC	Aircraft code (3 characters -- see code sheet).
ALA(6)	Mean reference A-weighted overall sound level in dBA.
ALTA(6)	Mean reference tone-corrected A-weighted overall sound level in dBA.
ALTX(22)	Profile tone-corrected A-weighted overall sound level for each distance for the reference power setting and airspeed in dBA.
ALX(22)	Profile A-weighted overall sound level for each distance for the reference file power setting and airspeed in dBA.
ATNC(24)	Atmospheric absorption coefficients for the OMEGA 10 profile output (ITEMP and IRHUM) in dB per 1000 feet.
ATNR(24)	Atmospheric absorption coefficients for standard day conditions (59°F and 70%) in dB per 1000 feet.
AW(24)	A-weighting coefficients in dB.
BLK	A data statement variable carried in OUTC labeled common containing a blank Hollerith character. It is used to print variable format data and initialize numerous program variables.
COMD(6)	Last five characters of each reference file dataset COMDECK name.
CRI	Comdeck revision identifier (see code sheet).
D2X(22)	Factor to adjust the measure data to the correct profile slant distance.
DATE	Date of computer run (see code sheet).
DATEN	Date of computer run in numeric form which is used as part of the data identification code on tab plots and in the reference dataset (see code sheet).
DELN	Noise adjustment factor added to each band in the reference spectrum (dB).
DG	Ground-to-ground propagation adjustment factor.
DRAG(3,6)	Drag configuration read from the reference dataset and printed on output page G.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
EA(13,13)	Excess atmospheric attenuation in dB for bands 17 to 29 and distances 400 to 6300 feet.
EPNLA(6)	Mean reference effective perceived noise level for each power condition in EPNdB.
EPNLX(22)	Profile effective perceived noise level in EPNdB for each distance for the reference power setting and airspeed.
ET(2)	Engine type read from the reference dataset and printed on page G and on the second profile dataset comment card.
EXTMX	Maximum permitted Δ "6 extrapolation from the reference value at a slant distance of 1000 feet for the first air-to-ground measure (EXTMX=5.0 dB).
FJ	Constant used in the perceived noise level computations; FJ=0.15 for 1/3 octave band data.
FL(24,5)	Data statement array used in noy computations (function FNOY) containing the band sound pressure levels in dB given in Table 3.
FM(24,4)	Data statement array used in noy computations (function FNOY) containing the reciprocals of the slopes given in Table 3.
FREQ3(24)	Geometric mean and lower limiting frequencies required to compute atmospheric absorption coefficients for 1/3 octave data.
H0	Reference minimum slant range for the power setting being computed.
IAP	Index of the reference approach operation power code and corresponding power setting data.
IBNH	Largest band number index (24 corresponds to band 40).
IBNL	Initial band number index (1 corresponds to band 17).
ID	Variable frequently used to identify the SPL data to be used in the specific computations.
IHP	Index of the highest ranking reference file power setting less than approach power.
IMS(6)	Reference minimum slant range in feet for each power setting.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
IORD(28)	Tab plot ordinate scale values.
IPAGE	Part of page number identification.
IPR	Program print control flag (see code sheet).
IPROP	Propagation type code; 1 for air-to-ground and 2 for ground-to-ground.
IPTC	Index of band which determines the tone correction for the reference distance profile spectrum.
IPU	Program profile dataset print (file TAPE3) control flag (see code sheet).
IRD	Profile distance index which corresponds to the reference minimum slant range.
IREF(12)	Flag used to indicate change in slope reference indices because the reference and requested power settings are on different sides of approach power (see subroutine DELTA6).
IREQ(6)	Program flag used to indicate which reference data are required to compute the requested profile output.
IREQC(3,12)	Indices of reference power setting and two slope power settings required to compute the profile output for each requested power setting. See subroutine DELTA6 for the complete definition.
IRHUM	Reference relative humidity in percent.
ISEQD(7)	Data statement array in subroutine OUTH containing the indexes of the measure data in array SENX in the sequence required for printing.
ISEQF(7)	Same as ISEQD except ISEQF contains the index of the variable format array corresponding to each measure data point.
ISRC(24)	Integer value of mean reference data.
ITEMP	Reference surface temperature (F).
ITP	Index of the reference takeoff operation power code and corresponding power setting data.
IV(6)	Reference aircraft velocity in knots for each power setting.
IVER	Program version code.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
IVX	Integer value of the reference or profile aircraft velocity in knots.
LFLG(12)	Program flag used to flag profile data when the extrapolation limit is exceeded or when data are omitted because of Δ^6 problems.
LIM	Extrapolation check flag. Extrapolation is checked only when LIM=1.
MEAS(3)	Program control variable used to select the profile measure for the no-print mode (see code sheet).
MM	Maximum number of reference power settings per aircraft (MM=6).
MOPC	Maximum number of operation power codes defined in array OPP in subroutine SETUPD6.
N	Number of reference file power settings read from file TAPE7 for aircraft ACC.
NP	Number of output power settings for which profile data are requested for this aircraft.
NPM	Maximum NP permitted by the program (NPM=12).
NR(6)	Number of runs (measure locations) averaged to obtain the given reference data for each power setting (the reference data were computed in the OMEGA 6 program).
OPC(6)	Operation power code for each reference power setting.
OPCC(12)	Operation power code for each profile output power setting.
OPCD(12)	Data statement array containing the default profile output operation power codes.
OPCR(12)	Operation power code for the reference data from which the OPCC data are computed and the operation description taken.
OPP(20)	Data statement array containing all (MOPC) defined operation power codes for flight data. This array must be updated when new codes are defined (see subroutine SETUPD6).

<u>SYMBOL</u>	<u>DESCRIPTION</u>
OTC	Operation type code.
P(2,6)	Power setting description data for each reference power setting.
PC(2,12)	Power setting description data for each profile output power setting.
PNLA(6)	Mean reference perceived noise level in PNdB for each power setting.
PNLTA(6)	Mean reference tone-corrected perceived noise level in PNdB for each power setting.
PNLTX(22)	Profile tone-corrected perceived noise level for the reference power setting and airspeed in PNdB.
PNLX(22)	Profile perceived noise level for the reference power setting and airspeed in PNdB.
PRDA(22,6,7)	Profile data for EPNLX, SELTX, and SELX for air-to-ground propagation for each reference power setting and adjusted to the program reference airspeed (RV).
PRDC(22,7,2)	Final EPNLX, SELTX, and SELX profile data for air-to-ground and ground-to-ground for one power setting (computed by subroutine DELTA6).
PRDC(22)	Array used in subroutine DELTA6 to compute the profile data for one specific measure and type propagation.
PRDG(22,6,7)	Same as PRDA above except for ground-to-ground data.
PRDI(22,6)	Array equivalent (subroutine DELTA6 argument) to specific elements of array PRDA or PRDG. Contains all available profile reference data for one measure and one type propagation.
PS(2,6)	Reference power setting data (value and units in character format) for each reference operation power code.
PSC(12)	Profile output power setting for each requested operation power code in character format (see code sheet).
PSCF(12)	Same as PSC(12) except in numeric format.
PSIF(6)	Reference power setting in numeric format.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
PSU	Power setting units for this aircraft.
PTC	Tone correction in dB.
PV	Profile version code (see code sheet).
RV	Program reference airspeed in knots (RV=250).
SELA(6)	Mean reference sound exposure level in dB for each power setting.
SELTA(6)	Mean reference tone-corrected sound exposure level in dB for each power setting.
SELTX(22)	Profile tone-corrected sound exposure level in dB for a specific reference power setting and airspeed.
SELX(22)	Profile sound exposure level in dB for a specific reference power setting and airspeed.
SENX(22,7)	Array equivalent to arrays PNLTX(22) through SELX(22) in blank common.
SOURCE(2,6)	Identifies the program and date from each reference dataset.
SPLA(6,24)	Mean reference sound pressure level in dB for each power condition.
SPLX(22,24)	Profile sound pressure level in dB.
SR(6,33)	Mean reference data for each power condition; equivalent to arrays SPLA through CA in blank common (see subroutine CDIST).
SX(22)	Distance data in feet for the 22 profile distances.
TAPE3	File on which profile datasets are written; TAPE3 may be copied or equivalenced to the PUNCH file.
TAPE5	Input file for all OMEGA 6 data; TAPE5 is equivalenced to the system INPUT file.
TAPE6	Output file on which all tab output are printed; TAPE6 is equivalenced to the system OUTPUT file.
TAPE7	Input file for all reference datasets.
THETA(6)	Mean reference angle of maximum radiation in degrees for each power condition (directivity angle).

<u>SYMBOL</u>	<u>DESCRIPTION</u>
VFCT	Variable used to adjust aircraft airspeed from reference dataset airspeed to program reference airspeed <u>or</u> from program reference to final profile airspeed.
VREF	Floating point value of the aircraft reference airspeed (IV).
VX(12)	Aircraft airspeed in knots for each profile power condition.

DETAILED DESCRIPTION OF THE OMEGA 10 PROGRAM

This section discusses the MAIN routine and each subroutine in the OMEGA 10 program. Procedures within most routines are documented at a level useful to a programmer reading this while working with the code or a reader interested in what happens within a specific subroutine. Most routines contain numerous comments which should be very helpful in following the code.

The program algorithms and I/O are discussed in the routines in which they are coded. The program code sheet in Appendix A and the sample problem in Appendix C are referenced to simplify the description of the input and output. The more complex subroutines are supplemented by flow charts drawn from the point of view of function performed rather than block instructions.

COMMON VARIABLES

Extensive use is made of common in the program for communications between the various routines. Many of the storage locations in blank common are used in different ways or with different variable names throughout the program to save core. Several of the large arrays are included in blank common rather than labeled common because on the CDC CYBER computers a large blank common reduces the total core required to load and execute the program. The variables used in labeled common are usually of a similar type and/or used in many of the same subroutines.

The variables assigned to blank and labeled common in the MAIN routine and the total common length are listed in Table 1. The subroutines in which the labeled common are used are listed in Table 2. All blank and labeled common are included in the MAIN routine. All common variables are defined in the complete list of symbols in the previous section of this report. The blank and labeled common are described in the following paragraphs.

TABLE 1
MAIN ROUTINE VARIABLES IN BLANK AND LABELED COMMON

<u>Blank Common</u>	<u>Labeled Common</u>		
	<u>HEADC</u>	<u>COMPC</u>	<u>OUTC</u>
IBNL	AC	IV(6)	ORD(43)
IBNH	DATE	IMS(6)	ISC(9)
L	ACC	P(2,6)	IORD(28)
SR(6,33)	IPAGE	OPC(6)	DASH
NR(6)	IVX	OPCC(6)	DOT
ISRC(24)	ITEMP	PS(2,6)	X
SPLX(22,24)	IRHUM	PSC(12)	BLK
PNLTX(22)	IVER	PSU	DATEN
PNLX(22)	CRI	PSIF(6)	PP(84,3)
ALTX(22)	ET(2)	PSCF(12)	
ALX(22)	OTC	IREQC(3,12)	
EPNLX(22)		SX(22)	
SELTX(22)		ATNC(24)	
SELX(22)		ATNR(24)	
PRDA(22,6,7)		DELN	
PRDG(22,6,7)		IPTC	
PRDC(22,7,2)		IPROP	
		MEAS(3)	
		OPCR(12)	
		PC(2,12)	
Length	1837	13	245
			337

TABLE 2
SUBROUTINES CONTAINING THE LABELED COMMON

<u>HEADC</u>	<u>COMPC</u>	<u>OUTC</u>
HEAD	CDIST	IPA
OUTG	HEAD	OUTG
OUTJ	OUTG	OUTH
PPFDAT	OUTJ	OUTJ
SUMRY	PPFDAT	
TITPG	SETUPD6	
	SUMRY	

Blank Common

The 3069 storage locations used by blank common in the main routine is the maximum required in any routine in the program. Almost all routines use some blank common but only a few require the 3069 locations. The variable names assigned to blank common vary throughout the program. Most variables are defined to communicate with several subroutines and then redefined for the next series of routines.

COMPC Common

These variables are a combination of output variables and variables required to compute the profile data or both. The variable names are the same throughout the program.

HEADC Common

These variables are primarily output variables required to identify the data being analyzed. Most of these data are printed in the page header blocks, the plot identification blocks, and the output COMDECK comment cards. The variable names are the same throughout the program.

OUTC Common

These variables are required to set up and print the tab listings and plots in subroutines OUTG, OUTJ and OUTH. If all tab output are deleted (eg. in some future preprocessor version of this program), this common statement will no longer be required. These storage locations are defined the same throughout the program; however, several variable names or array dimensions are changed in subroutines OUTG and IPA.

MAIN PROGRAM

MAIN is the executive routine for the entire OMEGA 10 program. Its principal function is to call the subroutines required to compute the aircraft analysis. However, it also reads all the aircraft code sheet data, initializes numerous program and aircraft variables, and reads and checks the reference file (TAPE7) input data. The

MAIN routine is discussed in the following paragraphs using the program listing in Appendix I and the flowchart in Figure 2 as a guide.

Method

The first segment of the MAIN routine, from the beginning to label 150, performs the following data input and initialization steps:

(1) Numerous program and aircraft variables are initialized. The SX array contains the 22 standard profile distances:

$$SX_I = \text{antilog} \left(\frac{I+22}{10} \right) \quad \text{feet}$$

where I is the standard distance index (I=1 to 22).

(2) The job control card is read and default values are set when they apply. For IPR equal to zero or blank (no-print mode), the IPU flag is always set equal to one and, if all MEAS are blank, MEAS₃ is set equal to one (SELX). For IPR equal one (print mode), all MEAS flags are set equal to one (all three measures are always computed).

(3) The code sheet cards for aircraft ACC are read and additional aircraft default parameters are set.

(4) The atmospheric absorption coefficients are computed for non-standard temperature and relative humidity. The coefficients for standard conditions (59°F and 70%) are stored in the ATNR data statement array.

(5) The TAPE7 reference file is rewound and searched for all reference datasets for aircraft ACC. All data for aircraft ACC must be back-to-back in the reference file. A maximum of six (MM) are read and stored in the program. If several datasets with the same operation power code (OPC) are in TAPE7, the last dataset for this OPC is stored in the program. These reference datasets are checked for errors in aircraft code, operation power code, and card sequence number; an error will abort this aircraft analysis (not the entire job).

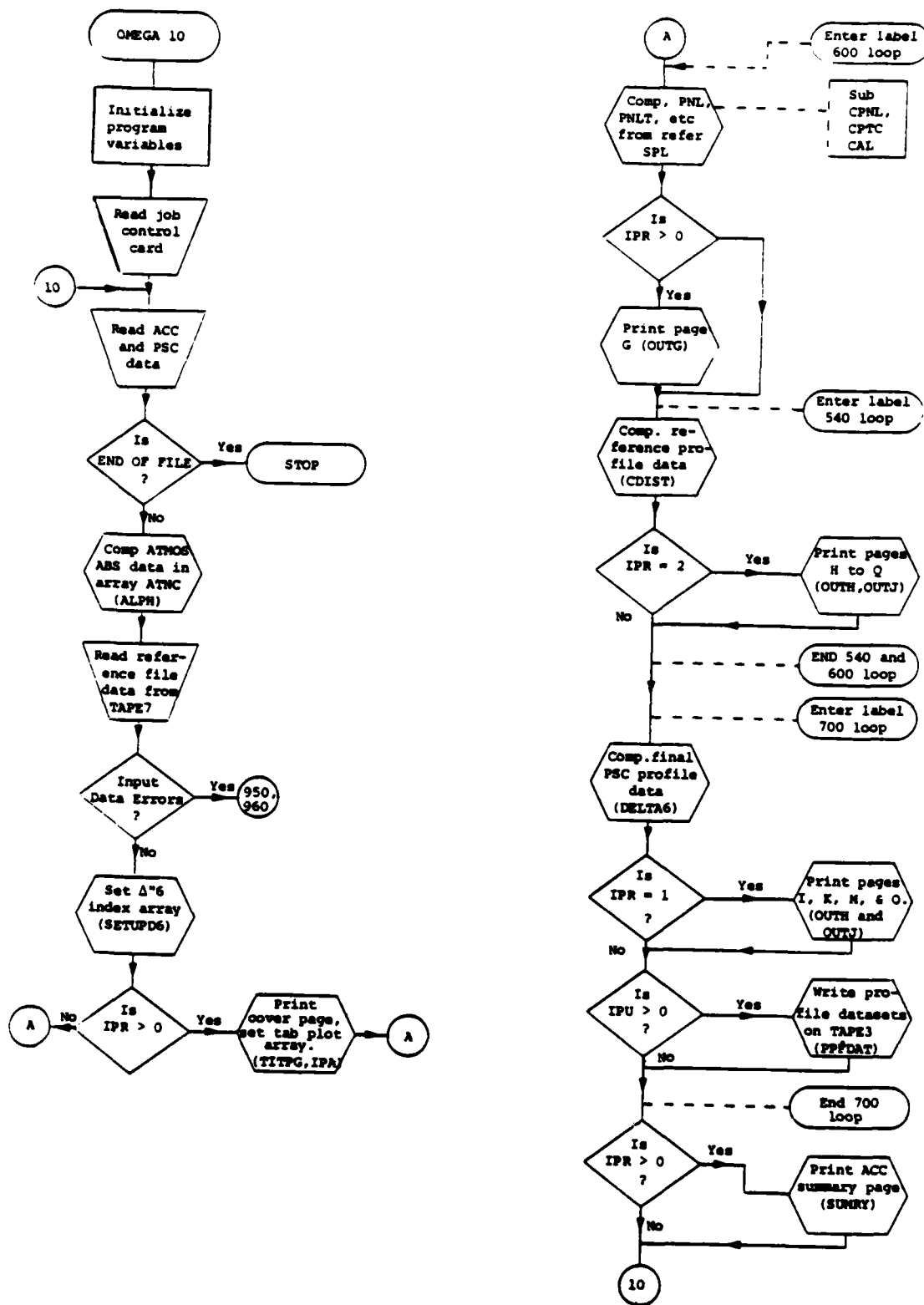


Figure 2. Flowchart for OMEGA 10 MAIN Routine.

After all input data are read and checked, the program calls subroutine SETUPD6 to apply the Δ^6 rules in the selection of the one, two, or three reference datasets required to compute the profile output dataset for each power setting (PSC). The indices of these reference data for each PSC are stored in array IREQC. Also flag array IREQ is set equal to one when the corresponding reference dataset is required to compute profile data. The IREQC and IREQ arrays are defined in greater detail in comment statements in subroutines SETUPD6 and DELTA6.

For IPR greater than zero, the cover page is printed by subroutine TITPG and several plot arrays used to print the plots in subroutines OUTG and OUTJ are initialized by subroutine IPA.

The label 600 loop performs the following operations for each of the N reference dataset power settings ($IREQ > 0$) required to compute the requested profile noise data at the PSC power settings:

(1) Subroutines CPNL, CPTC and CAL are called to compute the perceived noise level (PNLA), tone correction (C or PTC), and A-weighted overall sound level (ALA) from the reference SPL spectrum for the Lth power setting. The PNLA data are stored in $SR_{L,28}$ and the ALA are in $SR_{L,26}$. The tone-corrected perceived noise level (PNLTA) is:

$$SR_{L,29} = SR_{L,28} + PTC \quad \text{PNdB}$$

and the tone-corrected A-weighted overall sound level (ALTA) is:

$$SR_{L,27} = SR_{L,26} + PTC \quad \text{dBA}$$

(2) Subroutine OUTG prints (for $IPR > 0$) a tab plot and listing of the SPL reference spectrum and prints the data computed in step 1 above, the EPNLA, SELA, SELTA and THETA from the reference dataset, and numerous additional identification parameters, all for the Lth reference power setting.

(3) The 540 loop calls subroutine CDIST to compute all SPL and single event data for air-to-ground and ground-to-ground propagation. Subroutine CDIST extrapolates the reference SPL spectrum to each

profile distance and then computes all single event data for each distance. Subroutine OUTH prints tab listings of these SPL and single event data and subroutine OUTJ prints tab plots of the single event measure versus distance data (both only for the IPR>0 for the NP=0 option). The data printed here are at the reference power setting and airspeed (L^{th} power setting).

The label 700 loop performs the following operations for each of the NP output power settings (PSC):

(1) Subroutine DELTA6 is called to compute the final profile data for all single event measures when IPR>0 and for each requested (MEAS>0) measure when IPR=0. The indices of the reference profile data required to interpolate or extrapolate (apply Δ^6 rules) these profile data are given in array IREQC which was evaluated in subroutine SETUPD6. These final profile data are stored in array PRDC. After all profile data are computed for the L^{th} power setting (end of loop 620), the LFLG program flag is checked. If LFLG is less than zero, no profile data were computed for this L^{th} power setting and the program skips down to the end of the 700 loop.

(2) For IPRR equal to one, subroutines OUTH and OUTJ are called to print and plot these final EPNLX through ALTX profile data. Note that whenever profile data are printed all seven measures are always computed.

(3) For IPU greater than zero, the requested (MEAS>0) EPNLX, SELTX and SELX profile measures are written on file TAPE3 by subroutine PPFDAT. In the print node (IPR>0), these data are usually not written on TAPE3. A description of the format and content of these flight noise profile datasets is presented in Appendix F.

After completing the label 700 loop operations, subroutine SUMRY is called to print the final aircraft summary page which lists numerous test identification parameters, identifies all reference datasets read for this aircraft, and lists the COMDECK names of all reference datasets required to interpolate or extrapolate each profile dataset. Program control then returned to statement label 10 to perform the next aircraft analysis or to terminate the job.

SUBROUTINE ALPH(REL,TEMP,ABC,IL,IH)

This subroutine is called from the MAIN routine to compute the atmospheric absorption coefficients for non-standard output temperature (TEMP) and relative humidity (REL). The coefficients for standard day conditions (59°F, 70 percent) are stored in the MAIN routine.

Subroutine Arguments

The subroutine arguments are defined as follows:

- (1) REL and TEMP are the relative humidity and temperature (°F) for which the ABC data are computed.
- (2) ABC is the absorption coefficient array defined in this subroutine.
- (3) IL and IH are the lowest and highest frequency indices for which the ABC are computed. They are 1 and 24, respectively, which corresponds to bands 17 and 40.

Data Statement Arrays

Array FREQ3 contains the geometric mean and lower limiting frequencies for 1/3 octave data. X and Y contain the normalized absolute humidity ($h_{\text{normalized}}$) and normalized molecular absorption coefficient ($\alpha_{\text{normalized}}$) data given in SAE ARP 866A.⁽²⁾

Atmospheric Absorption Coefficient Algorithm

The atmospheric absorption coefficients for 1/3 octave frequencies are computed as described below.

- (1) The absolute humidity statement function is:

$$F(TEMP,REL) = \{ (a)(REL) \} \{ \text{antilog}[(b)(TEMP) + (c)(TEMP)^2] + (d)(TEMP)^3 \}$$

where

$$\begin{aligned}
 a &= 1.064764 \times 10^{-2} \\
 b &= 2.288074 \times 10^{-2} \\
 c &= -9.589 \times 10^{-5} \\
 d &= 3.0 \times 10^{-7}
 \end{aligned}$$

(2) The normalized absolute humidity ($h_{\text{normalized}}$) is computed as a function of frequency.

$$\text{HN} = \frac{F(\text{TEMP}, \text{REL})}{\left(\frac{\text{FREQ}}{1010}\right)^{1/2}}$$

where

FREQ = the geometric mean or lower limiting frequency for the 1/3 octave frequency.

(3) A quadratic Aitkin interpolation function is used to compute the normalized molecular absorption coefficient (ALN) for a given normalized absolute humidity (HN).

(4) Then the atmospheric absorption coefficient (ABC) as a function of frequency is:

$$\text{ABC} = (\text{FREQ})(\text{FT1})(\text{ALN}) + (\text{FT2})(\text{FREQ})^{2.05} \quad \text{dB}$$

where

$$\text{FT1} = (3.788785 \times 10^{-3}) (\text{antilog}[4.6833333 \times 10^{-3} \times \text{TEMP}])$$

$$\text{FT2} = (2.4931591 \times 10^{-8}) (\text{antilog}[6.33 \times 10^{-4} \times \text{TEMP}])$$

(FREQ)(FT1) = maximum molecular absorption coefficient.

(FT2)(FREQ)^{2.05} = classical absorption coefficient.

FUNCTION ATKN(X,Y,N,K,XI)

This function is a general AITKEN interpolation function, used by subroutine ALPH to compute the normalized molecular absorption coefficient. ATKN was obtained from the ASD computer center library (old IBM 7094 library). Since this is a common interpolation function defined in most numerical methods texts, no additional description will be given. The function arguments are defined in comment statements in the listing.

FUNCTION ICV(DR)

This function is used in numerous routines to convert variable DR from floating point to integer. The resulting integer is rounded up when the fractional part is greater than or equal to 0.5. This method gives more consistent and conservative noise measure data than would be obtained by simple truncation.

SUBROUTINE HEAD(IP)

This subroutine is called from subroutine OUTH to print the header block on output pages H, I, L and M. The IP subroutine argument identifies the page for which the header block is requested. These header blocks are 108 columns wide (printer columns 11 to 119). Each header block contains the five categories of data information described below:

(1) The identification block located in the upper right corner identifies the specific OMEGA program that produced the page, the aircraft code, the operation type and power codes (OPS), the profile version code, the date of that computer run, and the page number of that particular computer printout. These identification data enable AMRL to locate and track specific results in our data bank and reconstruct the source of the data and all processing parameters and computations.

(2) The table title printed across the top describe the measures or type of data presented on that page.

(3) The aircraft block identifies the specific aircraft (eg., C-141).

(4) The operation block presents the operation power description, the power setting, and the airspeed.

(5) The meteorology block gives the temperature (°F), relative humidity (percent), and Delta N (dB). Note that Delta N is not a meteorology related constant.

SUBROUTINE IPA

This subroutine is called from the MAIN routine to initialize the ORD, PD, PB, and PM arrays used to print the tab plots in subroutines OUTG and OUTJ. The content of these arrays is obvious in the coding.

SUBROUTINE OUTG

This subroutine is called from the MAIN routine to print the tab plot and listing of the reference SPL spectrum versus 1/3-octave frequency for the L^{th} power setting. The PNLTA, PNLTA, AL, ALTA, and C data computed from this mean spectrum and THETA, EPNLA, SELA and SELTA from the reference dataset as well as various operation and identification parameters are also printed below the tab plot.

Method

The integer SPL data are computed and stored in array ISRC. The maximum annotated abscissa scale value (MX) is the nearest multiple of ten less than seven plus the maximum SPL. The minimum scale value (MN) is 70 dB less than MX. The abscissa scale is defined in array ISC. The actual plotted maximum and minimum are two greater than MX and two less than MN.

The SPL data are scaled, set up in the print array (PP), and printed in the label 150 loop. The remainder of the subroutine completes the tab plot and prints the PNLTA, PNLTA, etc. data below the tab plot. The detailed format of these page G data can best be observed by consulting the sample problem in Appendix C. There should

be sufficient comment statements in the subroutine listing to identify the data being printed.

SUBROUTINE CDIST(IRD,RV)

This subroutine is called from the MAIN routine to compute the single event noise profile data (e.g., SELX versus distance for 22 distances from 200 to 25,000 feet) for air-to-ground (IPROP=1) or ground-to-ground (IPROP=2) propagation for the L^{th} reference power setting. These data are also adjusted to the output temperature and relative humidity and to the program reference (RV) airspeed.

The subroutine argument IRD is the index of the standard distance which is within 1 percent of the reference distance. IRD is determined in this subroutine and returned to the MAIN routine.

The EA data statement array contains the excess attenuation data for frequencies 50 Hz to 800 Hz and distances 400 to 6300 feet. These data were obtained from Figure 3 which was taken from AMRL-TR-75-50.⁽³⁾ They are required to compute the ground-to-ground propagation data.

The flowchart in Figure 4 provides a brief description of the data computed by this subroutine.

Extrapolated SPL Spectra

The first segment of this subroutine (label 30 loop) extrapolates the reference SPL spectrum to each of the 22 profile distances defined in array SX. These 22 SPL spectra are used to compute the single event profile data for air-to-ground propagation. The extrapolation algorithm is:

$$\text{SPLX}_{I,J} = \text{SPLA}_{L,J} - \frac{(\text{SX}_I)(\text{ATNC}_J) - (\text{H0})(\text{ATNR}_J)}{\text{SNTH}} \\ - 20 \log (\text{SX}_I/\text{H0}) + \text{DELN} \quad \text{dB}$$

where

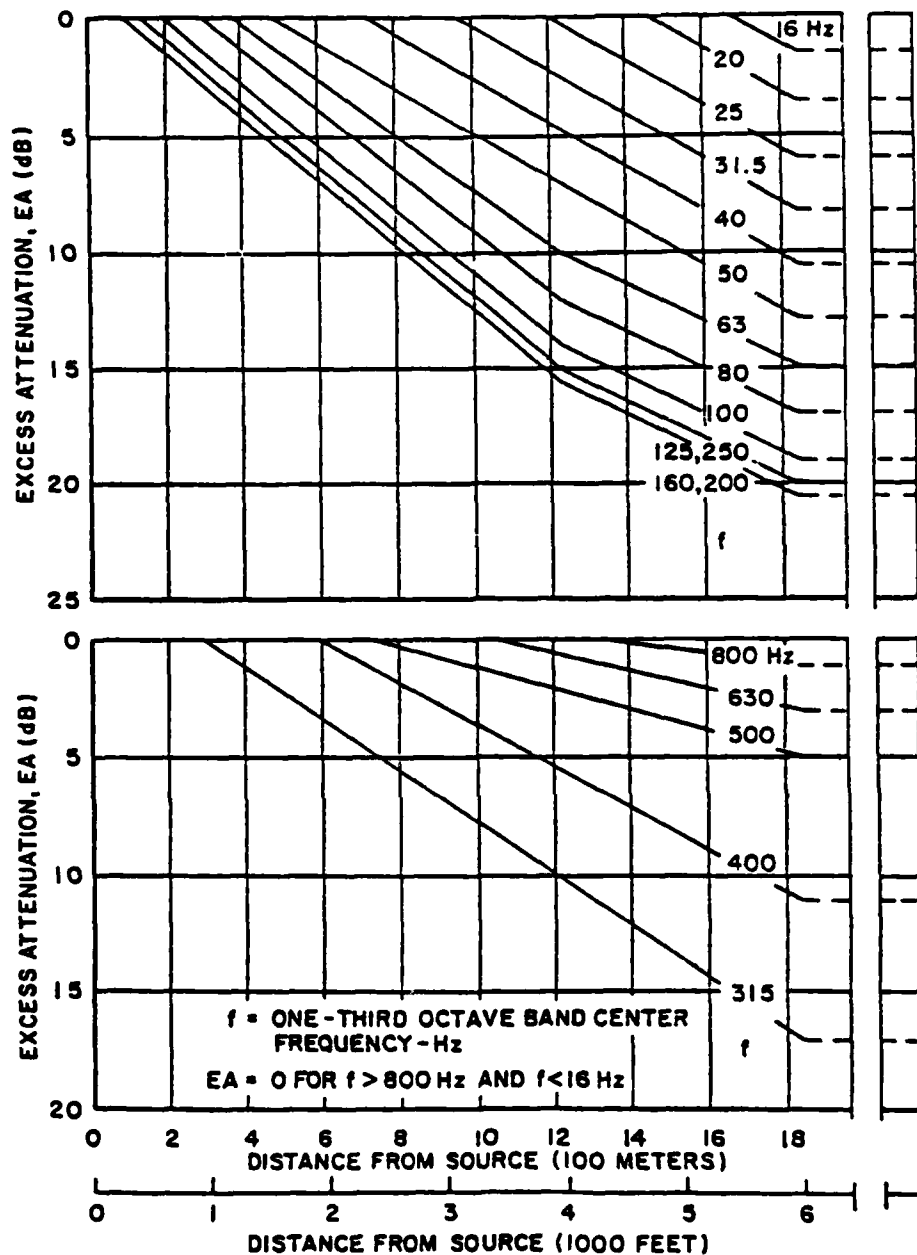


Figure 3. Excess Attenuation. (3)

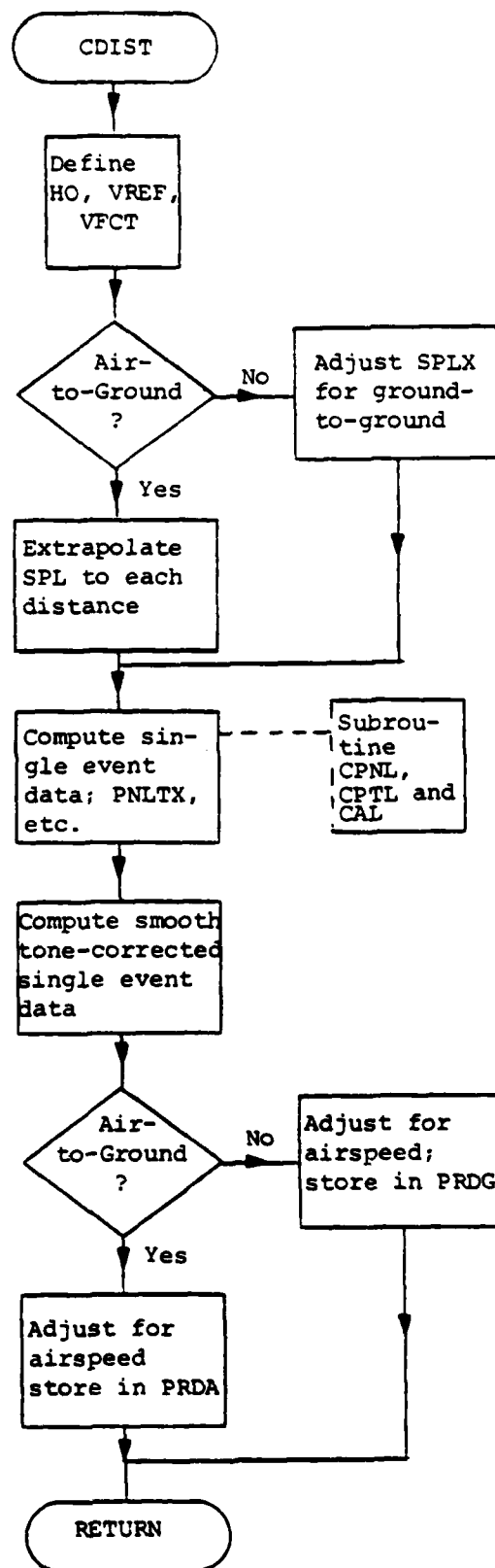


Figure 4. Flowchart for Subroutine CDIST.

$SPLX_{I,J}$ = the sound pressure level in dB for the I^{th} distance and J^{th} band.
 $SPLA_{L,J}$ = the mean sound pressure level in dB for the L^{th} reference power setting and the J^{th} band.
 SX_I = $\text{antilog} \left(\frac{I+22}{10} \right)$ which is the I^{th} profile distance in feet.
 $ATNC_J$ = the atmospheric absorption coefficients in dB per 1000 feet for the profile output temperature (ITEMP) and humidity (IRHUM).
 $ATNR_J$ = the atmospheric absorption coefficients in dB per 1000 feet for standard day conditions.
 $SNTH$ = $(1000) (\sin [\theta_{L}])$.
 θ_L = the directivity angle in degrees for the L^{th} power setting.
 $H0$ = the reference minimum slant range in feet for the L^{th} power setting.
 $DELN$ = the constant dB level added to all SPL bands for the L power setting.

The following distance function used later in this subroutine to adjust the integrated single event data for changes in slant range is also computed in this segment of the program:

$$D2X_I = 6 \log (SX_I/H0) .$$

Adjust the SPL Spectra for Ground-to-Ground Propagation

The SPL spectra computed for air-to-ground propagation are adjusted for ground-to-ground propagation after all air-to-ground data are computed for the L^{th} reference power setting:

$$SPLX_{I,J} = SPLX_{I,J} - EA_{I-3,J}$$

where

I = the distance index defined for the 4^{th} through 16^{th} distance.
 J = the frequency band index defined for frequency bands 17 through 29.
 $EA_{I-3,J}$ = excess attenuations in dB for the I^{th} distance and J^{th} frequency.

$$SPLX_{I,J} = SPLX_{I,J} - EA_{13,J}$$

where I is defined for distances 17 through 22 and J is defined for bands 17 through 29. The excess attenuation is constant for distances greater than 6300 feet.

A constant ground-to-ground adjustment factor of 5 dB (DG) is also subtracted from the air-to-ground SPL for all distances and all frequency bands:

$$SPLX_{I,J} = SPLX_{I,J} - DG$$

Single Event Noise Data

The statement label 150 loop computes all single event noise data for each of the profile distances. Subroutines CPNL, CPTC, and CAL are called to compute the perceived noise level (PNLX), tone correction (PTC) and the A-weighted overall sound level (ALX), respectively, for each distance spectrum. If PNLX data are missing for distances beyond the second distance, the PNLX data are extrapolated as follows:

$$PNLX_I = (2)(PNLX_{I-1}) - PNLX_{I-2} \quad \text{PNdB}$$

The tone-corrected perceived noise level (PNLTX) and tone-corrected A-weight overall sound level (ALTX) for the I^{th} distance are:

$$PNLTX_I = PNLX_I + PTC \quad \text{PNdB}$$

$$ALTX_I = ALX_I + PTC \quad \text{dBA}$$

The effective perceived noise level (EPNLX), sound exposure level (SELX), and tone-corrected sound exposure level (SELTX) are:

$$EPNLX_I = EPNLA_L + PNLTX_I - PNLTA_L + D2X_I \quad \text{EPNdB}$$

$$SELX_I = SELA_L + ALX_I - ALA_L + D2X_I \quad \text{dB}$$

$$SELTX_I = SELTA_L + ALTX_I - ALTA_L + D2X_I \quad \text{dB}$$

where $EPNLA_L$, $SELA_L$, and $SELTA_L$ are the mean data from the reference dataset for the L^{th} power setting. The $PNLTA_L$, ALA_L , and $ALTA_L$ were computed from the reference SPL spectrum for the L^{th} power setting.

Smooth Tone-Corrected Data

The last segment of this subroutine (statement label 220 loop) computes the smoothed ALTX, PNLTX, SELTX, and EPNLX data for each distance (I) and adjusts these data to the program reference air-speed:

$$\begin{aligned}\text{ALTX}_I &= \text{ALX}_I + (C2)(D3) && \text{dBA} \\ \text{PNLTX}_I &= \text{PNLX}_I + (C2)(D3) && \text{PNdB} \\ \text{SELTX}_I &= \text{SELX}_I + (C1)(D3) && \text{dB} \\ \text{EPNLX}_I &= \text{EPNLX}_I + (C1)(D3) - C3_I && \text{EPNdB}\end{aligned}$$

where

$$\begin{aligned}C1 &= \text{SELTX}_{\text{IRD}} - \text{SELX}_{\text{IRD}} && \text{dB} \\ C2 &= \text{ALTX}_{\text{IRD}} - \text{ALX}_{\text{IRD}} && \text{dBA} \\ \text{IRD} &= \text{the index of the reference distance} \\ C3_I &= \text{SELTX}_I - \text{SELX}_I && \text{dB} \\ D3 &= 1.0 \text{ for distances 200 to 3,150 feet} \\ D3 &= (0.2)(18-I) \text{ for distances 4,000 to 8,000 feet (I=14 to 17).} \\ D3 &= 0.0 \text{ for distances 10,000 to 25,000 feet.}\end{aligned}$$

The SELTX_I used to compute $C3_I$ above is the unsmoothed SELTX_I defined in the previous section; that is, $C3_I$ is the tone correction for the unsmoothed SELTX and EPNLX data.

All EPNLX, SELTX, and SELX data for the L^{th} reference power setting are adjusted to the program reference airspeed and stored in arrays PRDA or PRDG as required in subroutine DELTA6. The four remaining single event measures, PNLTX through ALX, are also stored in arrays PRDA and PRDG, but without the airspeed adjustment which does not apply to these nonintegrated measures. It should also be noted here that all seven measures are stored in blank common arrays PNLTX through SELX without the airspeed adjustment.

For air-to-ground propagation (IPROP=1):

$PRDA_{I,L,1} = EPNLX_I - VFCT$	EPNdB
$PRDA_{I,L,2} = SELTX_I - VFCT$	dB
$PRDA_{I,L,3} = SELX_I - VFCT$	dB
$PRDA_{I,L,4} = PNLTX_I$	PNdB
$PRDA_{I,L,5} = PNLX_I$	PNdB
$PRDA_{I,L,6} = ALTX_I$	dBA
$PRDA_{I,L,7} = ALX_I$	dBA

and for ground-to-ground propagation (IPROP=2):

$PRDG_{I,L,1} = EPNLX_I - VFCT$	EPNdB
$PRDG_{I,L,2} = SELTX_I - VFCT$	dB
$PRDG_{I,L,3} = SELX_I - VFCT$	dB
$PRDG_{I,L,4} = PNLTX_I$	PNdB
$PRDG_{I,L,5} = PNLX_I$	PNdB
$PRDG_{I,L,6} = ALTX_I$	dBA
$PRDG_{I,L,7} = ALX_I$	dBA

where VFCT adjusts the airspeed from the reference file airspeed for the L^{th} power setting (IV_L) to the program reference airspeed (RV) in knots:

$$VFCT = 10 \log \left(\frac{RV}{IV_L} \right).$$

These single event measure data, which were computed from the single event reference data and the reference SPL spectrum extrapolated to each of the 22 profile distances, are frequently identified as "reference file measure data" or "reference file profile data" in the remainder of this OMEGA 10 documentation.

SUBROUTINE CPNL(I, ID)

This subroutine is called from the MAIN routine and subroutine CDIST to compute the perceived noise level (PNL) for the Ith spectrum using the standard method described in several references.^(4,5) The PNL quantifies the relative subjective noisiness of different sound spectra and is widely used to assess the annoyance of individual sounds.^(6,7) The ID subroutine argument determines whether the PNL data are computed from the mean SPL spectrum of the Ith power setting ($SPLA_{I,J}$ for ID=0) or the extrapolated SPL spectrum for the Ith distance ($SPLX_{I,J}$ for ID=1).

Blank common variables IBNL and IBNH are the indices of frequency bands 17 and 40 (frequencies 50 to 10000 Hz) as required by the PNL algorithm. FJ is a PNL weighting factor defined for the 1/3 octave band data.

Method

PNL is calculated as follows from each 1/3 octave band SPL spectrum (I):

(1) Convert each 1/3 octave band SPL (array SPLA or SPLX) for frequency band indices IBNL to IBNH to perceived noisiness FN_J using function FNOY which defines the noisiness of sound in noy units as a function of frequency and SPL. Also sum these noy values (SUM) and determine the largest value (AMX).

(2) Determine the total perceived noisiness, SUM, as follows:

$$SUM = (FJ) \left[\sum_J (FN_J) - AMX \right] + AMX \quad \text{noys}$$

where

FJ = 0.15 for 1/3 octave band data.

FN_J = perceived noisiness value for frequency index J from Step (1).

AMX = number of noys in the noisiest band.

(3) Calculate PNL:

$$PNL = 40 + 33.3 \log (SUM) \quad \text{PNdB}$$

When one or more SPL data points are beyond the range of the noy algorithm, PNL is set equal to 9999.

FUNCTION FNOY(SPL,JJ)

This function is used by subroutine CPNL to compute the perceived noisiness value (in noys) for a given 1/3 octave band sound pressure level (SPL) using the method described in SAE ARP 865A.⁽⁵⁾ Function argument JJ is the frequency band index (numeric value of 1 to 24) corresponding to the 24 frequency bands from 50 to 10,000 Hz and used in data statement arrays FL and FM.

Method

The perceived noisiness value FNOY, in noys, for a particular frequency band (JJ) is related to the band sound pressure level, SPL, by the following equations:

- (1) For $FL_{JJ,1} \leq SPL < FL_{JJ,2}$

$$FNOY = 0.1 \text{ antilog } [(FM_{JJ,1})(SPL - FL_{JJ,1})] \quad \text{noys}$$
- (2) For $FL_{JJ,2} \leq SPL < FL_{JJ,3}$

$$FNOY = \text{antilog } [(FM_{JJ,2})(SPL - FL_{JJ,3})] \quad \text{noys}$$
- (3) For $FL_{JJ,3} \leq SPL < FL_{JJ,4}$

$$FNOY = \text{antilog } [(FM_{JJ,3})(SPL - FL_{JJ,3})] \quad \text{noys}$$
- (4) For $FL_{JJ,4} \leq SPL < 150$

$$FNOY = \text{antilog } [(FM_{JJ,4})(SPL - FL_{JJ,5})] \quad \text{noys}$$
- (5) For $SPL < FL_{JJ,1}$

$$FNOY = 0.0 \quad \text{noys}$$
- (6) For $SPL > 150$, FNOY is undefined because it is beyond the range of the perceived noisiness algorithm (carried as 5001).

Data statement arrays FL(24,5) and FM(24,4) contain the L_1 to L_4 and M_1 to M_4 versus frequency data listed in Table 3 (from SAE ARP 865A⁽⁵⁾).

TABLE 3

DATA STORED IN ARRAYS FL(24, 5) AND FM(24, 4) IN FUNCTION FNOY⁽⁵⁾

Band Center Frequency (Hz)	* L ₁	** M ₁	L ₂	M ₂	L ₃	M ₃	L _c	M ₄	L ₄
50	49	0.079520	55	0.058098	64	0.043478	91.01	0.030103	52
63	44	0.068160	51	0.058098	60	0.040570	85.88	0.030103	51
80	39	0.068160	46	0.052288	56	0.036831	87.32	0.030103	49
100	34	0.059640	42	0.047534	53	0.035831	79.85	0.030103	47
125	30	0.053013	39	0.043573	51	0.035336	79.76	0.030103	46
160	27	0.053013	36	0.043573	48	0.033333	75.96	0.030103	45
200	24	0.053013	33	0.040221	46	0.033333	73.96	0.030103	43
250	21	0.053013	30	0.037349	44	0.032051	74.91	0.030103	42
315	18	0.053013	27	0.034859	42	0.030675	94.63	0.030103	41
400	16	0.053013	25	0.034859	40	0.030103	100.00	0.030103	40
500	16	0.053013	25	0.034859	40	0.030103	100.00	0.030103	40
630	16	0.053013	25	0.034859	40	0.030103	100.00	0.030103	40
800	16	0.053013	25	0.034859	40	0.030103	100.00	0.030103	40
1000	16	0.053013	25	0.034859	40	0.030103	100.00	0.030103	40
1250	15	0.059640	23	0.034859	38	0.030103	100.00	0.030103	38
1600	12	0.053013	21	0.040221	34	0.029960	100.00	0.029960	34
2000	9	0.053013	18	0.037349	32	0.029960	100.00	0.029960	32
2500	5	0.047712	15	0.034859	30	0.027960	100.00	0.029960	30
3150	4	0.047712	14	0.034859	29	0.029960	100.00	0.029960	29
4000	5	0.053013	14	0.034859	29	0.029960	100.00	0.029960	29
5000	6	0.053013	15	0.034859	30	0.029960	100.00	0.029960	30
6300	10	0.068160	17	0.037349	31	0.029960	100.00	0.029960	31
8000	17	0.079520	23	0.037349	37	0.042285	44.29	0.029960	34
10,000	21	0.059640	29	0.043573	41	0.042285	50.72	0.029960	37

*L₁ to L₄ data are stored in FL(24, 5).**M₁ to M₄ data are stored in FM(24, 4).

SUBROUTINE CPTC(PTC,I,ID)

This subroutine is called from the MAIN routine and from subroutine CDIST to compute the tone correction (PTC) for the I^{th} spectrum. This I^{th} spectrum will be from array $\text{SPLA}_{I,J}$ for the I^{th} power setting when the ID subroutine argument is zero (CPTC called from MAIN) or from array $\text{SPLX}_{I,J}$ for the I^{th} distance for ID=1 (CPTC called from CDIST). The blank common array IPTC_I is used to store the frequency index (J) of the frequency band which determined the tone correction for the I^{th} spectrum.

This subroutine uses the procedure described in FAR Part 36, Section 36.3.⁽⁴⁾ This procedure requires SPL data for 1/3 octave frequency bands 80 to 10,000 Hz; however, this subroutine will compute PTC when SPL data greater than or equal to 20 dB are available for at least 10 consecutive bands within this 1/3 octave frequency band range (only SPL data greater than or equal to 20 dB are used).

Method

Before applying the tone correction procedure, this subroutine determine the largest SPL data point in the spectrum and also the number of consecutive SPL data points greater than 20 dB on each side of this peak value (statement labels 370 to 490). If the total number of points is less than ten, tone correction is undefined (9999) and control is returned to the calling routine. When at least ten points are available, the tone correction procedure is applied over redefined frequency band indicies IL2 to IH1.

The remainder of this subroutine (statement labels 5 to 220) is a direct application of the ten step tone correction procedure defined in FAR Part 36, Section 36.3. The final tone correction is returned in variable PTC. The following comments compare the notation used in the coding and in the FAR Part 36 description:

(1) The frequency band index i in Part 36 corresponds to J in the coding. Spectrum index K doesn't apply because the subroutine operates on one spectrum per call.

(2) Circled SPL data are denoted by variable ICT_J equal to one.

(3) All other variable correspondence should be obvious.

SUBROUTINE CAL(I,ID)

This subroutine is called from the MAIN routine and from subroutine CDIST to compute the A-weighting overall sound level (AL) for the I^{th} spectrum. The subroutine argument ID determines whether the AL data are computed from the mean SPL spectrum for the I^{th} power setting or the extrapolated SPL spectrum for the I^{th} distance. ID is defined the same as in subroutines CPTC and CPNL.

Method

AL is defined as follows:

$$AL_I = 10 \log \left[\sum_J \text{antilog} \left(\frac{SPL_{I,J} + AW_J}{10} \right) \right] \quad \text{dBA}$$

where

J = the frequency band index; J is defined for bands 17 to 40 (indicies 1 to 24).

$SPL_{I,J}$ = the sound pressure level for the I^{th} spectrum or I^{th} distance and the J^{th} band (arrays SPLX or SPLA).

AW_J = the A-weighting relative response in dB for the J^{th} band (see Table 4).

If the AL data are undefined for the I^{th} spectrum, AL_I is set equal to 9999; this should never occur in this program.

SUBROUTINE OUTH(IRD,IPTC,SENX,LFLG,IPF)

This subroutine is called from the MAIN routine to print the SPL spectra versus slant distance on pages H and L and/or the single event noise data (seven measures) versus slant distances on pages I and M. The air-to-ground data (IPROP=1) are printed on pages H and I and the ground-to-ground data (IPROP=2) on pages L and M. Subroutine argument IRD is the index of the profile distance which is

TABLE 4
WEIGHTING FACTORS

Frequency (Hz)	Relative Response (dB)
	A-Weighting
50	-30.2
63	-26.2
80	-22.5
100	-19.1
125	-16.1
160	-13.4
200	-10.9
250	- 8.6
315	- 6.6
400	- 4.8
500	- 3.2
630	- 1.9
800	- 0.8
1000	0
1250	0.6
1600	1.0
2000	1.2
2500	1.3
3150	1.2
4000	1.0
5000	0.5
6300	- 0.1
8000	- 1.1
10000	- 2.5

within 1 percent of the reference distance for this power setting. The remaining arguments are defined in subroutine comment statements. The data format and page layout for each page can best be determined by consulting the sample problem in Appendix C.

Print SPL Spectra

The first segment of this subroutine which is omitted when $IPF > 2$ prints the SPL spectra versus distance data for the 22 profile distances. Subroutine HEAD is called to print the page header block. The statement label 50 loop sets up the integer and variable format arrays and prints each of the 22 spectra. All SPL data less than zero are omitted from the printout (blanked out). The frequency band which determines the tone correction in the reference distance spectrum is flagged with the ">" symbol. The variable format is required to accommodate the blank and flagged data.

Print Single Event Data

The remainder of this subroutine (from label 50) prints the single event versus distance data for the 22 profile distances. The sequence of these seven single event measures in array SENX is determined by the IPF program flag. For $IPF \leq 2$, the sequence is PNLTX, PNLX, ALTX, ALX, EPNLX, SELTX and SELX; while for $IPF > 2$, the sequence is EPNLX, SELTX, SELX, PNLTX, PNLX, ALTX and ALX. Neither sequence is the same as the print sequence which is just the reverse of the latter case ($IPF > 2$). Thus, index variable JD is setup to identify the single event data in array SENX in the required print sequence. For the $IPF > 2$ case, variable JD is defined by the ISEQD data statement array which contains the indices of these single event measures in the print sequence. Array ISEQF contains the variable format index corresponding to the JD^{th} single event variable. The data are printed with a variable format to blank out all negative single event data.

Subroutine HEAD is called to print the page I or M header block. The label 100 loop prints the measure data for each distance. The label 80 loop sets up the variable print and format arrays for each measure for the I^{th} distance. These variable arrays are required to blank out data less than zero.

SUBROUTINE OUTJ(IP,SENX,LFLG)

This subroutine is called from the MAIN routine to print the single event measure tab plots for air-to-ground (IPROP=1, pages J and K) or ground-to-ground (IPROP=2, pages N and O) data for the L^{th} power setting. The value of the subroutine argument IP determines the single event measures plotted on each page. When IP is one or four, the PNLTX, PNLX, ALTX, and ALX data are plotted on pages J or N, and when IP is two or three, the EPNLX, SELTX, and SELX data are plotted on pages K and O. This IP program flag also determines the sequence in which these single event data are stored in array SENX. This data sequence is described in detail in subroutine OUTH where program flag IPF is equivalent to IP in this routine. Subroutine argument LFLG is a footnote flag; for LFLG=1, an extrapolation limit flag is printed at the bottom of each page. The plot format and page layout can best be determined by consulting the sample problem in Appendix C.

Method

Each tab plot contains the distance scale on the ordinate and the dB scale on the abscissa. The distance scale always contains the same 22 profile distances from 200 to 25,000 feet. The abscissa scale is 8.3-inches wide and covers an 83 dB range. The maximum abscissa scale value is determined from the measure data for the first ten distances (smallest distances). The maximum annotated scale value is the largest multiple of ten which is less than the largest measure plus eight. The largest plotted point may be one larger than this multiple of ten. All data outside the abscissa scale range are deleted from the plot.

The label 400 loop sets up the plot array and the grid pattern for each profile distance. An identification block is printed in the upper left corner and a legend block is printed in the lower right corner of the grid. These blocks do not normally interfere with the plotted data points; however, they do make the coding more complex and thus more difficult to change.

The label 150 loop scales the three or four (J1 to J2) data points plotted for each distance, sets up the scaled point in the plot array with the correct symbol, and saves the data presently in the plot array. There should be sufficient comment statements in this subroutine to follow the data being printed; thus no additional documentation will be given here.

SUBROUTINE PPFDAT (PRDC, LFLG, COMD, IJ)

This subroutine is called from the MAIN routine to write the profile datasets on file TAPE3 for the L^{th} output power setting (PSC). The TAPE3 file may be equivalenced or copied to the PUNCH file. The air-to-ground and ground-to-ground data are in array PRDC and LFLG is a program flag which when equal to one adds an additional extrapolation limit comment line to each profile dataset. The format and content of these profile datasets is given in Appendix F. There should be sufficient comment statements in this subroutine to follow the data being written.

SUBROUTINE TITPG (IPR)

This subroutine is called from the MAIN routine to print the aircraft title page which identifies the aircraft being analyzed and the data computed in the analysis. The format and content of this page can best be determined by consulting the sample problem in Appendix C. There should be sufficient comment statements in the coding to follow the information being printed. IPR is the program print flag.

SUBROUTINE SETUPD6(IREQ,N,NP,ACC,ITP,IAP,IHP)

This subroutine is called from the MAIN routine to apply the Δ^6 rules to determine the reference data required to compute the profile data at the requested output power setting (PSC). The IREQ, N, NP, ITP, IAP, and IHP subroutine arguments and numerous additional variables are defined in the comment statements at the beginning of this subroutine. Argument ACC is the aircraft code.

Method

This section contains a summary of the Δ^6 rules used in this subroutine and in subroutine DELTA6 to determine the two or four slope reference datasets required to compute the profile measure data for each output power setting (PSC or PSCF). The reference operation power code (OPCR) given on the code sheet identifies the extrapolated reference profile data from which profile measure data for this PSC are interpolated or extrapolated and also determines the operation power description. This OPCR must be in the reference file or data for this PSC are omitted from the computer run. The OPCR and slope reference dataset array indices are stored in array IREQC for each PSC. The Δ^6 rules are defined as follows:

(1) For OPCR equal to 01, 02, 08, 09, 10, 17, 18, or 19, the requested power setting (PSC) must be the same as the reference file power setting (PS). If it is not the same, the PSC data are deleted from the run. For OPCR equal to 17, 18 or 19, the reference file airspeed (IV) must also be the same as the requested airspeed (VX). This rule is applied in this subroutine by labels 360 to 365 within the label 400 loop.

(2) For OPCR equal to 15 or 16 (STOL takeoff and approach), interpolations and extrapolations will be made from the slope of a straight line fit of measure data versus power setting between 15 and 16. Both 15 and 16 must be in the reference file or the requested power setting is deleted from the run. This rule is applied by labels 260 to 300 in this subroutine.

(3) For OPCR equal to 03, 11 or 14 (takeoff, max rated thrust or intermed power (mil)), interpolations and extrapolations will be made from the slope of a straight line fit between 05 (approach)

03, 11 or 14. If 05 is missing, the requested power setting will be deleted from the run. It is assumed that only 03, 11 or 14 will be given in the reference file and requested as a Δ "6 reference (OPCR); however, if 03 and 11 or 14 are in the reference file, interpolations and extrapolations will be made from the slope of a straight line fit between 05 and 03. For example, if 03, 05 and 11 are in the reference file and OPCR=11 for one of the requested power settings (PSC), the PSC will be interpolated or extrapolated using the 05 to 03 slope with the 11 reference data as the reference point. This rule is applied between labels 20 and 40 and labels 160 and 180 in this subroutine.

(4) For an OPCR equal to 05 (approach) and a PSC greater than or equal to the approach power setting, interpolations and extrapolations will be made from the slope of a straight line fit between 05 and 03 (takeoff) or 05 and 11 or 14. When the PSC is less than the approach power setting, the interpolations and extrapolations will be made from the slope of a straight line fit between 05 and the highest ranking power setting less than approach as defined in item 6 below. If there is no reference file power setting less than approach, the PSC is extrapolated using the 05 and 03 slope. This rule is applied by labels 180 to 200 in this subroutine.

(5) For an OPCR equal to 12 (normal rated thrust), extrapolations will be made from the slope of a straight line fit between 05 (approach) and 03 (takeoff). The OPCR equal to 12 reference measure (PNLX, PNLTX, ALX, ALTX, SELX, SELTX or EPNLX) data are used as the slope reference point. The program assumes that the requested power setting (PSC) and the reference file power setting (PS) for OPCR=12 are between the reference file 03 and 05 power settings; if the PSC is not, a warning message is printed and the data are still extrapolated from the 03 to 05 slope line. This rule is applied by labels 230 to 250 in this subroutine.

(6) For an OPCR equal to 04, 06, 07, or 13 the reference file is searched for all the 04, 06, 07, and 13 operation power codes which have a power setting less than the 05 (approach) power setting. If two or more are found, they are ranked in the following highest to lowest ranking order: 13, 06, 04, and 07.

If the reference measure (PNLX, PNLTX, etc) data at the reference distance (1000 feet) for the highest ranking power setting is less than the reference measure data at approach power (05), then the slope of a straight line fit between this highest ranking power setting and the approach power will be used for all interpolations or extrapolations for power settings less than approach. If the reference measure data at the reference distance for the highest ranking power setting is greater than or equal to the reference measure data at approach power (05), there are no corrections to the data (ie., slope=0) for power settings less than approach power. Next one of the following four items applies depending on the magnitude of PS and PSC relative to the approach power.

(a) When the reference file power setting (PS) and the requested profile power setting (PSC) are greater than or equal to the approach reference file power setting, extrapolations are made from the slope of a straight line fit between 03 (takeoff) and 05 (approach). This slope line uses the OPCR measure data and power setting as the reference point.

(b) When the reference file power setting (PS) and the requested profile power setting (PSC) for one of the above OPCR's are both less than the approach reference file power setting, all interpolations or extrapolations are made from the slope of a straight line fit between the approach and highest ranking power settings as explained in item (6) above (slope may be zero).

(c) When the reference file power setting (PS) for one of the above OPCR's is greater than the approach reference file power setting and the corresponding profile power setting (PSC) is less than the approach reference file power setting, the extrapolations are made in two steps. First, the measure data are extrapolated to the approach power setting using the slope of a straight line fit between the measure data at approach power and the measure data at takeoff power, with the OPCR measure data and power setting as the reference point. Second, the measure data are extrapolated from the approach power to the requested power setting (PSC) using the slope of a straight line fit between the measure data at approach

power and the highest ranking power setting less than approach as described in item (6) above. This second slope may be zero. If there are no reference file power settings less than approach, the takeoff to approach slope is used to compute the requested power setting data (PSC).

(d) When the reference file power setting (PS) for one of the above OPCR's is less than the approach reference file power setting and the corresponding profile power setting (PSC) is greater than the approach reference file power setting, the extrapolations are, once again, made in two steps. First, the measure data are extrapolated to the approach power setting using the slope of a straight line fit between the measure data at approach power and the measured data at the highest ranking power setting less than approach, with the OPCR measure data and power setting as the reference point as described in item (6) above (this slope may be zero). Second, the measure data are extrapolated from the approach power to the requested power setting (PSC) using the slope of a straight line fit between the measure data at approach and takeoff power settings. If there is no reference file takeoff power setting, the first slope is used to compute the requested power setting data.

Note that each reference to takeoff power (03) in items (a) through (d) could be replaced by max rated thrust (11) or intermediate power (mil) (14) when takeoff power is not in the reference file. Parts of this rule are applied in this subroutine between labels 55 and 90 and labels 365 and 360; however, those parts which require that the measure data be checked or which require a two step extrapolation are applied in subroutine DELTA6.

(7) No extrapolations at the 1000 foot reference distance for air-to-ground SELX (or SELTX or EPNLX when only one measure is computed) data may exceed 5 dB. If the 5 dB limit is exceeded, a new power setting (PSC) corresponding to this 5 db limit is computed using the same straight line fit slope. The comment "Power setting extrapolation limited by AFAMRL/BBE, WPAFB" is added to each profile dataset (4th comment card) and printed at the bottom

of output pages I, K, M, and O and on the summary page. This extrapolation limit is checked for each segment of the two step extrapolations in items 6c and 6d above. This rule is applied in subroutine DELTA6 described in the next section.

All references in the above Δ "6 rules to straight line fits between specific operation power codes is assumed to mean a straight line fit between PNLX, PNLTX, ALX, ALTX, SELX, SELTX or EPNLX measure versus power setting data for those operation power codes. Extrapolation or interpolation of data is assumed to mean the extrapolation or interpolation of the measure (PNLX etc.) data for a given power setting. This straight line fit algorithm is defined and applied in subroutine DELTA6.

This subroutine defines the indices of the slope (as required) and OPCR reference datasets in array IREQC for each output power setting (PSC) as required in items 1 to 6 above. In item (6c) and (6d) where two slopes are required, the second slope points are determine in subroutine DELTA6. Actually, almost all item 6 logic is defined in subroutine DELTA6; only the highest ranking power setting less than approach, the first slope indices, and the OPCR index are determined in this subroutine. There should be sufficient comments in this subroutine to follow the coding of the above rules. The flowchart in Figure 5 may also be an aid in following the coding and determining what rules are applied in this subroutine.

When new operation power codes are added to the NOISEFILE flight noise database, they must be added to the data statement array OPP and the above rules must be modified to account for the new power codes.

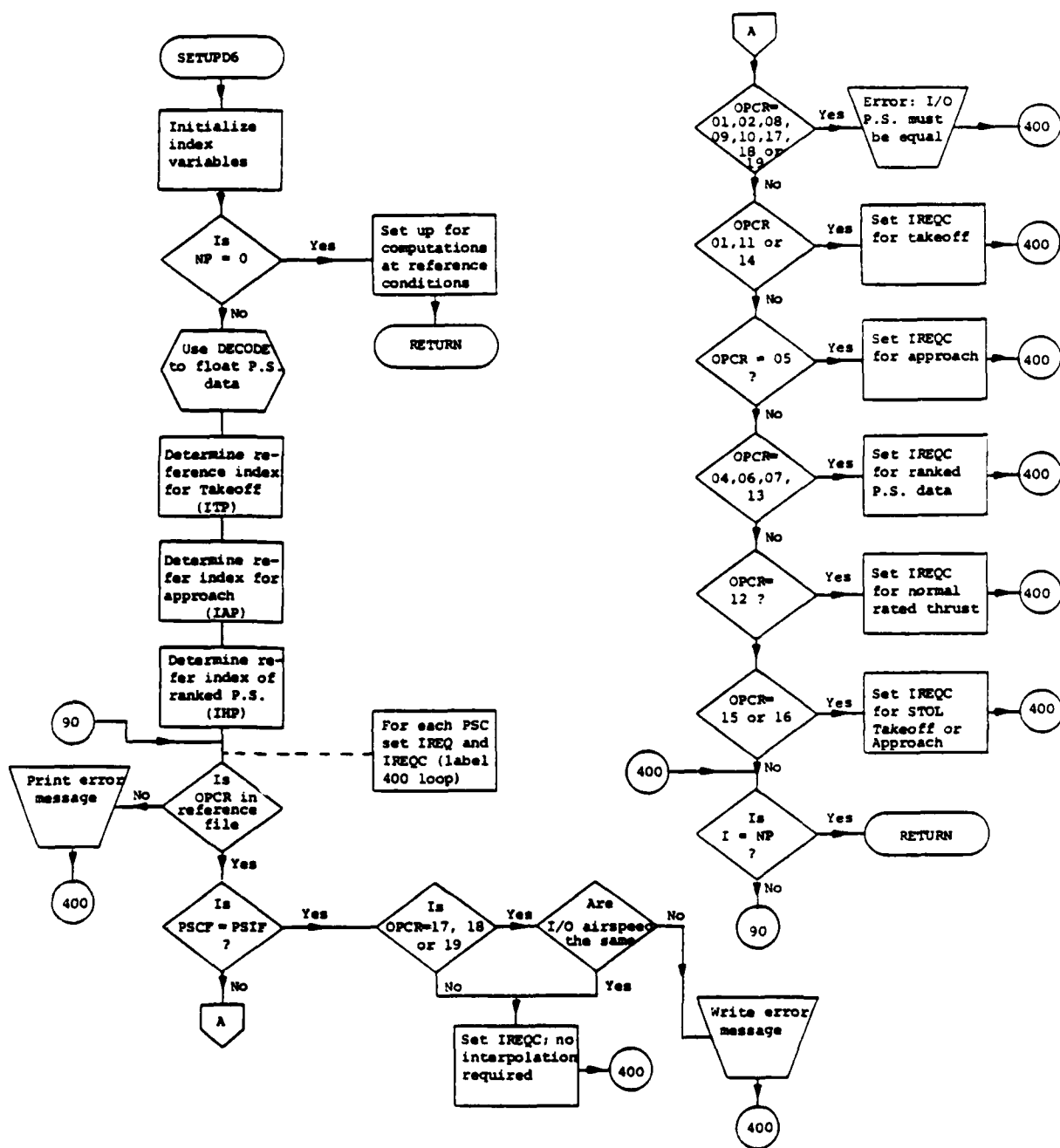


Figure 5. Flowchart for Subroutine SETUPD6.

SUBROUTINE DELTA6 (PRDI, PRDC, K, PSIF, PSCF, IREQC, LFLG, VFCT, LIM, PSC, EXTMX, ITP, IAP, IHP, IREF)

This subroutine is called from the MAIN routine to apply the A"6 algorithms in computing the final flight noise PNLX, PNLTX, ALX, ALTX, SELX, SELTX and EPNLX profile data at the requested power setting (PSC) and airspeed. All the subroutine arguments are defined in the comment section at the beginning of this subroutine (source listing). The term "reference file measure data" used in the following paragraphs is the measure data (PNLX, etc) derived from the SPL reference spectrum after it is extrapolated to each of the 22 profile distances (see subroutine CDIST).

Method

The following linear interpolation (or extrapolation) function (F) is defined in this subroutine and used to compute the single event noise measures at each profile distance:

$$YC = \left(\frac{Y2-Y1}{X2-X1} \right) (XC-XB) + YB$$

where

- YC = the interpolated or extrapolated measure data for the PSC power setting (array PRDC);
- Y1 and Y2 = the reference file measure data used to compute the slope (array PRDI);
- YB = the reference file measure data reference point defined by OPCR (array PRDI);
- X1 and X2 = the reference file power setting data used to compute the slope (array PSIF);
- XC = the requested power setting (array PSCF); and
- XB = the reference file power setting defined by OPCR (array PSIF).

The airspeed adjustment factor (VFCT) is subtracted from this YC data where

$$VFCT = 10 \log \left(\frac{VX_L}{RV} \right)$$

VX_L = profile output airspeed (knots) for L^{th} PSC.

RV = program reference airspeed (presently 250 knots).

The linear interpolation algorithm used to compute the limiting power setting when the noise level extrapolation limit (EXTMX) is exceeded is:

$$XC = XB + \left(\frac{YL - YB}{Y2 - Y1} \right) (X2 - X1)$$

where

XC = the new PSC power setting (PSCF) corresponding to the limiting measure value (YL); and

YL = the limiting measure value ($YL = YB + \text{EXTMX}$), YL is EXT in the program.

All other variables are defined above.

There should be sufficient comment statements in the source listing to follow the coding; however, the following outline of this subroutine may be helpful. The principle segments of this subroutine are:

(1) The statement label 40 loop applies the above interpolation function and airspeed adjustment to compute the measure data for all Δ^6 rules except rule one and part of rule six (see subroutine SETUPD6).

(2) The statement label 80 loop applies the airspeed adjustment to compute the measure data when no Δ^6 adjustments are required.

(3) Label 100 sets the LFLG program flag when insufficient data were available to compute the measure data.

(4) The label 110 to 150 (exclusive) segment checks the measure and power setting data at the 1000 foot reference distance to determine if the reference (PS) and output (PSC) power settings are on opposite sides of approach power or if the measure data for the highest ranking power setting less than approach power are greater than the measure data at approach power.

(5) The label 150 to 200 segment checks the extrapolation limit for the first measure data computed at the 1000 foot reference distance for each power setting. If the limit is exceeded, a new power setting is computed and set up in array PSCF.

(6) The remainder of this subroutine (labels 250 to 485) computes the measure data for cases where the reference (PS) and requested (PSC) power settings are on opposite sides of the approach power setting (see Δ "6 rules (6c) and (6d) in the subroutine SETUPD6 documentation). The computation of these measure data requires two extrapolations; first, the measure data are extrapolated from the reference power setting (PS or PSIF) to the approach power setting and then from the approach power setting to the requested output power setting (PSC or PSCF). These extrapolations use the approach to takeoff slope and highest ranking power setting less than approach to approach slope in the sequence determined by the given data. The second slope references are coded in the IREF program flag array.

SUBROUTINE SUMRY (IPU, COMD, EXTMS, N, NP, SOURCE, LFLG, IREF, ITP, IAP, IHP)

This subroutine is called from the MAIN routine at the end of each aircraft analysis to print a summary of the input and output data for that aircraft. The subroutine arguments are:

- (1) IPU is the profile dataset print (on TAPE3) flag;
- (2) COMD contains the last 5 characters of the reference dataset comdeck name;
- (3) EXTMX is the maximum extrapolation error permitted by the program (see subroutine DELTA6);
- (4) N is the number of input power settings (PS);
- (5) NP is the number of output power settings (PSC);
- (6) SOURCE contains the date of the original reference dataset run;
- (7) LFLG is a flag defined for each output power setting (see subroutine DELTA6);
- (8) IREF is a flag which is greater than zero when two slope lines were used to extrapolate the measure data (required when reference and output power settings are on opposite sides of approach power);
- (9) ITP, IAP, and IHP are the indices of the reference file data for takeoff, approach, and the highest ranking power setting less than approach power.

If the sample problem in Appendix C is used as a guide, there should be sufficient comment statements in this subroutine to follow the data being printed.

GENERAL OVERVIEW OF THE OMEGA 11 PROGRAM

The OMEGA 11 program, hereafter referred to as simply the "program", is designed to compute descriptions of the ground run-up noise of an aircraft in terms of tone-corrected perceived noise level (PNLTX), A-weighted overall sound level (ALX), and tone-corrected A-weighted overall sound level (ALTX) as a function of distance to the aircraft, aircraft power setting and meteorological conditions. These noise measure data (profile datasets) are computed for aircraft ground run-up reference data as outlined in AMRL-TR-73-107.⁽¹⁾ They are required as input to the NOISEMAP noise exposure forecast program and also are the ground run-up part of the NOISEFILE 3 database.

To compute the above noise measure data for selected operation power settings, the program inputs all reference datasets for aircraft ACC from the NOISEFILE 4 database. These reference datasets contain sound pressure level (SPL) data for 19 angles normalized to a reference distance of 250 feet and to standard day temperature (59°F), relative humidity (70%) and barometric pressure (29.92 inches Hg). The format of these data are described in Appendix G.

These reference spectra are then extrapolated to each of the 22 standard profile distances (from 200 to 25,000-feet) at the requested standard or non-standard weather conditions. PNLTX, ALX and ALTX noise measures are determined for each distance and angle from these extrapolated SPL spectra for the reference power setting. This program interpolates between two reference file power settings to compute the noise measure data for each power setting requested on the code sheet. Noise measure data can be computed for any power setting within the range available in the reference file.

A brief summary of the program operation is given below:

(1) The program inputs the code sheet parameters described in Appendix B and reads the reference datasets for aircraft ACC from the TAPE7 reference file.

(2) The power setting data are ranked and the indices of the reference datasets required to interpolate each output power setting are defined.

(3) The cover page is printed whe IPR is greater than zero.

(4) The aircraft summary page is printed.

(5) If Delta N (DELN) is not zero, it is added to all spectra for all power settings.

(6) If print flag IPR is greater than zero, all reference datasets are printed.

(7) PNLTX, ALX and ALTX profile data for each requested power setting (PSC) are computed (in sequence from low to high PSC):

(a) If the PSC is the same as one of the reference dataset power settings, the profile data are computed and no interpolation is required.

(b) If the PSC is not the same as a reference dataset power setting, the profile data are computed at the reference conditions for the nearest reference file power settings on each side of PSC and the PSC profile data are linearly interpolated. For many PSC's, the reference profile data for at least one dataset will have been computed for the previous PSC and thus stored in the SENX array.

(8) If IEDIT equal zero, the PSC profile data are edited to select the 10 angles which best represent the profile dataset at the reference distance.

(9) For IEDIT greater than or equal to zero, all PNLTX, ALX and/or ALTX profile data are written on file TAPE2 as requested by the MEAS program flag.

(10) For IPR greater than zero, the PNLX, PNLTX, ALX and/or or ALTX profile data page are printed as requested by the MEAS flag. A plot is also printed for PNLTX, ALX and ALTX at the reference distance.

The content and format of the above mentioned output can best be determined by consulting the sample problem in Appendix D.

The CDC FORTRAN extended (FORTRAN IV) computer language was used for the entire program. The common and subroutine features of the language were used extensively throughout the program to save computer time and core.

The following sections describe the detailed tasks accomplished by the program. It is intended to document the procedures within each subroutine at a level useful to either a programmer reading this while working with the code or a reader simply interested in what happens with a specific subroutine. The algorithms used to compute the noise measures are described in detail in the individual subroutines.

GENERAL ORGANIZATION OF THE OMEGA 11 PROGRAM

The general organization of the entire program is shown in Figure 6. The arrows indicate access to the various routines rather than program flow; for example, MAIN calls subroutine CDIST which in turn calls subroutine CPNL, CPTC and CAL and subroutine CPNL calls function FNOY. The circled numbers indicate the input (TAPE5) and output (TAPE2, TAPE6) files. Since the TAPE6 file (equivalenced to the OUTPUT file) is written by numerous routines throughout the program, the circled six is omitted from the figure.

Using Figure 6 as a guide, this section summarizes in very general terms the functions performed by the entire program. This is meant to serve as an introduction for the reader to the functions of the individual subroutines.

The control routine, MAIN, reads the job control card and initializes several program and test variables. Subroutine TESTN is then called to read the code sheet test parameters, initialize numerous test variables; and call subroutine ALPH to compute the atmospheric absorption data for non-standard temperature and relative humidity.

Next the MAIN routine initializes additional test parameters and calls subroutine RSPLN to read all reference datasets for aircraft ACC from file TAPE7. The power settings from these reference datasets as well as the output power setting data are ranked by subroutine RANK which also determines the reference datasets required to compute the profile data for each output power setting.

The cover (IPR>0) and summary pages are printed by subroutines TITPG and SUMRY, respectively. Delta N (DELN) is added to all reference spectra (for DELN≠0) which are then printed (IPR>0) by the MAIN routine.

Subroutine CDIST is called to compute the PNLX, PNLTX, ALX and/or ALTX profile data (as requested by the MEAS flag) for the reference dataset power settings required to interpolate the output

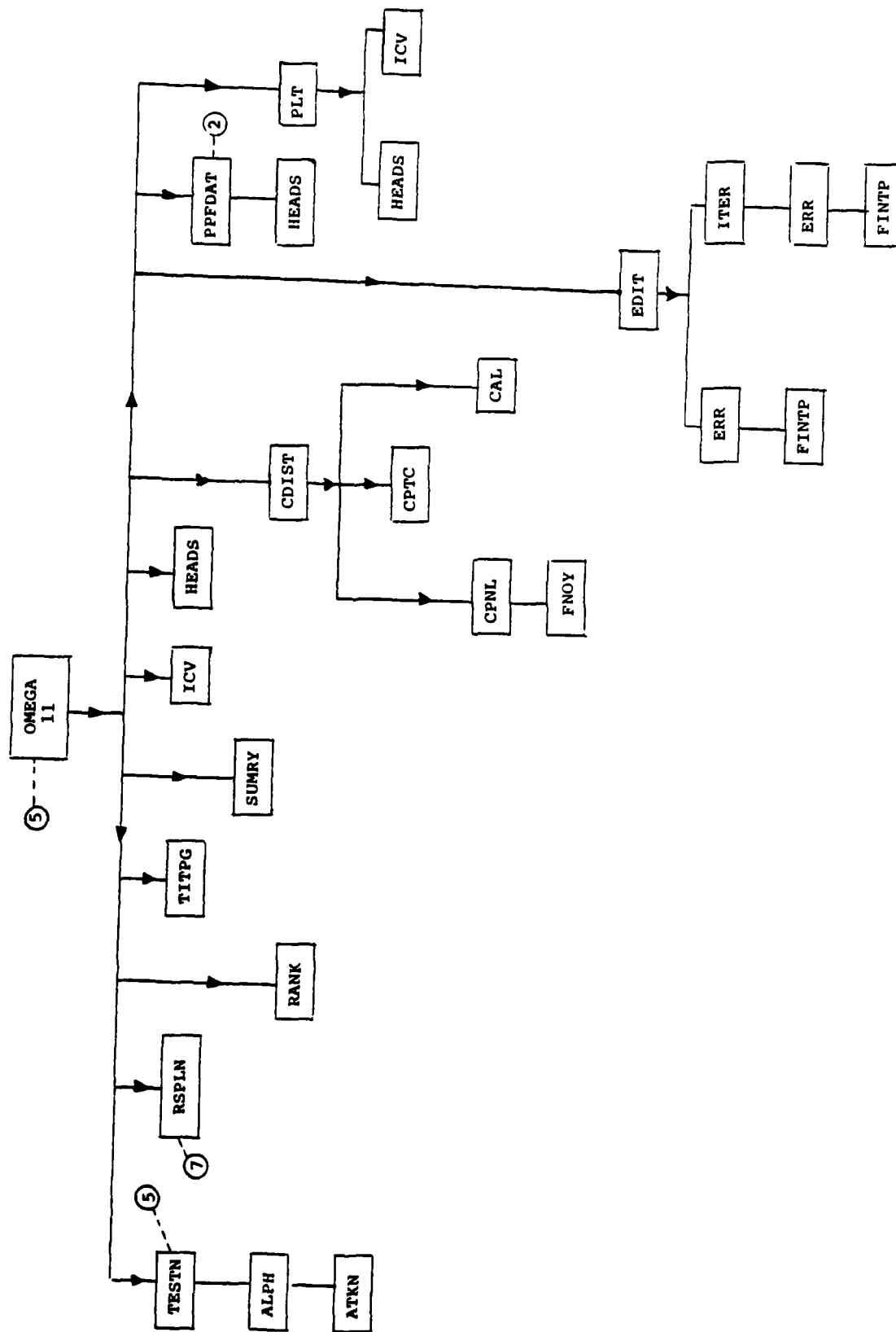


Figure 6. General Organization of OMEGA 11 Program.

power settings (PSC). This interpolation between power settings is performed by the MAIN routine. Subroutine CDIST calls subroutine CPNL, CPTC and CAL to compute the PNLX, tone correction, and ALX data. These interpolated profile data are edited (IEDIT=0) by subroutine EDIT to select the 10 angles which best describe the profile data at the reference distance. EDIT calls subroutine ERR which uses linear interpolation between the selected angles to determine how well they represent the profile function. The FINTP linear interpolation subroutine is used by subroutine ERR. EDIT also calls subroutine ITER which attempts to reduce the interpolation errors by selecting the angles with the largest errors; ITER also calls ERR.

Subroutine PPFDAT writes the profile datasets on file TAPE2 (for IEDIT $\geq$ 0) and prints (IPR $>$ 0) the tab output pages for all computed measures. Subroutine PLT prints (IPR $>$ 0) a tab plot of the PNLTX, ALX and ALTX noise level versus angle data computed for the reference distance. The angles for which profile data are written on TAPE2 are listed below the tab plot.

After computing and printing the profile data for each of the NP power settings, control is returned to label 10 in the MAIN routine and the program repeats the above for the next aircraft (or until an end of file is read from the INPUT file).

DEFINITIONS OF SYMBOLS AND TERMINOLOGY USED IN THE OMEGA 11 PROGRAM

The symbols defined here are used in this report and/or in the OMEGA 11 program source listing. They are a subset of the complete symbol versus reference list given in the SUPER INDEX in Appendix J. Many of the symbols given in the SUPER INDEX are really dummy variables used in only one or two routines and re-defined in each routine; most of these symbols are not included in this list of symbol definitions. Symbols which are arrays will be listed with their array dimensions. Variables I, J and K are usually but not always used as array subscripts as follows:

(1) The subscript "I" is a running index associated with any one spectrum (angle). It is also frequently used as a "dummy" index to initialize variables.

(2) The subscript "J" is a running index associated with any one band in the set of octave or 1/3 octave frequency bands. It is also an index associated with a specific profile measure.

(3) The subscript "K" is a running index associated with any one profile distance.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
ACC	Three character aircraft code read from the code sheet and printed on all output pages and in all output datasets.
ALTX(19,22,2)	Profile tone-corrected A-weighted overall sound level in dBA for each angle and profile distance for two power settings.
ALX(19,22,2)	Profile A-weighted overall sound level in dBA for each angle and profile distance for two power settings.
ATN(24)	Data statement array containing the atmospheric absorption coefficients in dB per 1000 for standard day temperature and relative humidity.
ATN8(24)	Atmospheric absorption coefficients in dB per 1000 feet for OMEGA 11 profile output temperature and relative humidity.
ATNC(24)	Atmospheric absorption coefficients in dB per 1000 feet for OMEGA 11 reference input temperature and relative humidity (usually standard day conditions).
AW(24)	A-weighting coefficients in dBA.
BLK	A data statement variable containing a blank Hollerith character used in printing variable format data.
CRI	Comdeck revision identifier (see code sheet).
CXD(19)	Computed tone correction for each angle for the reference distance (dB).
DATE	Date of computer run (see code sheet).
DATN(6)	Date of the OMEGA 8 computer run which generated the reference dataset.
DELN	Noise adjustment factor added to the reference spectrum (dB).
DIST	Distance in feet to which the reference file data in NOISEFILE 4 are normalized (presently 250 feet).
EA(13,13)	Excess atmospheric attenuation in dB for bands 17 to 29 and distances 400 to 6300 feet (subroutine CDIST).
ER(19,3)	Profile dataset angle selection error data for each angle and measure (dB).

<u>SYMBOL</u>	<u>DESCRIPTION</u>
ERMAX	Maximum acceptable angle selection error in dB; no attempt is made to improve the angle selection for errors less than ERMAY.
FIMPR8	Characteristic impedance ratio using reference and profile output temperature and barometric pressure.
FJ	Constant used in the perceived noise level computations; FJ=0.15 for 1/3 octave band data.
FL(24,5)	Data statement array used in noy computations (functions FNOY) containing the band sound pressure levels in dB given in Table 3.
FM(24,4)	Data statement array used in noy computations (function FNOY) containing the reciprocals of the slopes given in Table 3.
FMT(22)	Variable format array used to print profile data in subroutine PPFDAT.
FMXER	Maximum angle selection error permitted without an error message being printed (see code sheet).
FREQ(24)	Data statement array containing the frequency values in Hz in character format for printing.
FREQ3(24)	Geometric mean and lower limiting frequencies required to compute atmospheric absorption coefficients for 1/3 octave band data.
FSPL(19,24,6)	Normalized reference SPL in dB for each angle, frequency band, and operation power code.
IBNH	Largest band number index (24 corresponds to band 40).
IBNL	Initial band number index (1 corresponds to band 17).
IC	Index which is usually associated with output power setting (PSC) data.
IEDIT	Program flag which controls the quantity of profile data written on file TAPE2 (see code sheet).
IFC(6)	Program flag used to flag special case output power setting data (see code sheet).
IFCC	Index used to count the number of IFC's > 0.
IFI(6)	Program flag used to flag special case (Afterburner, etc.) reference file power setting data.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
IFII	Index used to count the number of IFI's > 0.
IH	Index of the largest frequency band defined for this test (IH=24 for band 40).
IH8	Profile output relative humidity (code sheet input).
IHH	Reference relative humidity (70%).
II	Index which is frequently associated with the computation of the two sets of profile data used to interpolate profile data at the requested power settings.
IL	Index of the lowest frequency band defined for this test (IL=1 for band 17).
IPR	Program print control flag (see code sheet).
IR(19)	Array used to print integer values of the reference SPL data.
IRD	Profile distance index which corresponds to the reference minimum slant range (presently IRD=2).
IREQ(2,6)	Index of the one or two reference datasets required to compute the profile data for each requested power setting.
IT	Reference temperature in degrees F (always 59°F).
IT8	Profile output temperature in degrees F (see code sheet).
IVER	Program version code.
L	Index frequently associated with data for a specific reference file power setting.
M	Program flag indicating whether data are for octave (M=1) or 1/3 octave (M=3) band center frequency (always 3 in this program).
MEAS(3)	Program job control variable which flags the profile measures to be computed (see code sheet).
MM	Increment of the frequency index (one for 1/3 octave band data).
N	Number of reference dataset operation power codes read from the reference file (TAPE7) for aircraft ACC.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
NC	Number of angles for which SPL spectra are defined in the reference dataset (always 19 for the present reference datasets).
NN	Maximum number of reference file operation power codes permitted for each aircraft (NN=6).
NP	Number of output operation power codes (power settings) to be computed for this aircraft.
NPM	Maximum number of profile operation power codes permitted for each aircraft (NPM=6).
NR(17,3)	Change in slope rank data computed in the angle selection routines for angles 10 to 170 degrees for each measure. Angles with rank greater than nine are included in the final profile dataset.
NRC(6)	NRC(K) contains the index of the output power setting data (in arrays PSC and PSCF) whose power setting rank is K.
NRI(6)	NRI(K) contains the index of the reference power setting data (in arrays PS and PSIF) whose power setting rank is K.
OPC(6)	Reference operation power codes.
OPCC(6)	Output operation power codes.
OPCSP(8)	Special case operation power codes for which no interpolation is permitted. This array must be updated when new codes are added.
OPD(2,6)	Power description data for each reference operation power code (20 characters).
OPD1, OPD2	Power description data defined for output power settings when the reference and output power settings are the same.
P1	Reference barometric pressure in inches Hg (always 29.92 inches Hg).
P8	Profile output barometric pressure in inches Hg.
PNLTX(19,22,2)	Profile tone-corrected perceived noise level in PNdB for each angle and distance for two power settings.
PNLX(19,22,2)	Profile perceived noise level in PNdB for each angle and distance for two power settings.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
PS(6,6)	Power setting data for each reference file operation power code (power setting value and units in character format).
PSC(6)	Power setting data for each profile output operation power code in character format (see code sheet).
PSCF(6)	Numeric form of PSC(6) data defined above.
PSIF(6)	Numeric form of the first power setting for each reference operation power code in PS(6,6) above; eg. PSIF(I)=PS(1,I).
PSU	Power setting units for the profile output data.
PTC	Tone correction in dB.
PV	Profile version code (see code sheet).
RMS(3)	Root mean square of the angle selection error for each measure.
RUN(6)	Two character run number from each reference dataset.
RUNC(6)	Data statement array containing run numbers 01 to 06 in character format. These run numbers are assigned to the output data in power setting sequence.
SENX(19,22,12)	Array equivalent to arrays PNLX through SENXD in blank common where SENXD(19,22,4) contains the interpolated profile data for the measures.
SPLX(19,24)	Profile sound pressure level in dB for each angle (spectrum).
SX(22)	Distance data in feet for the 22 profile distances.
TL2(2)	Data statement array used to set up the variable formats for the profile data tab output.
TAPE2	File on which datasets are written; TAPE2 may be copied or equivalenced to the PUNCH file.
TAPE5	Input file for all input data; TAPE5 is equivalenced to the system INPUT file.
TAPE6	Output file on which all tab output are printed; TAPE6 is equivalenced to the system OUTPUT file.
TAPE7	Reference dataset input file.

<u>SYMBOL</u>	<u>DESCRIPTION</u>
TEST(6)	Ten character test number from each reference data-set.
TT(6,6)	Two lines of 25 characters from the reference data-set describing the noise source. The two lines from the first reference dataset are printed in the Noise Source/Subject block on all output pages.

DETAILED DESCRIPTION OF THE OMEGA 11 PROGRAM

This section discusses the MAIN routine and each subroutine in the OMEGA 11 program. Procedures within most routines are documented at a level useful to a programmer reading this while working with the code or a reader interested in what happens within a specific subroutine. Most routines contains numerous comments which should be very helpful in following the code.

The program algorithms and I/O are discussed in the routines in which they are coded. The program code sheet in Appendix B and the sample problem in Appendix D are referenced to simplify the description of the input and output. The more complex subroutines are supplemented by flowcharts drawn from the point of view of function performed rather than block instructions.

COMMON VARIABLES

Extensive use is made of common in the program for communications between the various routines. Many of the storage locations in blank common are used in different ways or with different variable names throughout the program to save core. Several of the large arrays are included in blank common rather than labeled common because on the CDC 6600 computer a large blank common reduces the total core required to load and execute the program. The variables used in labeled common are usually of a similar type and/or used in many of the same subroutines.

The variables assigned to blank and labeled common in the MAIN routine and the total common length are listed in Table 5. The subroutines in which the labeled common are used are listed in Table 6. All blank and labeled common are included in the MAIN routine. All common variables are defined in the complete list of symbols at the beginning of the report. The blank and labeled common are described in the following paragraphs.

TABLE 5
MAIN ROUTINE VARIABLES IN BLANK AND LABELED COMMON

<u>Blank Common</u>	<u>Labeled Common</u>	
	<u>ATTNC</u>	<u>HEADC</u>
M	ATNC(24)	TEST(6)
MM	ATN8(24)	TT(6,6)
IL	SX(22)	DATE
IH		RUN(6)
NC		IPAGE
L		IVER
N		ACC
ID		OPC(6)
DIST		IT
MEAS(3)		P1
FSPL(19,24,6)		IHH
SPLX(19,22)		IT8
PNLX(19,22,2)		P8
PNLTX(19,22,2)		IH8
ALX(19,22,2)		FIMPR8
ALTX(19,22,2)		PV
SENXD(19,22,4)		CRI
IR(19)		PS(6,6)
IPRCK(6)		OPD(2,6)
DMY(202)		OPCC(6)
		DELN
		PSC(6)
		PSU
		NP
		PSIF(6)
		PSCF(6)
		NRC(6)
		ICC
		OPCDM
		OPD1
		OPD2
		COMD(6)
		RUNC(6)
		IC
		DATN(6)
		IFC(6)
		IFCC
		IFI(6)
		IFII
Length	8447	70
		185

TABLE 6
SUBROUTINES CONTAINING THE LABELED COMMON

ATTNC

CDIST

TESTN

HEADC

HEADS

PPFDAT

RANK

RSPLN

SUMRY

TESTN

TITPG

Blank Common

The 8447 storage locations used by blank common in the main routine are the maximum required in any routine in the program. Almost all routines use some blank common but only few require the 8447 locations. The variable names assigned to blank common vary throughout the program. Most variables are defined to communicate with several subroutines and then redefined for the next series of routines. In several cases variables are changed or equivalenced to simplify the computations and/or output routines.

ATTNC Common

These variables are used to extrapolate data from a given set of distance and weather conditions to a new set of conditions. For example, from reference distance and standard day conditions to the profile distances at the profile temperature and humidity. These 70 storage locations are defined the same throughout the program.

HEADC Common

These variables are primarily output variables required to identify the data being analyzed. Most of these data are printed in the page header blocks and the output COMDECK comment cards. The storage locations are defined the same throughout the program.

MAIN PROGRAM

MAIN is the executive routine for the entire OMEGA 11 program. Its principal function is to call the subroutines required to read the input data, perform the data analysis, and write the tab and data file outputs. However, the program also reads the program control parameters, initializes numerous test variables, interpolates the profile noise levels as a function of power setting, and prints part of the output. The MAIN routine is discussed in the following paragraphs using the program listing in Appendix J, the flowchart in Figure 7, and the sample problem in Appendix D as guides.

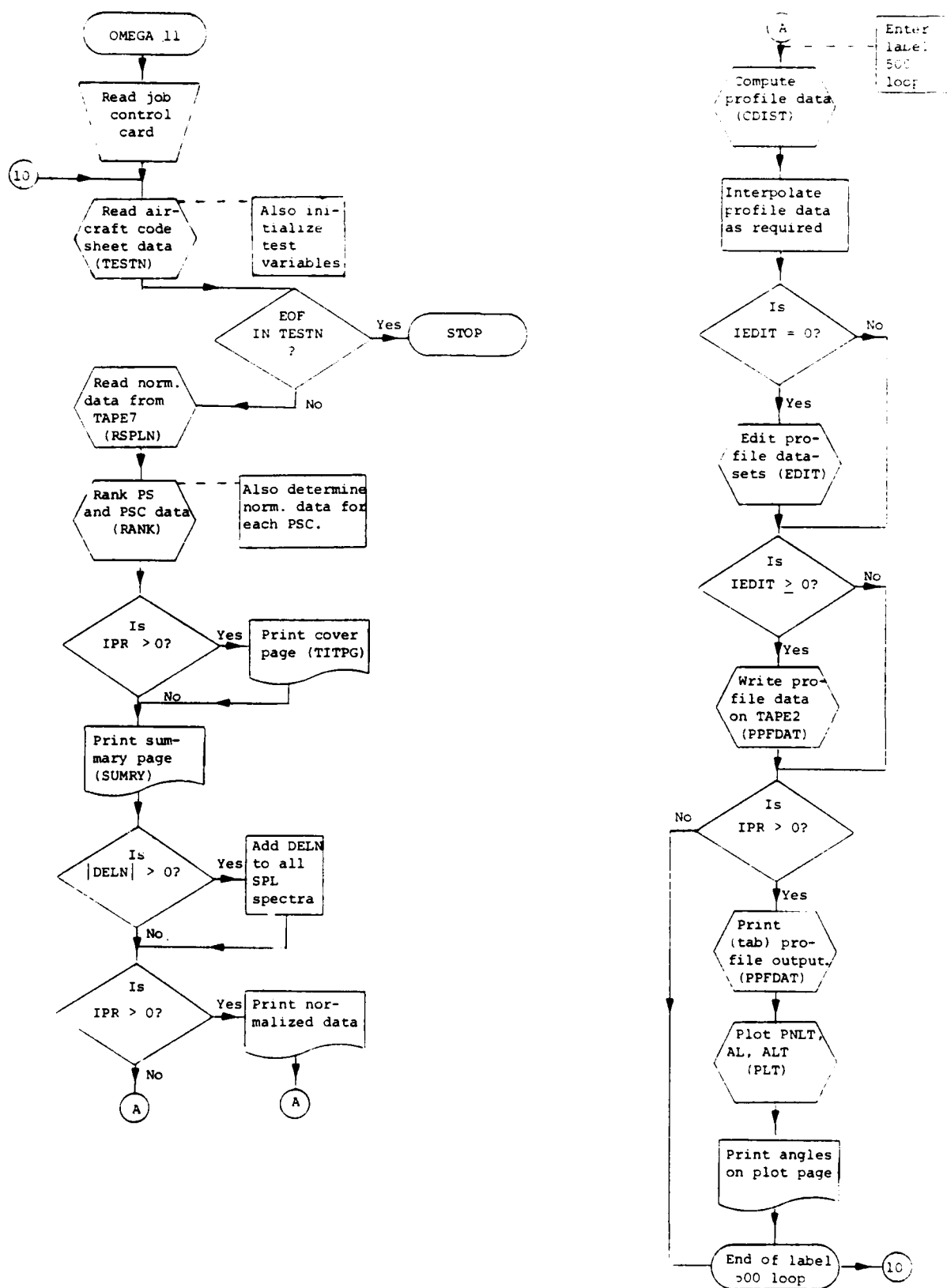


Figure 7. Flowchart for OMEGA 11 MAIN Routine.

Data Statement Arrays

The FREQ data statement array contains frequency data (Hz) in character format which is printed in the frequency versus SPL listings of the reference datasets.

Initialize Test Variable

The first segment of this routine performs the following variable initialization steps:

- (1) The SX standard profile distance array is evaluated:

$$SX_I = \text{antilog} \left(\frac{I+22}{10} \right) \quad \text{feet}$$

where I is the distance index running from 1 to 22.

- (2) The code sheet job control card is read once per execution of the program.

- (3) Subroutine TESTN is called to read all test (aircraft) code sheet parameters and initialize numerous other test variables based on these code sheet input data (eg. atmospheric absorption data).

Read Reference Data

The program calls subroutine RSPLN to read the reference data for aircraft ACC from file TAPE7. TAPE7 may contain data for numerous aircraft, however, all data for aircraft ACC must be back to back. All reference data (for ACC) for normal power settings are stored in the program; the special case (afterburner, etc.) power setting data are stored only when at least one special case output power setting is requested. Note that array OPCSP in subroutine RSPL must be updated when new special case OPC's are added to NOISE-FILE.

Setup Interpolation Index Array

Subroutine RANK is called to rank from low to high the input and output power setting data. These ranked power setting data are used to determine the reference data required to interpolate the profile data for each output power setting. The indices of these reference data are stored in array IREQ.

Subroutine TITPG prints the cover page when flag IPR is greater than zero. Subroutine SUMRY uses the above IREQ array data to print the aircraft summary page which is the only tab output when IPR is less than one.

Adjust and Print Reference Data

The following constant is computed as required by subroutine CDIST later in the program:

$$D1 = 10 \log (FIMPR8) + 20 \log (DIST)$$

where

FIMPR8 = the characteristic impedance ratio computed in subroutine TESTN.

DIST = the reference distance in feet.

The statement label 55 loop checks array IREQ to determine which reference data are actually required for this aircraft analysis. If Delta N is not equal to zero, it is added to all spectra in these required datasets which are then printed when flag IPR is greater than zero. Subroutine HEADS prints each reference page header block. The overall SPL is also computed and printed below the last SPL band. The overall SPL is defined as follows:

$$\text{Overall SPL} = 10 \log \sum_J \text{antilog} \left(\frac{FSPL_{I,J,L}}{10} \right)$$

where

$FSPL_{I,J,L}$ = reference band SPL in dB at distance DIST and for angle index I, band index J, and power setting index L.

Single Event Profile Data

The statement label 500 loop computes the single event profile noise data for each of the NP power settings (PSC). Each of the NP power settings will require profile data from one reference dataset when the PSC is the same as a reference power setting or from two reference datasets when the PSC must be interpolated. The dataset indexes required for each PSC are stored in array IREQ. Subroutine

CDIST computes the profile data requested by the MEAS flag (PNLTX, ALX and/or ALTX) for each reference dataset.

Note that profile data are computed and stored for no more than two reference datasets at any one time; however array IREQ is set up and checked to avoid duplicate computations. This limit of two was set to keep the program core size below 60000₈.

When no power setting interpolation is required, the final profile data are stored in array SENX (by subroutine CDIST) as indicated in the program comment statements (see label 370 and 380). When the PSC are not the same as a reference file power setting, the profile data are interpolated for each angle (I) and distance (K):

$$SENX_{I,K,J} = \left[\frac{SENX_{I,K,J1} - SENX_{I,K,JJ}}{PSIF_{L2} - PSIF_{L1}} \right] [PSCF_{ICC} - PSIF_{L1}] +$$

$SENX_{I,K,JJ}$
PNdB or dBA

where

- $SENX_{I,K,J}$ = the final profile data in PNdB or dBA for the Ith angle, Kth distance and measure index J (J ranges from 9 to 12).
- $SENX_{I,K,J1}$ = the profile data for the J1th measure index from the second (L2) reference dataset for I and K.
- $SENX_{I,K,JJ}$ = the profile data for the JJth measure index from the first (L1) reference dataset for I and K.
- $PSIF_{L2}$ = power setting from the second (L2) reference dataset.
- $PSIF_{L1}$ = power setting from the first (L1) reference dataset.
- $PSCF_{ICC}$ = the output profile power setting for which the profile data are interpolated.

Edit and Write Profile Data

When flag IEDIT is zero, subroutine EDIT is called to select the ten angles which best describe each profile measure at the reference distance. The ten selected angles are angles 0 and 180 degrees plus the eight angles from 10 to 170 degrees for which the value of array $NR_{I,J}$ is greater than nine, where I is the angle index (I=1 to 17) and J is the measure index (J=1 to 3 for PNLTX, ALX and ALTX).

Subroutine PPFDAT is called to write the final profile data for the requested measures (MEAS>0) on file TAPE2 and to print the profile data tab output. The quantity of data written on TAPE2 depends on the value of the IEDIT flag:

- (1) For IEDIT<0, all TAPE 2 output are omitted.
- (2) For IEDIT=0, write the 10 angles selected by subroutine EDIT.
- (3) For IEDIT=1, write all 19 angles of profile data.

A description of the content and format of these profile datasets is given in Appendix H.

The profile data listings are printed when program flag IPR is greater than zero. They contain data for all 19 angles and 22 distances; one page is printed for each measure (listing includes the PNLX data when PNLTX is computed).

Subroutine PLT prints (IPR>0) a plot of PNLTX, ALX and ALTX noise level versus angle for the reference distance. This plot is very helpful when selecting the ten angles (manually) or when checking the angles selected by the edit routine. The angles written on TAPE2 for each measure are printed below this plot.

At this point, control is returned to label 10 to begin the next aircraft analysis.

SUBROUTINE TESTN(NPM)

This subroutine is called from the MAIN routine to input the aircraft code sheet parameters. The subroutine also initializes numerous test variables and sets code sheet default parameters. There should be sufficient comment statements in the listing to document most of the coding.

Method

The first segment of the subroutine (to label 10) reads the code sheet test parameters and sets the program default values. The computer job is terminated when an end of file is read from unit 5. The code sheet parameters and default conditions are described in Appendix B. The reference temperature (IT8) is converted from °F to °C as required to compute the impedance data.

The impedance ratio for reference and profile output conditions is:

$$FIMPR8 = \left[\frac{273 + TM}{273 + TM8} \right]^{1/2} \left[\frac{P8}{P1} \right]$$

where

TM = reference temperature (15°C)

TM8 = profile output temperature in °C

P1 = reference barometric pressure (29.92 in Hg).

P8 = profile output barometric pressure in inches Hg.

Subroutine ALPH is called to compute the atmospheric absorption data in dB per 1000 feet for non-standard day profile conditions (ATN8). For standard day conditions (59°F and 70%), these absorption data are stored in the ATN data statement array.

SUBROUTINE ALPH(REL,TEMP,ABC,IL,IH)

This subroutine is called from subroutine TESTN to compute the octave or 1/3 octave band atmospheric absorption data in dB per 1000 feet for non-standard day temperature and relative humidity. This subroutine is the same as subroutine ALPH in the OMEGA 10 program.

FUNCTION ATKN(X,Y,N,K,XI)

This function is a general AITKEN interpolation function, used by subroutine ALPH to compute the normalized molecular absorption coefficient. ATKN was obtained from the ASD computer center library (old IBM 7094 library). Since this is a common interpolation function defined in most numerical methods texts, no additional description will be given.

SUBROUTINE HEADS(IPH)

This subroutine is called from the MAIN routine and from subroutines CDIST and PLT to print page header blocks at the top of all output pages. The header blocks are 112 characters wide for the reference sound pressure level output (label 2000 formats) and 126 characters wide for all profile output pages (label 3000 formats). The IPH subroutine argument determines the specific page header block printed for each call.

The content and format of the header blocks can best be observed by consulting the sample problem in Appendix D. This subroutine should contain sufficient comment statements to identify the data being printed. It may also be helpful to consult the subroutine HEAD documentation in the OMEGA 10 program; the five categories of data described there also apply here.

SUBROUTINE RSPLN(NN,IERR)

This subroutine is called from the MAIN routine to input one reference dataset from file TAPE7 (unit 7) for each normal operation power code (OPC) in the reference file (NOISEFILE 4) for aircraft ACC. When file TAPE7 contains more than one reference dataset for one or more OPC's, only the last dataset is stored by this routine. The special case operation power code data (Afterburner, Wet or With Jets) are read only when at least one special case was requested on the code sheet (IFCC>0). The special case operation power codes are stored in array OPCSP which must be updated when new codes are added to the NOISEFILE database. NN is the maximum number of datasets for which storage has been allocated in the program (NN=6). The IERR argument is a program error flag which returns codes of 1 to 4 for different type input errors.

The flowchart in Figure 8 and the comment statements in the listing should make it easy to follow the data being read; the format and content of these ground run-up reference datasets are also given in Appendix G.

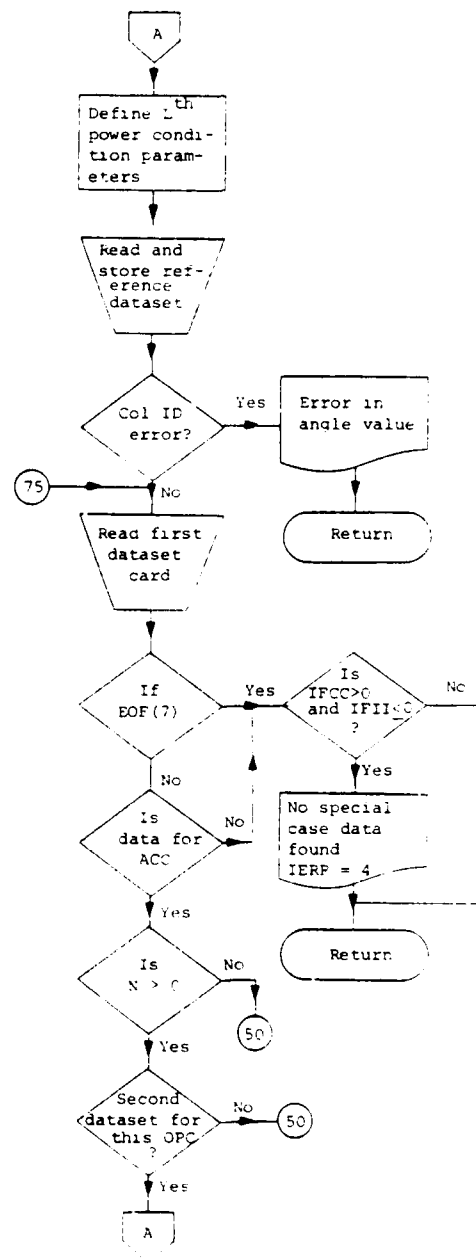
FUNCTION ICV(R)

This function is used in the MAIN and PLT routines to convert variable R to an integer. R is rounded up when the fractional part is greater than or equal to 0.5.

SUBROUTINE CDIST(IRD,D1,II)

This subroutine is called from the MAIN routine to compute the single event noise profile data (e.g., PNLTX versus distance for 22 distances from 200 to 25,000 feet) from the reference SPL spectra stored in array FSPL.

The subroutine argument IRD is the index of the standard distance which is within one percent of the reference distance. IRD is defined in this subroutine and returned to the MAIN routine. For the present standard references distance DIST of 250 feet, IRD will always be two. D1 is a constant computed in the MAIN routine



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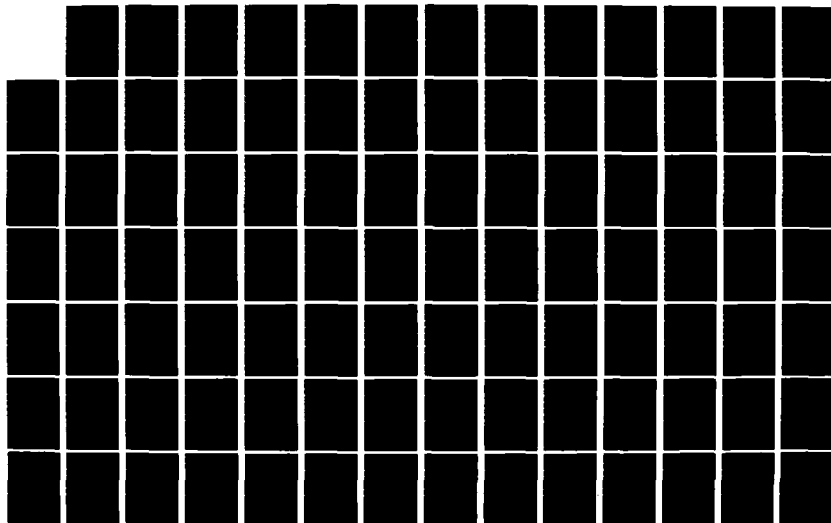
COMPUTER PROGRAMS FOR PRODUCING SINGLE-EVENT AIRCRAFT
NOISE DATA FOR SPEC. (U) DAYTON UNIV OH RESEARCH INST
H T MOHLMAN APR 83 UDR-TR-82-30 AFAMRL-TR-83-020
F33615-78-C-0500

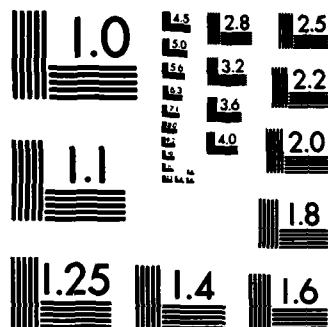
2/5

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NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

and defined in the next section. II is a power setting related index (see MAIN routine).

The EA data statement array contains the excess attenuation data for frequencies 50 Hz to 800 Hz and distances 400 to 6300 feet. These data were obtained from Figure 3 which was taken from AMRL-TR-75-50.⁽³⁾

Extrapolated SPL Data

The first segment of this subroutine (statement label 135 loop) computes the SPL spectrum extrapolated to the Kth standard profile distance:

$$\begin{aligned} \text{SPLX}_{I,J} = & \text{FSPL}_{I,J,L} + D1 - \text{EAD} - \frac{(\text{SX}_K) (\text{ATN8}_J)}{1000} \\ & - 20 \log (\text{SX}_K) + \frac{(\text{DIST}) (\text{ATNC}_J)}{1000} \quad \text{dB} \end{aligned}$$

where

$\text{SPLX}_{I,J}$ = the calculated band SPL in dB at the Kth profile distance from the source for angle index I and frequency index J.

$\text{FSPL}_{I,J,L}$ = reference band SPL in dB at distance DIST and for angle index I, band index J, and power setting index L.

D1 = defined in the MAIN routine
= $10 \log (\text{FIMPR8}) + 20 \log (\text{DIST})$

FIMPR8 = the ratio of profile and reference characteristic impedance (see subroutine TESTN).

DIST = reference distance in feet from the source (250 feet).

EAD = excess atmospheric attenuation of sound in dB over distance SX_K for frequency band index J (not defined for all J or for all SX_K).

SX_K = the Kth standard profile distance in feet (defined in the MAIN).

ATN8_J = sound absorption coefficient in dB per 1000 feet for frequency index J and profile output temperature and relative humidity.

ATNC_J = same as above except for standard day conditions (reference).

Frequency Weighted Measures

The statement label 250 loop controls the computation of the perceived noise level (PNLX), A-weighted overall sound level (ALX) and tone correction (CXD---reference distance only) for each spectrum (angle) for the Kth profile distance and Ith power setting. These data are computed only when requested by the MEAS program flag. Subroutine CPNL is called to compute the PNLX data for the Ith spectrum. If PNLX data are missing beyond the second distance, PNLX is extrapolated linearly from the last two good points:

$$PNLX_{I,K,II} = (2) (PNLX_{I,K-1,II}) - PNLX_{I,K-2,II} \quad \text{PNdB}$$

The A-weighted overall sound level for the Ith spectrum are computed by subroutine CAL. These ALX data are the final A-weighted profile data. The tone correction data are computed for the Ith spectrum and reference distance (IRD) by subroutine CPTC.

Single Event Profile Data

The PNLTX and ALTX profile data are computed by adding a smoothed tone correction to the PNLX and ALX data (label 400 loop):

$$PNLTX_{I,K,II} = PNLX_{I,K,II} + (C1) (CXD_I) \quad \text{PNdB}$$

$$ALTX_{I,K,II} = ALX_{I,K,II} + (C1) (CXD_I) \quad \text{dBA}$$

where

CXD_I = the tone correction in dB for the Ith spectrum at the reference distance.

C1 = 1.0 for distances 200 to 3150 feet.
= (0.2)(18-K) for distances 4000 to 8000 feet (K=14 to 17).
= 0.0 for distances 10000 to 25000 feet.

SUBROUTINE CPNL(FJ,I,II)

This subroutine is called from subroutine CDIST to compute the perceived noise level (PNLX) for the Ith spectrum (angle), Kth distance and IIth power setting. Function FNOY is used to compute the noy data for each SPL data point. Subroutine argument FJ is 0.15 for this 1/3 octave band data. The PNLX algorithms applied in this subroutine are the same as applied in subroutine CPNL in the OMEGA 10 program; thus no additional documentation will be given here.

FUNCTION FNOY(SPL,JJ)

This function is used in subroutine CPNL. It is the same as function FNOY described in the OMEGA 10 program documentation.

SUBROUTINE CPTC(PTC,I)

This subroutine is called from subroutine CDIST to compute the tone correction (PTC) for the Ith spectrum (angle) and the reference distance. This subroutine is the same as subroutine CPTC described in the OMEGA 10 program documentation.

SUBROUTINE CAL(I,II)

This subroutine is called from subroutine CDIST to compute the A-weighted overall sound level (ALX) for the Ith spectrum the Kth distance, and IIth power setting. The ALX algorithm is the same as described for subroutine CAL in the OMEGA 10 documentation. Many of the variable names are different in this subroutine; however, they should be defined in sufficient detail in comment statements in the listing.

SUBROUTINE PPFDAT(JL,J2,JI,L1,L2,IPR,IEDIT)

This subroutine is called from the MAIN routine to write (IEDIT>-1) the PNLTX, ALX, and/or ALTX single event profile data on file TAPE2 (unit 2) and to print (IPR>0) the PNLX, PNLTX, ALX and/or ALTX tab output on the OUTPUT file. For both types of output, only measures requested by the MEAS flag are printed. To simplify the coding and reduce the number of write statements, these profile data are stored in the blank common array SENX.

The subroutine arguments are defined as follows:

(1) J1 and J2 are the first and last indices of the SENX profile data and JI is the increment of J1 to J2.

(2) L1 and L2 are the indices of the normalized data used to compute (interpolate) the profile data for the requested power condition.

(3) IPR is the program tab print flag.

(4) IEDIT is the profile flag which controls the quantity of data printed on TAPE2.

Write Profile Datasets on TAPE2

The number of angles of profile data written on TAPE2 by the label 100 loop depends on the value of the IEDIT program flag. All 19 angles or the 10 angles selected by the EDIT routine are written for IEDIT equal to one and zero, respectively. A complete description of the content and format of the 10 angle ground run-up profile datasets is given in Appendix H. When all angles are written, the final 10 angles which most accurately describe each noise profile must be selected from these 19 angles. The tab plot of the profile data for the reference distance, printed by subroutine PLT on output page J, is included to aid in the selection of these 10 angles.

Print Single Event Data

The remainder of this subroutine (label 400 loop) prints the four single event measures (PNLX, PNLTX, ALX, and ALTX) on pages D through G, respectively. These data are printed from the SENX array using the J1, J2, and JI subroutine arguments defined above.

Subroutine HEADS is called to print each page header block. All single event data less than zero are blanked out in the printout. The content and format of these pages can best be observed by consulting the sample problem in Appendix D.

SUBROUTINE TITPG

This subroutine is called from the MAIN routine to print the cover or title page for each test. This cover page provides the following information:

- (1) The aircraft name and code from which the data were measured.
- (2) The program used in the test analysis.
- (3) The date of the computer run.
- (4) The types of data computed and printed for the test.

The content and format of this title page can best be understood by consulting the sample problem in Appendix D. With this sample problem title page as a guide, there should be no problem in following the coding.

SUBROUTINE PLT(IRD,JJ1,JJ2,JJI)

This subroutine is called from the MAIN routine to print a plot of PNLTX, ALX, and ALTX versus angle. These data are for the reference distance (IRD = 250 feet) from the profile datasets. The content and format of this plot can best be understood by consulting page J in the sample problem in Appendix D. This plot simplifies the selection or checking of the 10 angles which most accurately describe the profile data.

The JJ1, JJ2 and JJI subroutine arguments are the indices and the index increment of these profile measures in array SENX. IRD is the index of the reference distance in array SENX.

Method

The first segment of this subroutine initializes the P plot array, calls subroutine HEADS to print the page header block, and prints the plot symbol identification line, the top border line and

the first grid line below the header block. The label 25 loop determines the maximum PNLTX value which is then used to set up the abscissa scale values. The maximum annotated scale value is the first multiple of ten greater than this maximum PNLTX. The minimum value is 100 less than the maximum. The actual minimum and maximum values are two less and two greater than these annotated scale values.

The label 200 loop sets up and prints the plot for each of the 19 angles. The ordinate annotation and title and grid pattern are determined from the angle index I. The label 120 loop scales the PNLTX, ALX and ALTX data for the Ith angle and sets up the corresponding symbol in the plot array. The data are then printed and the plot array is reinitialized with the data stored in array SAV. There should be sufficient comments in the coding to follow the setup and printing of the data.

SUBROUTINE RANK(IREQ,IERR)

This subroutine is called from the MAIN routine to determine the reference data (one or two datasets) required to compute the profile output for each requested output power setting (PSC or PSCF). The indices of these reference data are stored in array IREQ for each power setting. Subroutine argument IERR is a program error flag which is returned greater than zero when errors occurred in this subroutine.

Method

The DECODE function is used to convert the input (PS) and output (PSC) power setting data from character format to floating point. The floating point data are required for ranking and interpolating the data.

Next this subroutine ranks all normal reference file power setting data (PSIF) and all normal requested output power setting data (PSCF). The special case data which may not be interpolated (Afterburner, Wet and With Jets) are not ranked. These ranked power setting data are then used to determine which reference data are

required to interpolate profile data for each (IC) output power setting. Indices of these reference data are defined in array IREQ for each output power setting. If profile data for the same reference power setting are required to interpolate profile data for two or more consecutive output power settings, the index of this reference power setting is stored in consecutive columns in the same row in array IREQ.

Profile data at these reference power settings are later extrapolated from the reference SPL spectra (see MAIN routine) as requested in array IREQ; thus, only those profile reference data required to interpolate data at the profile output power settings are extrapolated by the program. Also, to conserve storage, reference profile data storage is limited to the two power settings required to compute each output profile power setting; however, IREQ is checked to avoid duplicate reference profile computations.

There should be sufficient comments in the coding to follow the setup of the IREQ index array.

SUBROUTINE SUMRY(IREQ, IEDIT, FMXER)

This subroutine is called from the MAIN routine to print the OMEGA 11 summary page which lists job identification parameters as well as a summary of the input and output data. This page is the only tab output when the program print flag, IPR, is less than one. The subroutine arguments are defined as follows:

(1) IREQ is an array containing the indices of the reference datasets used to interpolate the profile data.

(2) IEDIT is a program flag which controls the editing of the profile data.

(3) FMXER is the maximum error permitted in the EDIT subroutine.

If the sample problem summary page is used as a guide, the coding in this subroutine should be easy to follow.

SUBROUTINE EDIT(IRD,J1,J2,JI,ACC,PSC,PSU,FMXER)

This subroutine is called from the MAIN routine to select the ten angles for each measure (PNLTX, ALX and ALTX) which best define the angle versus noise level data for that measure at the reference distance (250 feet). Actually only eight angles are selected by this routine, since angles 0 and 180 degrees are always included. Reference distance profile data for all three measures at all 19 angles are used to compute the three sets of ten angles, even though only one or two of the measures are required for the data analysis (see MEAS program flag).

The subroutine arguments are defined as follows:

- (1) IRD is the index of the reference distance.
- (2) J1 and J2 are the indices of the PNLTX and ALTX data in array SENXD and JI is the index increment (ALX data is in index J1 + JI).
- (3) ACC is aircraft code, PSC is the power setting for which the data are being computed, and PSU are the power setting units.
- (4) FMXER is the maximum error permitted in this EDIT routine (default FMXER=5.0).

Method

The following outline describes the method used to obtain the best set of ten angles:

- (1) Compute the 18 angle to angle changes in PNdB or dBA for each measure (slopes) and store in array SL.
- (2) Compute the 17 changes in slope (DSL) for each measure and assign to angles 10, 20, ..., 170 degrees. Store these data in array DSL.
- (3) Rank the absolute values of these 17 changes in slope (DSL) for each measure (label 50 loop).
- (4) The eight angles with the largest rank (ie. largest change in slope; rank 10 to 17) plus angles 0° and 180° will be the initial guess for the desired 10 angles for each measure. There are three sets of 10 angles, one for each measure. The rank data are stored in array NR.

(5) Using the selected 10 angles and linear interpolation, compute the difference between the original and interpolated data for each angle; ie., compute the error. The error for the 10 selected angles will always be zero; thus, the RMS of the error is computed only for the 9 remaining angles:

$$RMS = \frac{\Sigma(ERROR)^2}{9} .$$

These error data are computed by subroutine ERR.

(6) Compute the error and RMS error described in step 5 above for each measure three times using the three sets of angles (step 4) for each measure. For example, for PNLTX compute the RMS of the error using the angles selected for PNLTX, ALX and ALTX. For each measure, save the angles, error data and RMS for the smallest RMS error (see statement label 150 and 200 loops).

(7) Determine the angle with the largest error using the error data in step 6 above (for one measure at a time). If this error is greater than ERMAX (ERMAX=1.49 dB), select this angle as one of the eight to be chosen and, one at a time, delete each of the eight angles previously selected computing the error and RMS error for each of the eight sets. Determine the best of the eight RMS values and, if better than the RMS in step 6 above, revise the angle set for this measure. If no improvement is found, repeat the above using the second largest error greater than ERMAX. This step is performed by subroutine ITER called from this routine.

(8) Repeat step 7 above a maximum of five times (in subroutine ITER) or until all error are less than ERMAX (maximum of five passes including the second, third etc., largest error passes).

(9) Repeat steps 7 and 8 above for each of the three measures (label 200 loop).

(10) At this point we have revised sets of angles (compared with step 6 above) for a measure only if one or more errors were greater than ERMAX for that measure. If any angle sets have been revised, repeat steps 6 through 9 above using the new angle sets instead of those from step 4; otherwise, use angle sets selected

in step 6 as final values for each measure. The repeat of steps 6 through 9 are computed by the statement label 220 and 230 loops which also use subroutines ERR and ITER.

(11) Return the angle set for each requested measure to the MAIN routine in array NR. The angle set consists of those angles whose rank is from 10 to 17 in array NR. Print error messages if the interpolation errors using these final selected angles exceed FMXER (default FMXER=5.0).

SUBROUTINE ERR(J,JA,NRA,RMSA,ERA,JM)

This subroutine is called from subroutines EDIT and ITER to compute the error data as described in step 5 in subroutine EDIT. The subroutine arguments are:

- (1) J is the measure index of the original data.
- (2) JA is the measure index in the rank (NRA), error (ERA) and RMS error (RMSA) arrays. JA indicates the angle set being used to interpolate the above J measure data.
- (3) NRA, ERA and RMSA are defined in (2) above.
- (4) JM is the variable dimension of arrays NRA, ERA and RMSA.

Method

Subroutine FINTP is called to linearly interpolate the PNdB or dBA levels of the nine angles with rank less than ten. The error data are then computed as follows:

$$ERA_{I,JA} = SENX_{I,J} - DBC_I$$

$$RMSA_{JA} = \left[\frac{1}{9} \sum_I (ERA_{I,JA})^2 \right]^{1/2}$$

where

$ERA_{I,JA}$ = the interpolation error in PNdB or dBA for the I^{th} angle and measure index JA.

$SENX_{I,J}$ = the computed measure data in PNdB or dBA for angle I and measure J.

DBC_I = the interpolated measure value in PNdB or dBA
 for angle I.
 $RMSA_{JA}$ = the RMS error for measure index JA.

The above error data ($ERA_{I,JA}$) are zero for the eight angles with rank greater than nine; thus the RMS error are computed by dividing the sum of the error data by nine.

SUBROUTINE FINTP(AG,DBC,X,Y)

This is a linear interpolation subroutine called by subroutine ERR to interpolate the measure data for angles with rank less than ten. Arrays X and Y contain the angle and corresponding noise level data (PNdB or dBA) for angles 0 and 180 degrees plus the eight angles with rank greater than nine. Array AG contains the 19 angle values in ten degree increments from 0 to 180 degrees. Array DBC contains the noise level computed by this subroutine for the 19 angles.

Method

For angles defined in array X (rank greater than 9), DBC_J is set equal to the given noise level:

$$DBC_J = Y_L \quad \text{PNdB or dBA}$$

where

DBC_J = noise level for the J^{th} angle.

Y_L = the given noise level corresponding to angle X_L
 which is the same as angle AG_J .

For angles which must be interpolated the linear interpolation function is:

$$DBC_J = Y_{L1} + (Y_L - Y_{L1}) \left(\frac{X_I - X_{L1}}{X_L - X_{L1}} \right) \quad \text{PNdB or dBA}$$

where

DBC_J = the interpolated noise level for the J^{th} angle.
 XI = angle AG_J .
 L = the index of the first angle in array X greater than XI .
 $L1$ = $L - 1$.
 X_L = first angle greater than XI .
 X_{L1} = first angle less than XI .
 Y_L = given noise level corresponding to angle X_L .
 Y_{L1} = given noise level corresponding to angle X_{L1} .

SUBROUTINE ITER(J,JMN,ICK,ERMAX,NRD)

This subroutine is called from subroutine EDIT to perform the iterations described in steps 7 and 8 in subroutine EDIT. The subroutine arguments are:

- (1) J is the index of the original measure data and of the rank (NRD) and RMS error (RMS) data.
- (2) JMN is the index of the minimum error set in array ER.
- (3) ICK is an error flag which is one when an error greater than $ERMAX$ was found in this routine. This usually results in a change in rank (angles selected).
- (4) $ERMAX$ is a dB level defined in subroutine EDIT. An attempt is made to improve the angle selection for interpolation errors greater than or equal to this level.
- (5) NRD is a dummy rank array.

APPENDIX A
OMEGA 10 CODE SHEETS AND SETUP PROCEDURE

This Appendix contains the standard procedure for setup and execution of the OMEGA 10 program which includes the OMEGA 10 program code sheets and a detailed description of each code sheet parameter and alphanumeric data field.

OMEGA 10 PROGRAM CODE SHEET

I. JOB CONTROL CARD (One Per Job):

Col. 1 _ _ b _ _ b _ _ DATE; eg 29 JUN 77
 11 _ _ _ _ _ DATN; Data in DAMOYR form, eg. 290677
 18 _ _ _ IPR [0-- no print]
 20 _ _ MEAS(1) EPNL [0 for IPR=0; 1 for IPR=1]
 22 _ _ MEAS(2) SELT [0 for IPR=0; 1 for IPR=1]
 24 _ _ MEAS(3) SEL [1 for IPR=0; 1 for IPR=1]
 26 _ _ IPU [1 for IPR=0; 0 for IPR=1]

II. OUTPUT PARAMETERS FOR EACH AIRCRAFT (2 or 3 Cards):

Card #1

Col. 1 _ _ _ ACC
 4 _ _ _ ITEMP [59°F]
 7 _ _ _ IRHUM [70%]
 11 _ _ _ PV [w]
 13 _ _ _ CRI [0]
 15 _ _ _ DELN [0.0]
 20 _ _ NP
 22 _ _ _ _ _ PSU (left justify)

Card #2 (Profile Output Power Data)

Col. 1 _ _ _ _ _ PSC #1	Col. 6 _ _ _ VX	Col. 9 _ _ _ OPCR	Col. 11 _ _ _ OPCC [81]
13 _ _ _ _ _ PSC #2	18 _ _ _ VX	21 _ _ _ OPCR	23 _ _ _ OPCC [82]
25 _ _ _ _ _ PSC #3	30 _ _ _ VX	33 _ _ _ OPCR	35 _ _ _ OPCC [83]
37 _ _ _ _ _ PSC #4	42 _ _ _ VX	45 _ _ _ OPCR	47 _ _ _ OPCC [84]
49 _ _ _ _ _ PSC #5	54 _ _ _ VX	57 _ _ _ OPCR	59 _ _ _ OPCC [85]
61 _ _ _ _ _ PSC #6	66 _ _ _ VX	69 _ _ _ OPCR	71 _ _ _ OPCC [86]

Card #3 (Profile Output Power Data Conti.; required only when NP>6)

Col. 1 _ _ _ _ _ PSC #7	Col. 6 _ _ _ VX	Col. 9 _ _ _ OPCR	Col. 11 _ _ _ OPCC [87]
13 _ _ _ _ _ PSC #8	18 _ _ _ VX	21 _ _ _ OPCR	23 _ _ _ OPCC [88]
25 _ _ _ _ _ PSC #9	30 _ _ _ VX	33 _ _ _ OPCR	35 _ _ _ OPCC [89]
37 _ _ _ _ _ PSC #10	42 _ _ _ VX	45 _ _ _ OPCR	47 _ _ _ OPCC [90]
49 _ _ _ _ _ PSC #11	54 _ _ _ VX	57 _ _ _ OPCR	59 _ _ _ OPCC [91]
61 _ _ _ _ _ PSC #12	66 _ _ _ VX	69 _ _ _ OPCR	71 _ _ _ OPCC [92]

(Right Justify "PSC" Data)

III. TERMINATE SETUP DECK WITH AN "END OF RECORD" OR "END OF JOB" CARD

- (1) Repeat section II for each aircraft set in the job.
- (2) [] -- Program default values for the above parameters.
- (3) See Standard Procedure for Setup and Execution of the OMEGA 10 Program for above parameter definitions.

STANDARD PROCEDURE FOR SETUP
AND
EXECUTION OF THE OMEGA 10 PROGRAM

1) The OMEGA 10 setup deck must contain the following:

- (a) One job control card:
- (b) One, two or three output parameter cards for each set of profile data for each aircraft.

The parameters required for each card are listed on the OMEGA 10 code sheet and described in detail in Steps 2 and 3 below.

2) Fill in the OMEGA 10 code sheet job control card parameters were default conditions do not apply (code sheet Item I).

The required parameters are defined as follows:

- (a) The DATE in columns 1 to 9 will be printed on all output pages and in the first comment line in each profile data-set (9 alphanumeric characters).
- (b) The date in the day, month, year form (DATN) in columns 11 to 16 is printed as part of the run identification on all the plot pages (G, J, K, N, and O). It is not used in the no-print mode and thus may be left blank on the code sheet.
- (c) The value of IPR (integer) sets the print (IPR=1) or no-print (IPR=0 or blank) mode of the OMEGA 10 job. In the no print mode (default), only error messages and the summary page are printed on the OUTPUT file (TAPE6) and only the measure requested on the code sheet is computed. In the print mode, all seven measures are computed and all output are printed on the OUTPUT file.
- (d) The MEAS(1), MEAS(2) and MEAS(3) parameters (integers) determine which noise measures (EPNL, SELT and SEL respectively) are computed by the program. In the print mode (IPR=1), all three are always set equal to one by the program because all three measures are required; thus they may be left blank on the code sheet. In the no-print mode (IPR=0 or blank), measure data will be computed only for the one MEAS parameter which is greater than zero (default is MEAS(3)=1 and SEL is computed). Note that the PNL, PNLT, AL and ALT noise measures are always computed and printed in the print mode; however they cannot be written to file TAPE3.

- (e) IPU (integer) controls the printing of the profile datasets on file TAPE3 which may be equivalenced or copied to the PUNCH file. For IPU equal blank or zero (default for IPR=1), no data are written on TAPE3. For IPU equal to one (default for IPR=0 or blank), all profile data are written on TAPE3.
- 3) Fill in the OMEGA 10 code sheet output parameters for each aircraft where default parameters do not apply (code sheet Item II). One, two, or three cards are required for each aircraft set depending on the value of NP defined below. The required parameters are defined as follows:
- (a) ACC must be a three character numeric aircraft code. ACC is part of the profile dataset COMDECK name and part of the output profile identification required by the NOISEMAP program. It is also used to search the reference file for the required reference data.
 - (b) ITEMP and IRHUM (integers) are the output temperature (°F) and relative humidity (%), respectively. The default values listed on the code sheet are for standard day conditions.
 - (c) PV is an alphanumeric profile version code (usually alpha) which is printed on all output and is the second last character in the profile COMDECK name. One function of PV would be to make COMDECK names unique when the same aircraft data are run for different weather conditions (NOISEMAP does not read the PV code).
 - (d) CRI is an alphanumeric COMDECK revision identifier (usually integer) which is printed on the summary page and is the last character in the profile COMDECK name. CRI is designed to make COMDECK names unique when several revisions of the same data are stored in the NOISEFILE 3 and 4 data bases. The CRI default value will normally apply (not read by the NOISEMAP program).
 - (e) DELN (or "DELTA N) is the dB level to be added to all reference data for this aircraft (floating point or right justified integer). It is printed on the summary profile data pages and is typically used to adjust data for multiple engines.
 - (f) NP is the number of power settings (PSC's) to be computed for this ACC. If NP is zero or blank, profile data are computed for all operation power codes (for ACC) in the reference file with the reference file airspeed and power settings; also the output operation power codes (OPCC) are the same as the operation power codes in the reference file (that is, for NP=0, cards two and three are not read by the program). NP must be an integer less than or equal to 12.

- (g) PSU is the power setting unit which applies to the PSC data. PSU is also used to select the reference file power setting data; thus it must exactly match (including blanks) one of the units in the reference file or the ACC data will be terminated. PSU must be left justified in the 6 character field (alphanumeric). For the NP=0 option, the PSU field may be left blank in which case the first power setting data will be carried with the profile data.
 - (h) The PSC's are the power setting values for which profile data are computed. The PSC data may be listed as integer or floating point in any desired sequence, but in either case must be right justified in the five character field. Note that each reference dataset contains the source power setting in one, two, or three different units in the third comment card. The PSU parameter described in item 3g above specifies which of these power settings the OMEGA 10 program will use to interpolate the profile data. The PSC's are printed in the third comment card in each profile dataset, on all profile output pages, and on the summary page.
 - (i) The VX's are the airspeed values (right justified integers) in knots to which the profile data are adjusted. They are printed in the first comment line in each profile dataset, on all profile data output pages, and on the final summary page.
 - (j) The OPCR's (numeric with leading zero) are reference file operation power codes which determine the operation power descriptions of the profile data and the reference points (SEL, SELT, or EPNL versus power setting) from which the measure data for the PSC power settings are interpolated or extrapolated (the slope line passes through this reference point). The COMDECK names of the reference file datasets for this reference point and for the two slope points are printed on the summary page.
 - (k) The OPCC's are two character numeric operation power codes assigned to the output profile data. The OPCC are part or the COMDECK name and are also part of the profile identification used by the NOISEMAP program. Default values are 81 to 92. For NP equal to zero, the OPCC's are set equal to be reference file OPC's.
- 4) The following comments apply to the PSC, VX and OPCR data:
- (a) For OPCR equal to 01, 02, 08, 09, 10, 17, 18 or 19, the PSC power setting must be the same as the reference file power setting or the PSC data will be deleted from the run; that is, no extrapolation or interpolation is permitted for these OPCR's. For OPCR equal to 17, 18 or 19, the VX airspeed must also be the same as the reference file airspeed.

- (b) For OPCR equal to 15 or 16 and PSC not equal to the reference file power setting, both OPC's 15 and 16 must be in the reference file.
 - (c) When the PSC power setting is the same as the reference file power setting designated by OPCR, then only the OPCR reference file data are required to compute the PSC profile data. For all other cases where PSC is not the same, at least one additional reference file dataset is required to apply the Δ "6 rules. It is assumed here that the individual completing the code sheet is familiar with the Δ "6 rules or at least the Δ "6 requirements and limitations.
 - (d) If new operation power codes are added to the reference file, the OMEGA 10 program must be modified to apply the Δ "6 rules to the new OPC's.
- 5) Repeat Step 3 above for each set of profile data for each aircraft in the job. If two or more sets of profile data are required for the same aircraft because of additional PSC's or different DELN or weather data, the program uses the reference data read for the previous set and thus avoids searching the reference file for the same data. Since NOISEMAP uses an ID composed of the ACC and OPCC codes, computer jobs run for NOISEMAP input can not use the default OPCC for multiple sets for the same ACC; however, for jobs unrelated to NOISEMAP, PV or CRI codes can be used to make the COMDECK names unique.
- 6) The program will read the reference data from file "TAPE7" (or unit 7). These data must be on disk, tape or cards in card image format; not in the NOISEFILE 4 CDC UPDATE format. The program rewinds the TAPE7 file before searching for the aircraft (ACC) data; thus, aircraft sequence is not important in the OMEGA 10 job or on file TAPE7 (all data for each aircraft must be back to back in TAPE7). The program reads and stores all reference data for all operation power codes (MAX of 6) available on TAPE7 for aircraft ACC. If TAPE7 contains more than six operation power codes for aircraft ACC, a warning message is printed and only the first six are read and stored by the program.

- 7) Execution of the OMEGA 10 program requires a CM of 54000₈.
The files are setup as follows:

OMEGA10(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7,TAPE3)

where TAPE7 is the reference file and TAPE3 is the profile dataset output file.

- 8) After execution of the computer job, the following data are available:
- (a) The summary pages and all other tab printout are on the OUTPUT file or any file equivalenced to the OUTPUT file at execution time.
 - (b) The profile data are on file "TAPE3" which may be punched, copied onto tape or cataloged as a permanent disk file. It may be desirable to rewind the TAPE3 file and do a COPYSBF onto the OUTPUT file to obtain a listing of the profile data.
- 9) Data for aircraft code ACC will be deleted from the computer job and an error message printed when one or more of the following problems occur:
- (a) The PSU from the code sheet doesn't match the first power setting units for ACC in the reference file.
 - (b) There is an error in the operation power code, aircraft code, or card sequence in one or more reference file data cards.
 - (c) The reference file minimum slant range is not within 1% of a standard profile distance.
 - (d) No reference data were found for this aircraft in the reference file.
- 10) Data for operation power code OPCC will be deleted from the aircraft set and an error message printed when one or more of the following occur:
- (a) There is insufficient data for extrapolation or interpolation to the PSC power setting.
 - (b) The reference file and the PSC power settings are not equal as required for this OPCR.
 - (c) The reference file and the VX airspeeds are not the same as required for this OPCR.

- (d) The reference operation power code (OPCR) was not found in the reference file.
- 11) Warning messages are printed when one or more of the following occur:
 - (a) The reference file contains more than six datasets; only the first six are read for this aircraft.
 - (b) The reference file minimum slant range is not equal to 1000 feet as assumed by the program in subroutines DELTA6 and PPFDAT.
 - (c) The PSC for NORMAL RATED THRUST (OPCR=12) is less than the reference file APPROACH power setting.
- 12) The entire computer job is terminated when an "END of FILE" is read from the input file. This is the normal job termination.

APPENDIX B
OMEGA 11 CODE SHEETS AND SETUP PROCEDURE

This Appendix contains the standard procedure for setup and execution of the OMEGA 11 program which includes the OMEGA 11 program code sheets and a detailed description of each code sheet parameter and alphanumeric data field.

OMEGA 11 PROGRAM CODE SHEET

I. JOB CONTROL CARD (One Per Job):

COL. 1 b b b DATE: eg. 12 APR 77

12 IPR [0]

13 IEDT [0]

16 MEAS(1) FNLT [0]

18 MEAS(2) AL [0]

20 MEAS(3) ALT [0]

21 FMXER [5.0 dB]

II. OUTPUT PARAMETERS FOR EACH AIRCRAFT (2 Cards):

<u>Card #1</u>		<u>Card #2 (Profile Output Power Data)</u>	
COL. 1	ACC	COL. 1	NP
8	ITQ[59]	2	
11	PH[29.92]	11	PSU (LEFT JUSTIFY)
18	IH8[70]	21	PSC #1 COL. 17 IFC
22	PV[W]	31	PSC #2 27 IFC
24	CRJ[0]	41	PSC #3 37 IFC
26	DELN[0.0]	51	PSC #4 47 IFC
		59	PSC #5 57 IFC
		69	PSC #6 67 IFC
			(RIGHT JUSTIFY "PSC" DATA)
		COL. 19	OPCQ[91]
		29	OPCQ[92]
		39	OPCQ[93]
		49	OPCQ[94]
		59	OPCQ[95]
		69	OPCQ[96]

2nd AIRCRAFT

<u>Card #1</u>		<u>Card #2</u>	
COL. 1	ACC	COL. 1	NP
8	ITQ[59]	2	
11	PH[29.92]	11	PSU (LEFT JUSTIFY)
18	IH8[70]	21	PSC #1 COL. 17 IFC
22	PV[W]	31	PSC #2 27 IFC
24	CRJ[0]	41	PSC #3 37 IFC
26	DELN[0.0]	51	PSC #4 47 IFC
		59	PSC #5 57 IFC
		69	PSC #6 67 IFC
			(RIGHT JUSTIFY "PSC" DATA)
		COL. 19	OPCQ[91]
		29	OPCQ[92]
		39	OPCQ[93]
		49	OPCQ[94]
		59	OPCQ[95]
		69	OPCQ[96]

III. TERMINATE SETUP DECK WITH AN "END OF RECORD" OR "END OF JOB" CARD

- (1) Repeat section II, cards 1 and 2 for each aircraft set in the job.
- (2) [] -- Program default values for above parameters.
- (3) See Standard Procedure for Setup and Execution of the OMEGA 11 Program for parameter definitions.

STANDARD PROCEDURE FOR SETUP
AND
EXECUTION OF THE OMEGA 11 PROGRAM

- 1) The OMEGA 11 setup deck must contain the following:
 - (a) One job control card;
 - (b) Two output parameter cards for each set of profile data for each aircraft.

The parameters required for each card are listed on the OMEGA 11 code sheet and described in detail in Steps 2 and 3 below.

- 2) Fill in the OMEGA 11 code sheet job control card parameters where default conditions do not apply (code sheet Item I).
The required parameters are defined as follows:
 - (a) The DATE in columns 1 to 9 will be printed on all output pages and in the first comment line in each profile dataset (9 alphanumeric characters).
 - (b) The value of IPR determines the quantity of tab printout on the OUTPUT file. If IPR is zero or blank, only the summary page and program error messages are printed for each aircraft. If IPR is greater than zero, all tab output are printed (IPR must be an integer).
 - (c) The value of IEDIT determines the quantity of profile dataset output written of file TAPE2. If IEDIT is zero or blank, the profile datasets for each requested measure contain data for the 10 angles which best define the profile data (using linear interpolation) from 0° to 180°. If IEDIT is greater than zero, profile data for all 19 angles are written on TAPE2; for IEDIT less than zero, all profile data are omitted from TAPE2 (IEDIT must be an integer).
 - (d) The MEAS(1), MEAS(2) and MEAS(3) parameters determine which noise measures (PNLT, AL and ALT respectively) are computed by the program. If all three are zero or blank, all measures are computed; otherwise, only measures corresponding to MEAS greater than zero are computed (all MEAS must be integer).
 - (e) The value of FMXER is the maximum linear interpolation error permitted in the angle selection routine. For errors greater than FMXER, error messages are printed but the aircraft analyses are not terminated. Typically, the largest error in a relatively smooth profile is 1.0 to 1.5 dB or less. FMXER which applies only when IEDIT is zero or blank must be listed as a floating point number or right justified integer (default is 5.0 dB).

- 3) Fill in the OMEGA 11 code sheet output parameters for each aircraft where default parameters do not apply (code sheet Item II). The required parameters are defined as follows:
- (a) ACC must be a three character numeric aircraft code. ACC is part of the profile dataset COMDECK name and part of the output profile identification required by the NOISEMAP program. It is also used to search the reference file for the required reference data (see Step 4 below regarding multiple sets for the same aircraft code).
 - (b) IT8, P8 and IH8 are the output temperature (°F), barometric pressure (in Hg) and relative humidity (%) respectively. The default values listed on the code sheet are for standard day conditions. IT8 and IH8 must be integers and P8 must be floating point.
 - (c) PV is an alphanumeric profile version code (usually alpha) which is printed on all tab output and is the second last character in the profile COMDECK name. One function of PV would be to make COMDECK names unique when the same aircraft data are run for different weather conditions (NOISEMAP does not read the PV code).
 - (d) CRI is an alphanumeric COMDECK revision identifier (usually integer) which is printed on the summary page and is the last character in the profile COMDECK name. CRI is designed to make COMDECK names unique when several revisions of the same data are stored in the NOISEFILE 3 and 4 databases. The CRI default value will normally apply (not read by the NOISEMAP program).
 - (e) DELN (or "DELTA N") is the dB level to be added to all reference data for this aircraft (floating point or right justified integer). It is printed on the summary and reference data pages and is typically used to adjust data for multiple engines.
 - (f) NP is the number of power settings (PSC's) to be computed for this ACC. If NP is zero or blank, profile data are computed for all operation power codes (for ACC) in the reference file; also the output operation power codes (OPCC) are the same as the operation power codes in the reference file (that is, for NP=0, card 2 columns 2 to 70 are not read by the program). NP must be an integer less than or equal to 6.
 - (g) PSU is the power setting unit which applies to the PSC data. PSU must exactly match (including blanks) the units in the reference file or the ACC data will be terminated. PSU must be left justified in the 6 character field (alphanumeric). Note that the program checks only the first power setting data in the reference file; thus only the first reference file power setting can be used to interpolate profile data.

- (h) The PSC's are the power setting values for which profile data are computed. All PSC values must lie within the extremes available on the reference file. For uniformity, list special case PSC data (IFC=1) first followed by the normal PSC data (IFC=0); each in sequence from low to high (not required by the program). The PSC data may be listed as integer or floating point, but in either case must be right justified in the five character field. Note that each reference dataset contains the source power setting in one, two, or three different units in the third comment card; however, only the first power setting (value and units) is used for interpolation by the OMEGA 11 program.
 - (i) IFC is a program flag used to separate the AFTERBURNER, WET or WITH JETS special case data from the normal power data. IFC must be zero or blank for normal data and one (1) for special case data. For special case data (IFC=1), no interpolation is permitted and thus PSC must be exactly the same as the power setting in the normalized file.
 - (j) The OPCC are two character numeric operation power codes assigned to the output profile data. The OPCC are part of the COMDECK name and are also part of the profile identification used by the NOISEMAP program. Default values are 91 to 96.
- 4) Repeat Step 3 above for each set of profile data for each aircraft in the job. If two or more sets of profile data are required for the same aircraft because of additional PSC's or different DELN or weather data, ACC should be set equal to "****"; however, all other parameter must be defined or default conditions apply. When ACC=****, the program uses the reference data read for the previous set and thus avoids searching the reference file for the same data. Since NOISEMAP uses an ID composed of the ACC and OPCC codes, computer jobs run for NOISEMAP input can not use the default OPCC for multiple sets for the same ACC; however, for jobs unrelated to NOISEMAP, PV or CRI codes can be used to make the COMDECK names unique.
- 5) The program will read the reference data from file "TAPE7" (or unit 7). These data must be on disk, tape or cards in card image format; not in the NOISEFILE 4 CDC UPDATE format. The program rewinds the TAPE7 file before searching for the aircraft (ACC) data; thus, aircraft sequence is not important in the OMEGA 11 job or on file TAPE7 (all data for each aircraft

must be back to back in TAPE7). The program reads and stores all reference data for all operation power codes (MAX of 6) available on TAPE7 for aircraft ACC. If TAPE7 contains more than six operation power codes for aircraft ACC, all computations for that aircraft are terminated (one exception: if all IFC=0, special case data are not stored). The first Test number and Noise Source/Subject description read from the reference file (TAPE7) are the Test and Noise Source/Subject description used for this set of profile data for this aircraft. Run number is assigned from 01 to 06 in sequence of the PSC output.

- 6) After execution of the computer job, the following data are available:
 - (a) The summary pages and all other computer printouts are on the OUTPUT file or any file equivalenced to the OUTPUT file at execution time.
 - (b) The profile data are on file "TAPE2" which may be punched, copied onto tape or cataloged as a permanent disk file. It may be desirable to rewind the TAPE2 file and do a COPYSBF onto the OUTPUT file to obtain a listing of the profile data.
- 7) Execution of the OMEGA 11 program requires a CM of 60000₈. The files are setup as follows:

```
OMEGA11(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7,TAPE2)
```

where TAPE7 is the reference file and TAPE2 is the profile dataset output file.
- 8) Data for aircraft code ACC will be deleted from the computer job and an error message printed when one or more of the following problems occur:
 - (a) No reference data are found for ACC in TAPE7.
 - (b) TAPE7 contains data for more than the maximum (6) number of operation power codes for ACC.
 - (c) Error in reference dataset input caused by missing or extra data cards (angle ID errors).
 - (d) The PSU from the code sheet doesn't match the first power setting units for ACC in TAPE7.

- (e) The requested special case power setting (PSC for IFC=1) was not found in TAPE7.
 - (f) One or more requested power settings (PSC's) are outside the range of the power setting data available in TAPE7.
- 9) The entire computer job will be terminated when either of the following occur:
- (a) The number of power settings requested (NP) is greater than the maximum number permitted (NPM=6). An error message will be printed.
 - (b) An "END OF FILE" is read from this input file. This is the normal job termination.

APPENDIX C
OMEGA 10 SAMPLE PROBLEM

This sample problem for the OMEGA 10 program inputs the flight noise reference datasets for the C-141 aircraft from the NOISEFILE 4 database and interpolates profile data for the power settings requested on the code sheet. The following items are included in this Appendix:

- (1) The completed OMEGA 10 code sheet.
- (2) A listing of the code sheet and reference file input data.
- (3) The tab output.
- (4) A listing of the flight noise profile datasets written on file TAPE3.

OMEGA 10 PROGRAM CODE SHEET

I. JOB CONTROL CARD (One Per Job):

Col. 1 15 b M A R b Y 1 DATE; eg 29 JUN 77
 11 15 Q 3 8 1 DATN; Data in DAMOYR form, eg. 290677
 18 / IPR [0-- no print]
 20 MEAS(1) EPNL [0 for IPR=0; 1 for IPR=1]
 22 MEAS(2) SELT [0 for IPR=0; 1 for IPR=1]
 24 MEAS(3) SEL [1 for IPR=0; 1 for IPR=1]
 26 / IPU [1 for IPR=0; 0 for IPR=1]

II. OUTPUT PARAMETERS FOR EACH AIRCRAFT (2 or 3 Cards):

Card #1

Col. 1 027 ACC
 4 75 ITEMP [59°F]
 7 80 IRHUM [70%]
 11 7 PV [w]
 13 / CRI [0]
 15 DELN [0.0]
 20 2 NP
 22 EP8 PSU (left justify)

Card #2 (Profile Output Power Data)

Col. 1 <u>1</u> <u>90</u> PSC #1	Col. 6 <u>250</u> VX	Col. 9 <u>03</u> OPCR	Col. 11 <u>03</u> OPCC [81]
13 <u>1</u> <u>70</u> PSC #2	18 <u>320</u> VX	21 <u>04</u> OPCR	23 <u> </u> OPCC [82]
25 <u> </u> <u> </u> PSC #3	30 <u> </u> <u> </u> VX	33 <u> </u> OPCR	35 <u> </u> OPCC [83]
37 <u> </u> <u> </u> PSC #4	42 <u> </u> <u> </u> VX	45 <u> </u> OPCR	47 <u> </u> OPCC [84]
49 <u> </u> <u> </u> PSC #5	54 <u> </u> <u> </u> VX	57 <u> </u> OPCR	59 <u> </u> OPCC [85]
61 <u> </u> <u> </u> PSC #6	66 <u> </u> <u> </u> VX	69 <u> </u> OPCR	71 <u> </u> OPCC [86]

Card #3 (Profile Output Power Data Conti.; required only when NP>6)

Col. 1 <u> </u> <u> </u> <u> </u> <u> </u> PSC #7	Col. 6 <u> </u> <u> </u> <u> </u> VX	Col. 9 <u> </u> <u> </u> OPCR	Col. 11 <u> </u> <u> </u> OPCC [87]
13 <u> </u> <u> </u> <u> </u> <u> </u> PSC #8	18 <u> </u> <u> </u> <u> </u> VX	21 <u> </u> <u> </u> OPCR	23 <u> </u> <u> </u> OPCC [88]
25 <u> </u> <u> </u> <u> </u> <u> </u> PSC #9	30 <u> </u> <u> </u> <u> </u> VX	33 <u> </u> <u> </u> OPCR	35 <u> </u> <u> </u> OPCC [89]
37 <u> </u> <u> </u> <u> </u> <u> </u> PSC #10	42 <u> </u> <u> </u> <u> </u> VX	45 <u> </u> <u> </u> OPCR	47 <u> </u> <u> </u> OPCC [90]
49 <u> </u> <u> </u> <u> </u> <u> </u> PSC #11	54 <u> </u> <u> </u> <u> </u> VX	57 <u> </u> <u> </u> OPCR	59 <u> </u> <u> </u> OPCC [91]
61 <u> </u> <u> </u> <u> </u> <u> </u> PSC #12	66 <u> </u> <u> </u> <u> </u> VX	69 <u> </u> <u> </u> OPCR	71 <u> </u> <u> </u> OPCC [92]

(Right Justify "PSC" Data)

III. TERMINATE SETUP DECK WITH AN "END OF RECORD" OR "END OF JOB" CARD

-
- (1) Repeat section II for each aircraft set in the job.
 - (2) [] -- Program default values for the above parameters.
 - (3) See Standard Procedure for Setup and Execution of the OMEGA 10 Program for above parameter definitions.

OMEGA 10 SAMPLE PROBLEM CODE SHEET INPUT FILE:

15 MAR 82 150382 1 1
027 75 50 Z 1 2EPR
1.902500303 1.7032004

OMEGA 10 REFERENCE FILE INPUT DATA (FILE TAPE7):

COMMENT 02703180 OMEGA 6.7 27 DEC 79 C-141 1000 FT 250 KTS 59 F 70 PCT
COMMENT 02703180 TURBOFAN NO DRAG
COMMENT 02703180 TAKEOFF POWER 1.90 EPR
2670271032712791C-141 TAKEOFF POWER 8 1000 250 878
267027103271279211451166 9991020110510581071 21 733 773 787 894 929 934 867 90
2670271032712793 911 313 843 302 886 887 879 879 884 866 924 866 732 760 680 59
COMMENT 02704180 OMEGA 6.7 27 DEC 79 C-141 1000 FT 300 KTS 59 F 70 PCT
COMMENT 02704180 TURBOFAN NO DRAG
COMMENT 02704180 CRUISE POWER 1.52 EPR
2670271042712791C-141 CRUISE POWER 8 1000 300 967
267027104271279211241155 9771008107610061034 31 735 719 722 751 813 848 831 80
2670271042712793 813 848 812 811 799 807 814 803 818 915 905 806 775 748 659 53
COMMENT 02705180 OMEGA 6.7 27 DEC 79 C-141 1000 FT 140 KTS 59 F 70 PCT
COMMENT 02705180 TURBOFAN FLAPS ON, GEAR UP
COMMENT 02705180 APPROACH POWER 1.20 EPR
2670271052712791C-141 APPROACH POWER 4 1000 140 1061
267027105271279210681095 923 9521064 9991024 29 608 654 650 671 748 748 729 73
2670271052712793 715 754 725 732 725 733 747 753 827 887 777 791 770 714 664 50

OMEGA 10.3

A/C CODE: 027
OPS CODE: 103
DATE: 15 MAR 62

PAGE 01

	30	40	50	60	70	80	90	100	MEAN
50	.	.	.	.	.	.	.	.	79.3
63	.	.	.	.	.	.	.	.	77.3
80	.	.	.	.	.	.	.	.	76.7
100	.	.	.	.	.	.	.	.	69.4
F 125	.	.	.	.	.	.	.	.	92.9
R 160	.	.	.	.	.	.	.	.	93.4
E 200	.	.	.	.	.	.	.	.	86.7
Q 250	.	.	.	.	.	.	.	.	90.9
U 315	.	.	.	.	.	.	.	.	91.1
= 400	.	.	.	.	.	.	.	.	91.3
N 500	.	.	.	.	.	.	.	.	89.3
C 630	.	.	.	.	.	.	.	.	90.2
Y 800	.	.	.	.	.	.	.	.	86.7
1000	.	.	.	.	.	.	.	.	87.9
I 1250	.	.	.	.	.	.	.	.	86.4
X 1600	.	.	.	.	.	.	.	.	92.4
2000	.	.	.	.	.	.	.	.	86.6
H 2500	.	.	.	.	.	.	.	.	79.2
Z 3150	.	.	.	.	.	.	.	.	76.0
4000	.	.	.	.	.	.	.	.	68.0
5000	.	.	.	.	.	.	.	.	59.3
6300	.	.	.	.	.	.	.	.	
8000	.	.	.	.	.	.	.	.	
10000	.	.	.	.	.	.	.	.	

U-141 TAKEOFF POWER 1.90 EPR

AIRSPEED = 250 KNOTS
SLANT DISTANCE = 1000 FEET
TEMP = 59 F
REL HUMID = 70 %
NO. OF RECORDS = 8 IDENT: 10.3-027-103-150302
DATA FROM OMEGA 6.7 JOB COMPUTED ON 27 DEC 73
ENGINE TYPE: TURBOFAN
DRAG CONFIGURATION: NO DRAG
PNLT = 116.3 PNOB
PNL = 114.4 PNOB
ALT = 101.6 DBA
AL = 33.7 DBA
C = 1.9 DB
EPNL = 110.5 EPNOB
SEL = 105.8 DB
SELT = 107.1 DB
THETA = 87.8 DEG

OMEGA 10.3

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	20	30	40	50	60	70	80	90	MEAN
F 50	.	.	.	.	.	.	.	.	73.5
F 63	.	.	.	.	.	.	.	.	71.9
F 80	.	.	.	.	.	.	.	.	72.2
F 100	.	.	.	.	.	.	.	.	75.1
F 125	.	.	.	.	.	.	.	.	81.3
F 160	.	.	.	.	.	.	.	.	84.8
F 200	.	.	.	.	.	.	.	.	83.1
F 250	.	.	.	.	.	.	.	.	80.9
F 315	.	.	.	.	.	.	.	.	81.3
F 400	.	.	.	.	.	.	.	.	84.8
F 500	.	.	.	.	.	.	.	.	81.2
F 630	.	.	.	.	.	.	.	.	81.1
F 800	.	.	.	.	.	.	.	.	79.9
F 1000	.	.	.	.	.	.	.	.	88.7
F 1250	.	.	.	.	.	.	.	.	81.4
F 1600	.	.	.	.	.	.	.	.	80.3
F 2000	.	.	.	.	.	.	.	.	81.6
F 2500	.	.	.	.	.	.	.	.	91.5
F 3150	.	.	.	.	.	.	.	.	98.5
F 4000	.	.	.	.	.	.	.	.	88.6
F 5000	.	.	.	.	.	.	.	.	77.5
F 6300	.	.	.	.	.	.	.	.	74.8
F 8000	.	.	.	.	.	.	.	.	65.9
F 10000	.	.	.	.	.	.	.	.	53.4

C-141 CRUISE POWER 1.52 EPR

AIRSPEED = 300 KNOTS TEMP = 59 F
SLANT DISTANCE = 1000 FEET REL HUMID = 70 %
NU. OF KECOKOS = 9 IDENT: 10.3-027-104-150382
DATA FROM OMEGA 5.7 JOB COMPUTED ON 27 DEC 79
ENGINE TYPE: TURBOFAN
URAL CONFIGURATION: NU DRAG
PNLT = 112.5 PNOB
PNL = 110.7 PNOB
ALT = 98.5 DBA
AL = 96.7 DBA
C = 1.8 DB
EPIL = 107.8 EPNOB
SEL = 100.6 DB
SELT = 103.4 DB
THETA = 96.7 DEG

OMEGA 10.3

A/C CODE: 027
OPS CODE: 105
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	20	30	40	50	60	70	80	90	MEAN
F	(	(	(	(	(	(	(	(	60.8
R	(	(	(	(	(	(	(	(	65.4
E	(	(	(	(	(	(	(	(	65.0
A	(	(	(	(	(	(	(	(	67.1
U	(	(	(	(	(	(	(	(	74.8
E	(	(	(	(	(	(	(	(	74.8
3	(	(	(	(	(	(	(	(	72.9
U	(	(	(	(	(	(	(	(	73.7
E	(	(	(	(	(	(	(	(	71.5
C	(	(	(	(	(	(	(	(	75.4
N	(	(	(	(	(	(	(	(	72.5
C	(	(	(	(	(	(	(	(	73.2
Y	(	(	(	(	(	(	(	(	72.9
I	(	(	(	(	(	(	(	(	73.3
N	(	(	(	(	(	(	(	(	74.7
2000	(	(	(	(	(	(	(	(	75.3
H	(	(	(	(	(	(	(	(	82.7
Z	(	(	(	(	(	(	(	(	88.7
4000	(	(	(	(	(	(	(	(	77.7
5000	(	(	(	(	(	(	(	(	79.1
6300	(	(	(	(	(	(	(	(	77.0
8000	(	(	(	(	(	(	(	(	71.4
10000	(	(	(	(	(	(	(	(	66.4
	(	(	(	(	(	(	(	(	58.1

C-141 APPROACH POWER 1.20 EPR

AIR SPEED = 140 KNOTS TEMP = 53 F
SLANT DISTANCE = 1000 FEET REL HUMID = 70 %
NO. OF RECORDS = 4 IDENT: 10.3-027-105-150362

DATA FROM OMEGA 0.7 JOB COMPUTED ON 27 DEC 79
ENGINE TYPE: TURBOFAN
DRAG CONFIGURATION: FLAPS 04, GEAR UP

PNLT = 109.4 PNOB
PNL = 106.5 PNOB
ALT = 95.1 DBA
AL = 92.2 DBA
C = 2.9 DB
EPNL = 106.4 EPNOB
SEL = 99.9 DB
SELT = 102.4 DB
THETA = 106.1 DEG

TABLE: SINGLE EVENT NOISE AS A FUNCTION OF SLANT DISTANCE*									
AIR-TO-GROUND PROPAGATION									
AIRCRAFT:	OPERATIONS:	METEOROLOGY:	TEMP	REL HUMID	DELTA N	0.0 DB	SEL	SELT**	EPNL**
(C-141)	(TAKOFF POWER)	(1.90 EPR)	(75 F)	(50 %)	(0.0 DB)	(0.0 DB)	(0.0 DB)	(0.0 DB)	(EPNDB)
(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)	(AIRSPEED = 250 KNOTS)
SLANT DISTANCE (FEET)	AL (DBA)	ALT** (DBA)	PNL (PNDB)	PNLT** (PNDB)	SEL (0.0)	SELT** (0.0)	EPNL** (EPNDB)	EPNL** (EPNDB)	EPNL** (EPNDB)
200	116.6	118.5	132.0	134.0	116.5	119.8	123.9	123.9	123.9
250	114.3	115.3	129.8	131.7	116.9	118.2	122.3	122.3	122.3
315	112.0	114.0	127.4	129.4	115.2	116.5	120.5	120.5	120.5
400	109.7	111.6	125.0	126.9	113.4	114.7	118.7	118.7	118.7
500	107.2	109.1	122.5	124.4	111.6	112.9	116.8	116.8	116.8
630	104.7	106.6	119.8	121.8	109.6	110.9	114.7	114.7	114.7
800	102.1	104.0	117.0	119.0	107.6	108.9	112.5	112.5	112.5
1000	99.3	101.3	114.1	116.0	105.5	106.8	110.2	110.2	110.2
1250	96.5	98.4	110.9	112.8	103.2	104.5	107.6	107.6	107.6
1600	93.5	95.5	107.5	109.4	100.9	102.2	104.8	104.8	104.8
2000	90.5	92.5	103.9	105.8	98.5	99.8	101.8	101.8	101.8
2500	87.5	89.4	99.9	101.9	96.0	97.3	98.4	98.4	98.4
3150	84.3	86.3	95.7	97.6	93.5	94.8	94.8	94.8	94.8
4000	81.2	83.2	92.3	93.8	90.9	92.0	91.7	91.7	91.7
5000	77.9	79.9	88.8	90.0	88.3	89.1	88.6	88.6	88.6
6300	74.6	76.6	85.2	86.0	85.6	86.1	85.3	85.3	85.3
8000	71.2	73.2	81.4	81.8	82.7	83.0	81.9	81.9	81.9
10000	67.6	69.6	77.6	77.6	79.7	79.7	78.4	78.4	78.4
12500	63.8	65.8	73.7	73.7	76.6	76.6	75.1	75.1	75.1
16000	59.9	61.9	69.7	69.7	73.3	73.3	71.7	71.7	71.7
20000	55.8	57.8	65.4	65.4	69.8	69.8	68.0	68.0	68.0
25000	51.6	53.6	60.8	60.8	65.1	65.1	64.0	64.0	64.0

* EXTRAPOLATED FROM MEAN VALUES FOR LEVEL FLIGHTS.
 ** BASED ON SMOOTHED TONE CORRECTION FUNCTION.

OMEGA 10.3

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200	U-141	TAKEOFF POWER	A	P
250	1.90 EPR		A	P
315	AIR SPEED = 250 KNOTS			
	TEMP = 75 F REL HUMID = 50 %		A	P
	DELTA N = 0.0 DB			
400	IDENT: 10.3-027-103-150302-Z		A	P
500			A	P
630			A	P
800			A	P
1000			A	P
1250			A	P
1600			A	P
2000			A	P
2500			A	P
3150			A	P
4000			A	P
5000			A	P
6300			A	P
6000			A	P
10000			A	P
12500			A	P
16000			A	P
20000			A	P
25000			A	P

NOISE LEVEL IN DB

140

130

120

110

100

90

80

70

60

A/C CODE: 027
OPS CODE: 103
PROFILE VER: Z
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TABLE: SINGLE EVENT NOISE AS A FUNCTION OF SLANT DISTANCE*										IDENTIFICATION:	
GROUND-TO-GROUND PROPAGATION											
AIRCRAFT:	OPERATIONS:	METEOROLOGY:									
	(TAKEOFF POWER				TEMP		= 75 F			A/C CODE: 027	
	(1.90 EPR				REL HUMID		= 50 %			OPS CODE: 103	
	(									PROFILE VER: Z	
	(									15 MAR 82	
	(AIRSPEED = 250 KNOTS				DELTA N = 0.0 DB					PAGE M1	
SLANT DISTANCE (FEET)	AL (DBA)	ALT** (DBA)	PNL (PNDB)	PNLT** (PNDB)	SEL (DB)	SELT** (DB)	EPNL** (EPNDB)				
200	111.6	113.5	127.0	129.0	113.5	114.8	116.9				
250	109.3	111.3	124.8	126.7	111.9	113.2	117.3				
315	107.0	109.0	122.4	124.3	110.2	111.5	115.5				
400	104.7	106.6	120.0	121.9	108.4	109.7	113.7				
500	102.2	104.1	117.4	119.4	106.6	107.9	111.7				
630	99.7	101.6	114.7	116.7	104.6	105.9	109.6				
800	97.0	98.9	111.9	113.8	102.6	103.9	107.4				
1000	94.2	95.2	108.8	110.7	100.4	101.7	104.9				
1250	91.3	93.3	105.5	107.4	98.1	99.4	102.2				
1600	88.3	90.2	101.8	103.8	95.6	96.9	99.1				
2000	85.1	87.1	97.8	99.7	93.1	94.4	95.7				
2500	81.7	83.7	93.3	95.2	90.3	91.6	91.8				
3150	78.1	80.0	88.2	90.2	87.2	88.5	87.3				
4000	74.1	75.7	82.8	84.4	83.9	84.9	82.3				
5000	69.7	70.9	77.7	78.8	80.1	80.9	77.5				
6300	65.0	65.8	72.2	73.0	75.9	76.5	72.4				
8000	60.6	61.0	67.6	68.0	72.2	72.4	68.0				
10000	55.9	55.9	62.6	62.6	68.0	68.0	63.4				
12500	50.7	50.7	57.1	57.1	63.5	63.5	58.5				
16000	45.2	45.2	51.2	51.2	58.5	58.5	53.2				
20000	39.2	39.2	44.6	44.6	53.1	53.1	47.2				
25000	32.7	32.7	36.5	36.5	47.3	47.3	39.7				

* EXTRAPOLATED FROM MEAN VALUES FOR LEVEL FLIGHTS.

** BASED ON SMOOTHED TONE CORRECTION FUNCTION.

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OPS CODE: 103
PROFILE VER: 2
DATE: 15 MAR 82
PAGE N1

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A/C CODE: 027
OPS CODE: 103
PROFILE VER: 2
DATE: 15 MAR 82
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TABLE: SINGLE EVENT NOISE AS A FUNCTION OF SLANT DISTANCE*										IDENTIFICATION:	
AIR-TO-GROUND PROPAGATION										OMEGA 10.3	
AIRCRAFT:	OPERATIONS:	METEOROLOGY:								A/C CODE: 827	
C-141	CRUISE POWER	TEMP		= 75 F						OPS CODE: 162	
	1.70 EPR	REL HUMID		= 50 %						PROFILE VER: Z	
	AIRSPEED = 320 KNOTS	DELTA N = 0.0 DB								15 MAR 82	
										PAGE 12	
SLANT DISTANCE (FEET)	AL (DBA)	ALT** (DBA)	PNL (PNDB)	PNLT** (PNDB)	SEL (DB)	SELT** (DB)	EPNL** (EPNOB)				
200	115.9	117.5	130.6	132.2	115.6	118.1	122.9				
250	113.7	115.2	128.3	129.9	114.0	116.5	121.3				
315	111.3	112.9	126.0	127.5	112.2	114.7	119.5				
400	108.9	110.5	123.5	125.1	110.4	112.9	117.6				
500	106.4	108.0	121.0	122.5	108.5	111.0	115.7				
630	103.8	105.4	118.3	119.8	106.5	109.0	113.6				
800	101.1	102.6	115.4	117.0	104.4	106.9	111.3				
1000	98.2	99.7	112.4	113.9	102.1	104.6	108.9				
1250	95.1	96.7	109.2	110.8	99.6	102.1	106.3				
1600	91.8	93.4	105.9	107.5	97.0	99.5	103.6				
2000	88.4	90.0	102.3	103.8	94.1	96.6	100.6				
2500	84.8	86.4	98.4	99.9	91.1	93.6	97.3				
3150	81.2	82.7	94.1	95.7	88.1	90.6	93.6				
4000	77.6	78.8	89.8	91.1	85.1	87.1	89.4				
5000	74.1	75.0	85.2	86.1	82.2	83.7	84.9				
6300	70.7	71.3	81.7	82.3	79.4	80.4	81.5				
8000	67.3	67.6	78.0	78.3	76.6	77.1	77.9				
10000	63.7	63.7	74.0	74.0	73.6	73.6	74.0				
12500	60.0	60.0	69.8	69.8	70.5	70.5	70.4				
16000	56.1	55.1	65.4	65.4	67.2	67.2	66.6				
20000	51.9	51.9	60.9	60.9	63.6	63.6	62.7				
25000	47.5	47.5	56.6	56.6	59.9	59.9	59.0				

* EXTRAPOLATED FROM MEAN VALUES FOR LEVEL FLIGHTS.
 ** BASED ON SMOOTHED TONE CORRECTION FUNCTION.

OMEGA 10.1

A/C CODE: 027
OPS CODE: 182
PROFILE VER: 2
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PAGE: J2

200	C-141	CRUISE POWER	60	70	80	90	100	110	120	130	140
250	1.70 EPR										
315	AIKSPED = 320 KNOTS										
400	TEMP = 75 F										
500	DELTA N = 0.0 DB										
630	IDENT: 10.3-027-182-150382-2										
800											
1000											
1250											
1600											
2000											
2500											
3150											
4000											
5000											
6300											
8000											
10000											
12500											
16000											
20000											
25000											

NOISE LEVEL IN DB

AIR TO GROUND

P = PNL

* = PNL

† = ALT

A = AL

A/C CODE: 027
OPS CODE: 102
PROFILE VER: Z
DATE: 15 MAR 02
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TABLE: SINGLE EVENT NOISE AS A FUNCTION OF SLANT DISTANCE*									
GROUND-TO-GROUND PROPAGATION									
AIRCRAFT:	OPERATIONS:	AL	ALT**	PNL	PNLT**	SEL	SELT**	IDENTIFICATION:	
(	(	(DBA)	(DBA)	(PNDB)	(PNDB)	(DB)	(DB)	(EPNDB)	(
C-141	CRUISE POWER 1.70 EPR								OMEGA 10.3
									A/C CODE: 027
									OPS CODE: 182
									PROFILE VER: Z
									15 MAR 82
	AIR SPEED = 320 KNOTS								PAGE M2
SLANT DISTANCE (FEET)	AL (DBA)	ALT** (DBA)	PNL (PNDB)	PNLT** (PNDB)	SEL (DB)	SELT** (DB)			
200	110.9	112.5	125.6	127.2	110.6	113.1			
250	108.7	110.2	123.3	124.3	109.0	111.5			
315	106.3	107.9	121.0	122.5	107.2	109.7			
400	103.9	105.5	118.5	120.1	105.4	107.9			
500	101.4	103.0	115.9	117.5	103.5	106.0			
630	98.8	100.4	113.2	114.7	101.5	104.0			
800	96.0	97.6	110.3	111.8	99.4	101.9			
1000	93.1	94.7	107.1	108.7	97.0	99.5			
1250	90.0	91.6	103.9	105.4	94.5	97.0			
1600	86.7	89.3	100.3	101.9	91.8	94.3			
2000	83.2	84.7	96.4	98.0	88.9	91.4			
2500	79.3	80.9	92.1	93.6	85.6	88.1			
3150	75.2	75.8	87.2	88.7	82.1	84.6			
4000	70.8	72.0	81.7	83.0	78.3	80.3			
5000	66.0	65.9	75.8	76.7	74.1	75.6			
6300	61.0	61.6	69.3	69.9	69.7	70.7			
8000	56.5	55.8	63.2	63.5	62.8	66.3			
10000	51.8	51.6	58.6	58.6	61.7	61.7			
12500	46.7	46.7	53.2	53.2	57.2	57.2			
16000	41.2	41.2	47.1	47.1	52.3	52.3			
20000	35.3	35.3	41.3	41.3	47.0	47.0			
25000	29.0	29.0	32.1	32.1	41.3	41.3			

* EXTRAPOLATED FROM MEAN VALUES FOR LEVEL FLIGHTS.
 ** BASED ON SMOOTHED TONE CORRECTION FUNCTION.

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OPS CODE: 182
PROFILE VER: 2
DATE: 15 MAR 82
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OMEGA 10.3

A/C CODE: 027
OPS CODE: 182
PROFILE VER: Z
DATE: 15 MAR 82
PAGE 02

200	(	C-141	CRUISE POWER	(	S	T	E
250	(	1.70 EPR		(	.	.	S.T E
315	(	AIR SPEED = 320 KNOTS		(	.	.	S T E
400	(	TEMP = 75 F	REL HUMID = 50 %	(	.	.	S T E
500	(	DELTA N = 0.0 DB		(	.	.	S T E
630	(	IDENT: 10.3-027-102-150302-Z		(	.	.	S T E
800	(			(	.	.	S T E
1000	(			(	.	.	S T E
1250	(			(	.	.	S T E
1600	(			(	.	.	S T E
2000	(			(	.	.	S T E
2500	(			(	.	.	S T E
3150	(			(	.	.	S T E
4000	(			(	.	.	S T E
5000	(			(	.	.	S T E
6000	(			(	.	.	S T E
7000	(			(	.	.	S T E
8000	(			(	.	.	S T E
9000	(			(	.	.	S T E
10000	(			(	.	.	S T E
12500	(			(	.	.	S T E
16000	(			(	.	.	S T E
20000	(			(	.	.	S T E
25000	(			(	.	.	S T E
40	(			(	.	.	S T E
70	(			(	.	.	S T E
80	(			(	.	.	S T E
90	(			(	.	.	S T E
100	(			(	.	.	S T E
110	(			(	.	.	S T E
120	(			(	.	.	S T E

SUMMARY OF I/O FOR AIRCRAFT: C-141

PROGRAM: OMEGA 10.3
 AIRCRAFT CODE: 027
 PROFILE VERSION CODE: Z
 COMDECK REVISION IDENTIFIER: 1
 DATE: 15 MAR 82
 DELTA N (OK DELN) = 0.00 DB

***** INPUT DATA *****

COMDECK NAME	OPC	POWER SETTING	AIR SPEED KNOTS	POWER DESCRIPTION	DATE OF NORM. RUN
N02703180	03	1.90 EPR	250	TAKEOFF POWER	27 DEC 79
N02704180	04	1.52 EPK	300	CRUISE POWER	27 DEC 79
N02705180	05	1.20 EPR	140	APPROACH POWER	27 DEC 79

***** OUTPUT DATA *****

IS PROFILE DATA WRITTEN ON FILE 'TAPE3'?--YES
 MAXIMUM PERMITTED PROFILE DATA EXTRAPOLATION IS: 5.00 DB
 ENGINE TYPE FOR ALL PROFILE DATA: TURBOFAN
 METEOROLOGY: TEMP = 75 F
 REL HUMID = 50 %

PROFILE ID	OPC	POWER SETTING	AIR SPEED KNOTS	POWER DESCRIPTION	NORMALIZED COMDECKS REFERENCE SLOPE REF. POINTS
02703121	03	1.90 EPR	250.0	TAKEOFF POWER	N02703180
02702121	02	1.70 EPR	320.0	CRUISE POWER	N02704180 N02705180 N02703180

***** GENERAL INFORMATION *****

OPC --- OPERATION POWER CODE.
 THE ENGINE TYPE GIVEN ABOVE IS TAKEN FROM THE LAST REFERENCE FILE DATASET;
 IT IS ASSUMED TO BE THE SAME FOR ALL DATASETS.
 PROFILE COMDECK NAME = SYMBOL E, S OR L + PROFILE ID LISTED ABOVE

OMEGA 10 PROFILE DATASET OUTPUT FILE (FILE TAPE3):

```

*COMDECK E027031Z1
EPNL 027031 2 123.9 122.3 120.5 113.7 110.8 114.7C-141 1
COMMENT 027031Z1 OMEGA10.3 15 MAR 02 C-141 75 F 50 PCI
COMMENT 027031Z1 TURBOFAN N027031B0
COMMENT 027031Z1 TAKEOFF POWER 1.90 EPR
112.5 110.2 107.6 104.8 101.8 98.4 94.8 2
88.6 85.3 81.9 78.4 75.1 71.7 68.0 3
027031 1 110.9 117.3 115.5 113.7 111.7 109.6C-141 4
107.4 104.9 102.2 99.1 95.7 91.8 87.3 5
77.5 72.4 68.0 63.4 58.5 53.2 47.2 39.7C-141

*COMDECK S027031Z1
SELF 027031 2 119.8 118.2 116.5 114.7 112.9 110.9C-141 1
COMMENT 027031Z1 OMEGA10.3 15 MAR 02 C-141 75 F 50 PCI
COMMENT 027031Z1 TURBOFAN N027031B0
COMMENT 027031Z1 TAKEOFF POWER 1.90 EPR
108.9 106.8 104.5 102.2 99.8 97.3 94.8 2
89.1 86.1 83.0 79.7 76.5 73.3 69.5 3
027031 1 114.8 113.2 111.5 109.7 107.3 105.9C-141 4
103.9 101.7 99.4 96.9 94.4 91.6 88.5 5
80.9 78.5 72.4 68.0 63.5 58.5 53.1 47.3C-141

*COMDECK L027031Z1
SEL 027031 2 116.5 116.9 115.2 113.4 111.6 109.6C-141 1
COMMENT 027031Z1 OMEGA10.3 15 MAR 02 C-141 75 F 50 PCI
COMMENT 027031Z1 TURBOFAN N027031B0
COMMENT 027031Z1 TAKEOFF POWER 1.90 EPR
107.6 105.5 103.2 100.9 98.5 96.0 93.5 2
68.3 65.6 62.7 59.8 56.8 53.8 50.8 3
027031 1 113.5 111.9 110.2 108.4 105.6 104.6C-141 4
102.6 100.4 98.1 95.6 93.1 90.3 87.2 5
80.1 75.9 72.2 68.0 63.5 58.5 53.1 47.3C-141

*COMDECK E027021Z1
EPNL 027021 2 122.9 121.3 119.5 117.6 115.7 113.6C-141 1
COMMENT 027021Z1 OMEGA10.3 15 MAR 02 C-141 75 F 50 PCI
COMMENT 027021Z1 TURBOFAN N027041B0 N027051B0 N027031B0
COMMENT 027021Z1 CRUISE POWER 1.70 EPR
111.3 108.9 106.3 103.6 100.5 97.3 93.6 2
64.9 61.5 57.9 54.0 50.4 46.6 42.7 59.0C-141 3
027021 1 117.3 116.2 114.5 112.6 110.6 108.5C-141 4
106.2 103.6 101.0 98.0 94.7 91.0 86.7 81.3C-141 5
75.5 69.1 63.1 58.0 53.9 48.3 43.1 34.5C-141

*COMDECK S027021Z1
SELF 027021 2 118.1 116.5 114.7 112.9 111.0 109.0C-141 1
COMMENT 027021Z1 OMEGA10.3 15 MAR 02 C-141 75 F 50 PCI
COMMENT 027021Z1 TURBOFAN N027041B0 N027051B0 N027031B0
COMMENT 027021Z1 CRUISE POWER 1.70 EPR
106.9 104.6 102.1 99.5 96.0 93.6 90.5 87.1C-141 2
63.7 60.4 57.1 53.6 50.1 46.6 43.1 39.6C-141 3
027021 1 113.1 111.5 109.7 107.9 105.0 104.0C-141 4
101.9 99.5 97.0 94.3 91.4 88.1 84.6 80.3C-141 5
75.6 70.7 66.3 61.7 57.2 52.3 47.0 41.3C-141

*COMDECK L027021Z1
SEL 027021 2 115.0 114.0 112.2 110.4 108.5 106.5C-141 1

```


OMEGA 10 PROGRAM CODE SHEET

I. JOB CONTROL CARD (One Per Job):

Col. 1 1 5 b m a a b 2 DATE; eg 29 JUN 77
 11 1 5 0 3 8 2 DATN; Data in DAMOYR form, eg. 290677
 18 / IPR [0-- no print]
 20 MEAS(1) EPNL [0 for IPR=0; 1 for IPR=1]
 22 MEAS(2) SELT [0 for IPR=0; 1 for IPR=1]
 24 MEAS(3) SEL [1 for IPR=0; 1 for IPR=1]
 26 / IPU [1 for IPR=0; 0 for IPR=1]

II. OUTPUT PARAMETERS FOR EACH AIRCRAFT (2 or 3 Cards):

Card #1

Col. 1 0 2 7 ACC
 4 ITEMP [59°F]
 7 IRHUM [70%]
 11 PV [w]
 13 CRI [0]
 15 DELN [0.0]
 20 NP
 22 PSU (left justify)

Card #2 (Profile Output Power Data)

Col. 1	<u> </u>	PSC #1	Col. 6	<u> </u>	VX	Col. 9	<u> </u>	OPCR	Col. 11	<u> </u>	OPCC [81]
13	<u> </u>	PSC #2	18	<u> </u>	VX	21	<u> </u>	OPCR	23	<u> </u>	OPCC [82]
25	<u> </u>	PSC #3	30	<u> </u>	VX	33	<u> </u>	OPCR	35	<u> </u>	OPCC [83]
37	<u> </u>	PSC #4	42	<u> </u>	VX	45	<u> </u>	OPCR	47	<u> </u>	OPCC [84]
49	<u> </u>	PSC #5	54	<u> </u>	VX	57	<u> </u>	OPCR	59	<u> </u>	OPCC [85]
61	<u> </u>	PSC #6	66	<u> </u>	VX	69	<u> </u>	OPCR	71	<u> </u>	OPCC [86]

Card #3 (Profile Output Power Data Conti.; required only when NP>6)

Col. 1	<u> </u>	PSC #7	Col. 6	<u> </u>	VX	Col. 9	<u> </u>	OPCR	Col. 11	<u> </u>	OPCC [87]
13	<u> </u>	PSC #8	18	<u> </u>	VX	21	<u> </u>	OPCR	23	<u> </u>	OPCC [88]
25	<u> </u>	PSC #9	30	<u> </u>	VX	33	<u> </u>	OPCR	35	<u> </u>	OPCC [89]
37	<u> </u>	PSC #10	42	<u> </u>	VX	45	<u> </u>	OPCR	47	<u> </u>	OPCC [90]
49	<u> </u>	PSC #11	54	<u> </u>	VX	57	<u> </u>	OPCR	59	<u> </u>	OPCC [91]
61	<u> </u>	PSC #12	66	<u> </u>	VX	69	<u> </u>	OPCR	71	<u> </u>	OPCC [92]

(Right Justify "PSC" Data)

III. TERMINATE SETUP DECK WITH AN "END OF RECORD" OR "END OF JOB" CARD

- (1) Repeat section II for each aircraft set in the job.
- (2) [] -- Program default values for the above parameters.
- (3) See Standard Procedure for Setup and Execution of the OMEGA 10 Program for above parameter definitions.

OMEGA 10 CODE SHEET INPUT

15 MAR 62 150302 1 1
027

OMEGA 10 REFERENCE FILE INPUT (FILE TAPE7):

COMMENT 02703100 OMEGA 6.7 27 DEC 79 C-141 1000 FT 250 KTS 59 F 70 PCT
COMMENT 02703100 TURBOFAN
COMMENT 02703100 TAKEOFF POWER 1.90 EPR
2670271032712791C-141 TAKEOFF POWER 1.90 EPR 1000 250 878
267027103271279211451166 9991020110510501071 21 793 773 787 894 929 934 867 909
2670271032712793 911 913 893 902 888 887 879 879 864 866 924 866 732 760 680 593

[illegible]

NOISE PRODUCED ON THE GROUND BY
C-141 AIRCRAFT
DURING FLIGHT OPERATIONS

FLYOVER MEASUREMENTS
AIRCRAFT CODE: 027
PROFILE VERSION: M
COMPUTER PROGRAM OMEGA 10.3

	COMPUTER PROGRAM	DATE	PAGE
NORMALIZED SP. SPECTRUM			G
NOISE LEVELS AS A FUNCTION OF SLANT DISTANCE FROM AIRCRAFT			
AIR-TO-GROUND PROPAGATION			
SOUND PRESSURE LEVEL SPECTRA			H
SINGLE EVENT MEASURES			I,J,K
GROUND-TO-GROUND PROPAGATION			
SOUND PRESSURE LEVEL SPECTRA			L
SINGLE EVENT MEASURES			M,N,O

15 MAR 92

AERUSPACE MEDICAL RESEARCH LABORATORY
AMRIGHI-PATTON AIR FORCE BASE, D-110

[illegible]

OMEGA 10.3
A/C CODE: 027
OPS CODE: 103
DATE: 15 MAR 82
PAGE 61

	30	40	50	60	70	80	90	100	MEAN
F 50	(	(	(	(	(	(	(	(	79.3
63	(	(	(	(	(	(	(	(	77.3
80	(	(	(	(	(	(	(	(	78.7
100	(	(	(	(	(	(	(	(	89.4
125	(	(	(	(	(	(	(	(	92.9
160	(	(	(	(	(	(	(	(	93.4
200	(	(	(	(	(	(	(	(	86.7
250	(	(	(	(	(	(	(	(	90.9
315	(	(	(	(	(	(	(	(	91.1
400	(	(	(	(	(	(	(	(	91.3
500	(	(	(	(	(	(	(	(	89.3
630	(	(	(	(	(	(	(	(	90.2
800	(	(	(	(	(	(	(	(	88.8
1000	(	(	(	(	(	(	(	(	88.7
1250	(	(	(	(	(	(	(	(	87.9
1600	(	(	(	(	(	(	(	(	87.9
2000	(	(	(	(	(	(	(	(	86.4
2500	(	(	(	(	(	(	(	(	86.6
3150	(	(	(	(	(	(	(	(	92.4
4000	(	(	(	(	(	(	(	(	86.6
5000	(	(	(	(	(	(	(	(	79.2
6300	(	(	(	(	(	(	(	(	76.0
8000	(	(	(	(	(	(	(	(	68.0
10000	(	(	(	(	(	(	(	(	59.3

C-141 TAKEOFF POWER 1.90 EPR

AIR SPEED = 250 KNOTS TEMP = 59 F
SLANT DISTANCE = 1000 FEET REL HUMID = 70 %

NO. OF RECORDS = 8 IDENT: 10.3-027-103-150362

DATA FROM OMEGA 6.7 JOB COMPUTED ON 27 DEC 79
ENGINE TYPE: TURBOFAN
ORAL CONFIGURATION: NO DRAG

PNLT = 116.3 PND8
PNL = 114.4 PND8
ALT = 101.6 ODA
AL = 93.7 ODA
C = 1.9 O3
EPNL = 110.5 EPN08
SEL = 105.8 DB
SELT = 107.1 DB
THETA = 87.8 DEG

TABLE: SINGLE EVENT NOISE AS A FUNCTION OF SLANT DISTANCE*										IDENTIFICATION#	
ALX-TU-GROUND PROPAGATION										OMEGA 10.3	
AIRCRAFT:										A/C CODE: 027	
C-141										OPS CODE: 103	
										PROFILE VER: M	
										15 MAR 82	
										PAGE 11	
METEOROLOGY:											
TEMP = 39 F											
REL HUMID = 70 %											
DELTA N = 0.0 DB											
AIRSPEED = 290 KNOTS											
SLANT DISTANCE (FEET)	AL (DBA)	A-T** (D3A)	PNL (PNDB)	PNLT** (PNDB)	SEL (DB)	SELT** (DB)	EPNL** (EPNDB)				
200	116.7	115.6	132.1	134.0	118.6	119.9	124.0				
250	114.4	115.4	129.8	131.8	117.0	118.3	122.3				
315	112.1	114.1	127.5	129.5	115.3	116.6	120.6				
400	109.3	111.7	125.1	127.1	113.6	114.9	118.8				
500	107.4	109.3	122.6	124.6	111.7	113.0	116.9				
630	104.9	106.8	120.0	122.0	109.9	111.2	114.9				
800	102.3	104.3	117.3	119.2	107.9	109.2	112.8				
1000	99.7	101.6	114.4	116.3	105.8	107.1	110.5				
1250	96.9	98.8	111.3	113.3	103.6	104.9	108.0				
1600	94.0	95.0	108.0	110.0	101.4	102.7	105.3				
2000	91.1	93.0	104.5	106.4	99.0	100.3	102.4				
2500	88.1	90.0	100.7	102.6	96.6	97.9	99.2				
3150	85.0	87.0	96.6	98.6	94.2	95.5	95.7				
4000	82.0	83.5	93.0	94.5	91.7	92.7	92.4				
5000	78.8	80.0	89.6	90.8	89.2	89.9	89.4				
6300	75.6	75.4	86.2	86.9	86.5	87.0	86.3				
8000	72.2	72.6	82.5	82.9	83.8	84.0	83.0				
10006	68.8	69.8	78.8	78.8	80.9	80.9	79.6				
12500	65.1	65.1	75.0	75.0	77.9	77.9	76.4				
16000	61.4	61.4	71.0	71.0	74.7	74.7	73.0				
20000	57.4	57.4	66.9	66.9	71.4	71.4	69.5				
25000	53.3	53.3	62.6	62.6	67.8	67.8	65.8				

* EXTRAPOLATED FROM MEAN VALUES FOR LEVEL FLIGHTS.
 ** BASED ON SMOOTHED TONE CORRECTION FUNCTION.

OMEGA 10.3

A/C CODE: 027
OPS CODE: 103
PROFILE VER: M
DATE: 15 MAR 82
PAGE: J1

TAKEOFF POWER										NOISE LEVEL IN DB				
200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
C-141										AIR TO GROUND				
1.30 EPR										P = PNL				
AIRSPEED = 250 KNOTS										* = PNL				
TEMP = 59 F REL HUMID = 70 %										+ = ALT				
DELTA M = 0.0 DB										A = AL				
IDENT: 10.3-027-103-150382-M														
250	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
250	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
315	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
400	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
630	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
L	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
A	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
N	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
T	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
1250	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
1600	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
2000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
2500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
3000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
3500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
4000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
4500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
5000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
5500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
6000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
6500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
7000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
7500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
8000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
8500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
9000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
9500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
10000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
10500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
11000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
11500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
12000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
12500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
13000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
13500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
14000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
14500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
15000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
15500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
16000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
16500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
17000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
17500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
18000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
18500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
19000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
19500	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
20000	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600

OMEGA 10.3

A/C CODE: 027
OPS CODE: 103
PROFILE VER: M
DATE: 15 MAR 82
PAGE K1

200	C-141	TAKEOFF POWER	ST	E
250	1-90 EPR			ST . E
315	AIR SPEED = 250 KNOTS			
	TEMP = 59 F	REL HUMID = 70 %		ST . E
400	DELTA N = 0.0 D9			ST . E
500	IOCNT: 10.3-02/-103-150302-M			ST . E
S 630				ST . E
L				ST . E
A 800				ST . E
N				ST . E
T 1000				ST . E
D 1250				ST . E
I				ST . E
S 1600				ST . E
T				ST . E
A 2000				ST . E
N				ST . E
C 2500				ST . E
E				ST . E
3150				ST . E
I				ST . E
N 4000				ST . E
F 5000				ST . E
E				ST . E
6300				ST . E
T				ST . E
6000				ST . E
10000				ST . E
12500				ST . E
16000				ST . E
20000				ST . E
25000				ST . E
AIR TO GROUND				
E = EPNL				
F = SELT				
S = SEL				
NOISE LEVEL IN DB				
50	60	70	80	90
100	110	120	130	

TABLE: SINGLE EVENT NOISE AS A FUNCTION OF SLANT DISTANCE*										IDENTIFICATION#	
GROUND-TO-GROUND PROPAGATION										OMEGA 10.3	
AIRCRAFT#	AL (DBA)	ALT** (DBA)	PNL (PNDB)	PNLT** (PNDB)	SEL (DB)	SELT** (DB)	METEOROLOGY#		A/C CODE# 027		
G-141							TEMP	= 59 F	OPS CODE# 103		
							REL HUMID	= 70 %	PROFILE VER# M		
									15 MAR 82		
							DELTA N	= 0.0 DB	PAGE M1		
									AIRSPEED = 250 KNOTS		
SLANT DISTANCE (FEET)	AL (DBA)	ALT** (DBA)	PNL (PNDB)	PNLT** (PNDB)	SEL (DB)	SELT** (DB)	EPNL** (EPNDB)				
200	111.7	113.6	127.1	129.0	113.6	114.9	119.0				
250	109.4	111.4	124.8	126.8	112.0	113.3	117.3				
315	107.1	109.1	122.5	124.4	110.3	111.6	115.6				
400	104.8	105.7	120.1	122.0	108.6	109.9	113.8				
500	102.4	104.3	117.6	119.5	106.7	108.0	111.9				
630	99.9	101.8	114.9	116.9	104.8	106.1	109.8				
800	97.3	99.2	112.1	114.1	102.8	104.1	107.6				
1000	94.6	95.5	109.1	111.1	100.7	102.0	105.2				
1250	91.7	93.7	105.9	107.8	96.5	99.8	102.6				
1600	88.8	90.7	102.4	104.3	96.1	97.4	99.7				
2000	85.7	87.7	98.5	100.4	93.7	95.0	96.4				
2500	82.4	84.4	94.2	96.1	91.0	92.3	92.7				
3150	78.9	80.9	89.3	91.2	88.1	89.4	88.4				
4000	75.2	77.2	83.8	85.4	84.9	85.9	83.3				
5000	71.3	73.3	76.8	80.0	81.3	82.1	78.6				
6300	66.5	68.5	73.7	74.4	77.5	78.0	73.8				
8000	62.4	64.4	69.3	69.6	73.9	74.2	69.7				
10000	57.9	59.9	64.8	64.8	70.0	70.0	65.4				
12500	53.1	55.1	59.5	59.5	65.8	65.8	60.9				
16000	47.8	49.8	53.8	53.8	61.2	61.2	55.8				
20000	42.1	44.1	47.8	47.8	56.1	56.1	50.4				
25000	36.0	38.0	40.6	40.6	50.5	50.5	43.8				

* EXTRAPOLATED FROM MEAN VALUES FOR LEVEL FLIGHTS.
 ** BASED ON SMOOTHED TONE CORRECTION FUNCTION.

OMEGA 10.3

A/C CODE: 027
OPS CODE: 103
PROFILE VER: W
DATE: 15 MAR 82
PAGE: N1

TAKEOFF POWER									
200	300	400	500	600	700	800	900	1000	1100
C-141	1.90 EPR								
250	AIR SPEED = 250 KNOTS								
315	TEMP = 59 F								
400	DELTA N = 0.0 DB								
500	IDENT: 10.3-027-103-150382-W								
S 630									
L 400									
M 1000									
T 1250									
I 1600									
S 2000									
N 2500									
E 3150									
I 4000									
F 5000									
E 6300									
T 8000									
10000									
12500									
16000									
20000									
25000									
NOISE LEVEL IN DB									
50	60	70	80	90	100	110	120	130	
GROUND TO GROUND									
P = PNL									
+ = PNL									
+ = ALT									
A = AL									

A/C CODE: 027
OPS CODE: 103
PROFILE VER: W
DATE: 15 MAR 82
PAGE 01

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SUMMARY OF I/O FOR AIRCRAFT: C-141

PROGRAM: OMEGA 10.3
 AIRCRAFT CODE: 027
 PROFILE VERSION CODE: M
 COMDECK REVISION IDENTIFIER: 0
 DATE: 15 MAR 82
 DELTA N (JK DELN) = 0.00 DB

***** INPUT DATA *****
 COMDECK POWER AIRSPEED POWER DESCRIPTION DATE OF
 NAME OPC SETTING KNOTS NORM. RUN
 V02703180 03 1.90 EPR 250 TAKEOFF POWER 27 DEC 79

***** OUTPUT DATA *****
 IS PROFILE DATA WRITTEN ON FILE *TAPE3?--YES
 MAXIMUM PERMITTED PROFILE DATA EXTRAPOLATION IS: 5.00 DB
 ENGINE TYPE FOR ALL PROFILE DATA: TURBOFAN
 METEOROLOGY: TEMP = 59 F
 REL HUMID = 70 %

PRJFILE POWER AIRSPEED POWER DESCRIPTION NORMALIZED COMDECKS
 ID SETTING KNOTS REFERENCE SLOPE REF. POINTS
 02703180 03 1.90 EPR 250.0 TAKEOFF POWER N02703180

***** GENERAL INFORMATION *****
 OPC --- OPERATION POWER CODE.
 THE ENGINE TYPE GIVEN ABOVE IS TAKEN FROM THE LAST REFERENCE FILE DATASET;
 IT IS ASSUMED TO BE THE SAME FOR ALL DATASETS.
 PROFILE COMDECK NAME = SYMBOL E, S OK L + PROFILE ID LISTED ABOVE

OMEGA 10 SAMPLE RUN PROFILE DATASET OUTPUT FILE (FILE TAPE3):

```

*COMDECK E027031M0
EPNL 027031 2 124.0 122.3 120.6 116.6 116.3 114.9C-141 1
COMMENT 027031M0 OMEGA10.3 15 MAR 82 C-141 250 KTS
COMMENT 027031M0 TURBOFAN N027031B0
COMMENT 027031M0 TAKEOFF POWER 1.90 EPR
112.6 110.5 108.0 105.3 102.4 99.2 95.7 92.4C-141 2
89.4 86.3 83.0 79.6 76.4 73.0 69.5 65.8C-141 3
027031 1 119.0 117.3 115.6 113.6 111.3 109.8C-141 4
107.6 105.2 102.6 99.7 96.4 92.7 88.4 83.3C-141 5
76.6 73.6 69.7 65.4 60.9 55.8 50.4 43.8C-141

*COMDECK S027031M0
SEL 027031 2 114.9 110.3 110.0 114.9 113.0 111.2C-141 1
COMMENT 027031M0 OMEGA10.3 15 MAR 82 C-141 250 KTS
COMMENT 027031M0 TURBOFAN N027031B0
COMMENT 027031M0 TAKEOFF POWER 1.90 EPR
109.2 107.1 104.9 102.7 100.3 97.9 95.5 92.7C-141 2
89.9 87.0 84.0 80.9 77.9 74.7 71.4 67.8C-141 3
027031 1 114.9 113.3 111.6 109.9 108.0 106.1C-141 4
104.1 102.0 99.8 97.4 95.0 92.3 89.4 85.9C-141 5
82.1 78.8 74.2 70.0 65.8 61.2 56.1 50.5C-141

*COMDECK L027031M0
SEL 027031 2 116.6 117.0 115.3 113.6 111.7 109.9C-141 1
COMMENT 027031M0 OMEGA10.3 15 MAR 82 C-141 250 KTS
COMMENT 027031M0 TURBOFAN N027031B0
COMMENT 027031M0 TAKEOFF POWER 1.90 EPR
107.9 105.8 103.6 101.4 99.0 96.6 94.2 91.7C-141 2
89.2 86.5 83.8 80.9 77.9 74.7 71.4 67.9C-141 3
027031 1 113.6 112.0 110.3 108.6 106.7 104.8C-141 4
102.6 100.7 98.5 96.1 93.7 91.0 88.1 84.9C-141 5
81.3 77.5 73.9 70.0 65.8 61.2 56.1 50.5C-141

```

APPENDIX D
OMEGA 11 SAMPLE PROBLEM

This sample problem for the OMEGA 11 program inputs the reference file ground run-up noise normalized data for the T-38A aircraft from the NOISEFILE 4 database and interpolates profile data for the power settings requested on the code sheet. The following items are included in this Appendix:

- (1) The completed OMEGA 11 program code sheets.
- (2) A listing of the code sheet and reference file input data.
- (3) The tab output for this sample problem.
- (4) A listing of the ground run-up noise profile datasets written on file TAPE2.

OMEGA 11 PROGRAM CODE SHEET

I. JOB CONTROL CARD (One Per Job):

COL. 1 1 5 b 1 A 8 b 8 2 DATE: eg. 12 APR 77

12 1 IPR [0]

13 0 IEDT [0]

16 --- MEAS(1) PNLT [0]

18 --- MEAS(2) AL [0]

20 --- MEAS(3) ALT [0]

21 --- 3 5 FMXER [5.0 dB]

II. OUTPUT PARAMETERS FOR EACH AIRCRAFT (2 Cards):

Card #1		Card #2 (Profile Output Power Data)	
COL. 1	0 3 3 ACC	COL. 1	3 NP
8	7 0 ITQ 59]	2	2 8 P M
11	2 9 1 5 0 P8 29.92]	11	---
18	6 0 IH8 [70]	21	---
22	---	27	---
24	---	37	---
26	2 0 DELN [0.0]	47	---
		57	---
		67	---
		69	---

(RIGHT JUSTIFY "PSC" DATA)

COL. 19 2 5 OPCQ[91]

29 2 6 OPCQ[92]

39 2 7 OPCQ[93]

49 --- OPCQ[94]

59 --- OPCQ[95]

69 --- OPCQ[96]

2nd AIRCRAFT

Card #1		Card #2	
COL. 1	---	COL. 1	NP
8	---	2	---
11	---	11	---
18	---	21	---
22	---	27	---
24	---	37	---
26	---	47	---
		57	---
		67	---
		69	---

(RIGHT JUSTIFY "PSC" DATA)

COL. 19 --- OPCQ[91]

29 --- OPCQ[92]

39 --- OPCQ[93]

49 --- OPCQ[94]

59 --- OPCQ[95]

69 --- OPCQ[96]

III. TERMINATE SETUP DECK WITH AN "END OF RECORD" OR "END OF JOB" CARD

- (1) Repeat section II, cards 1 and 2 for each aircraft set in the job.
- (2) [] -- Program default values for above parameters.
- (3) See Standard Procedure for Setup and Execution of the OMEGA 11 Program for parameter definitions.

OMEGA 11 CODE SHEET INPUT FILES

15 MAR 82 1 0 3.5
033 7029.50 50 2.0
3% RPM 100 1 95 50 96 100 97

OMEGA 11 REFERENCE FILE INPUT DATA (FILE TAPE7):

COMMENT 03303A0 OMEGA 8.2 17 FEB 76 59 F 70 PCI 29.92 IN HG 74-004-029 04
 COMMENT 03303A0 T-38A AIRCRAFT ENG. J85-GE-5A
 COMMENT 03303A0 MAX PMR A/B 100 % RPM
 087+00402904 1 0 607 622 642 672 680 695 662 667 652 667 690 856 798 838 793
 087+00402904 2 0 602 797 763 744 612 726 726 800 676
 087+00402904 1 10 822 825 840 862 867 897 887 870 860 845 905 858 828 848 821
 087+00402904 2 10 819 607 814 777 644 768 763 833 704
 087+00402904 1 20 810 825 842 565 895 907 300 882 662 902 915 876 856 818 831
 087+00402904 2 20 837 814 813 777 829 758 753 828 696
 087+00402904 1 30 812 642 850 582 695 915 300 885 900 922 927 886 891 846 851
 087+00402904 2 30 854 827 834 804 822 771 770 833 719
 087+00402904 1 40 837 852 830 872 302 922 910 900 915 937 962 928 911 693 878
 087+00402904 2 40 889 864 864 937 839 806 768 798 714
 087+00402904 1 50 645 860 870 905 915 935 922 922 922 940 962 918 918 896 898
 087+00402904 2 50 904 879 853 847 854 826 308 803 739
 087+00402904 1 60 837 867 887 905 330 945 337 925 930 955 980 946 928 911 886
 087+00402904 2 60 834 872 857 517 834 801 783 795 719
 087+00402904 1 70 845 860 887 917 942 972 962 952 940 3651002 981 948 963 946
 087+00402904 2 70 917 922 917 997 899 861 843 818 766
 087+00402904 1 80 630 870 887 927 945 955 952 937 945 960 997 946 956 931 943
 087+00402904 2 80 919 922 902 887 677 836 815 803 746
 087+00402904 1 90 857 885 902 342 965 985 970 967 975101032 983 993 976 991
 087+00402904 2 90 964 974 352 329 322 683 645 810 771
 087+00402904 1 100 862 890 920 952 99710121000 990 992103010651046101310311003
 087+00402904 2 100 964 932 927 342 952 911 865 850 811
 087+00402904 1 110 885 917 952 39010301045104710521047103011021066108310561071
 087+00402904 2 110103210291007 369 977 956 335 918 871
 087+00402904 1 120 942 9601017106010971102110511271130114511901163109811131068
 087+00402904 2 1201074104910271012 999 968 340 920 884
 087+00402904 1 130 97510221047110511401147112010971152116211921161117111231101
 087+00402904 2 130109410741037102210321013 983 975 944
 087+00402904 1 1401010104010651095112711401115109711021160116011201110781051
 087+00402904 2 14010391009 992 369 987 956 310 888 850
 087+00402904 1 150 98810171035106510921112110710871077103511121078105310431003
 087+00402904 2 1501004 972 912 889 873 651 620 793 734
 087+00402904 1 160 845 842 617 615 820 632 825 807 605 730 790 708 733 716 708
 087+00402904 2 160 649 644 654 532 629 588 590 555 489
 087+00402904 1 170 775 775 775 782 792 797 787 765 762 757 760 733 706 688 678
 087+00402904 2 170 674 667 643 524 622 581 570 538 469
 087+00402904 1 180 703 705 732 752 757 762 747 725 720 717 730 698 678 663 656
 087+00402904 2 180 629 632 644 519 512 573 550 518 449
 COMMENT 03304A0 OMEGA 8.2 17 FEB 76 59 F 70 PCI 29.92 IN HG 74-004-029 03

COMMENT 03304A0 T-38A		AIRCRAFT		ENG. J85-GE-5A													
MIL PMR		100 % RPM		100 % RPM													
087+00402903	1	0	705	724	772	775	810	804	785	785	810	840	811	793	801	811	
087+00402903	2	0	794	799	783	757	812	731	730	788	676						
087+00402903	1	10	718	729	737	767	787	622	830	812	815	852	882	866	831	846	836
087+00402903	2	10	829	832	817	789	794	736	725	713	639						
087+00402903	1	20	700	732	755	782	802	640	827	817	822	867	890	845	868	861	861
087+00402903	2	20	847	852	849	824	824	783	765	740	671						
087+00402903	1	30	724	750	770	785	802	832	837	822	832	857	882	870	856	866	866
087+00402903	2	30	857	869	857	837	834	801	788	770	694						
087+00402903	1	40	737	772	760	787	805	845	840	832	855	875	902	873	870	866	876
087+00402903	2	40	864	872	852	842	837	801	783	755	694						
087+00402903	1	50	726	748	765	795	820	842	837	842	855	865	887	861	871	866	878
087+00402903	2	50	884	882	879	857	857	831	818	795	739						
087+00402903	1	60	732	750	787	810	825	860	870	850	857	882	910	881	881	893	886
087+00402903	2	60	839	897	889	869	874	851	833	810	749						
087+00402903	1	70	755	764	757	832	852	875	882	860	867	900	932	891	908	898	913
087+00402903	2	70	892	899	837	879	882	856	833	800	749						
087+00402903	1	80	770	790	802	832	862	892	887	880	895	925	940	898	923	906	926
087+00402903	2	80	919	927	927	904	904	881	863	838	781						
087+00402903	1	90	775	795	817	855	875	915	900	890	920	955	965	921	961	923	938
087+00402903	2	90	914	919	902	879	879	856	835	815	791						
087+00402903	1	100	777	812	822	855	897	930	917	915	940	965	980	955	978	958	958
087+00402903	2	100	944	954	942	922	929	888	863	835	809						
087+00402903	1	110	812	842	860	890	920	955	942	942	965	997	1015	983	1013	986	996
087+00402903	2	110	969	974	964	917	914	891	868	840	824						
087+00402903	1	120	840	880	905	940	957	1000	1010	1010	1017	1052	1067	1033	1046	1011	1021
087+00402903	2	120	1009	1009	1002	972	969	946	928	910	869						
087+00402903	1	130	887	920	955	992	1012	1032	1037	1057	1092	1030	1122	1071	1108	1046	1023
087+00402903	2	130	957	937	949	942	952	888	865	848	796						
087+00402903	1	140	920	952	965	1022	1060	1090	1055	1007	1045	1065	1082	1033	1058	1031	1026
087+00402903	2	140	1007	987	957	909	884	863	855	830	774						
087+00402903	1	150	920	950	972	995	997	1027	1002	992	1002	1020	1005	956	951	903	893
087+00402903	2	150	857	849	842	802	794	768	748	733	671						
087+00402903	1	160	842	857	840	852	870	887	845	835	852	845	855	833	823	811	793
087+00402903	2	160	754	757	732	597	697	663	650	623	576						
087+00402903	1	170	810	758	724	733	760	762	735	730	775	772	775	768	748	706	696
087+00402903	2	170	667	662	644	514	612	578	565	533	481						
087+00402903	1	180	797	770	750	709	719	727	724	705	715	720	725	703	673	648	646
087+00402903	2	180	624	614	554	572	564	528	535	495	430						
COMMENT 03313A0		OMEGA 8.2 17 FEB 76		59 F		70 PCT		29.92 IN HG		74-004-029 01							
CURRENT 03313A0		1-38A		AIRCRAFT		ENG. J85-GE-5A		48 % RPM									
IDLE																	
087+00402901	1	0	675	649	535	655	683	705	678	611	637	625	635	606	578	596	608
087+00402901	2	0	687	672	627	627	607	671	663	773	646						
087+00402901	1	10	673	646	643	550	683	717	663	627	670	680	657	611	626	593	596
087+00402901	2	10	659	652	634	537	609	676	575	775	641						
087+00402901	1	20	668	666	648	566	700	737	669	645	650	657	665	533	593	591	593
087+00402901	2	20	677	677	657	647	792	683	685	745	679						
087+00402901	1	30	688	664	652	561	685	732	696	633	655	687	660	615	596	591	616
087+00402901	2	30	664	679	632	514	774	693	590	793	684						
087+00402901	1	40	702	686	652	535	665	732	694	645	702	702	667	601	511	593	613
087+00402901	2	40	657	692	649	519	762	683	680	785	676						
087+00402901	1	50	696	686	652	506	664	730	503	650	692	607	522	573	601	591	613
087+00402901	2	50	662	664	612	512	669	626	653	733	614						

087+00402901	1	60	634	670	558	588	752	715	656	687	607	647	538	616	581	576
087+00402901	2	60	647	652	552	582	727	601	525	733	631					
087+00402901	1	70	636	683	657	688	702	755	712	666	692	647	650	601	596	556
087+00402901	2	70	607	587	552	564	712	641	510	720	614					
087+00402901	1	80	594	686	664	563	700	752	712	659	695	695	657	598	606	556
087+00402901	2	30	589	564	527	517	659	576	548	648	549					
087+00402901	1	30	712	632	684	679	715	705	730	675	715	715	635	620	608	581
087+00402901	2	90	577	554	513	509	622	546	545	638	529					
087+00402901	1	100	717	702	660	586	727	707	735	685	712	715	705	663	621	611
087+00402901	2	100	534	562	539	509	603	538	533	625	521					
087+00402901	1	110	710	702	670	695	715	760	710	677	705	730	720	660	656	626
087+00402901	2	110	622	607	583	572	677	593	593	670	551					
087+00402901	1	120	683	697	631	598	715	737	725	697	715	720	722	698	688	661
087+00402901	2	120	652	632	627	512	637	606	593	633	559					
087+00402901	1	130	717	710	683	716	740	762	717	687	712	720	707	686	661	641
087+00402901	2	130	659	647	612	647	689	646	630	705	581					
087+00402901	1	140	722	720	702	732	760	770	730	666	680	710	692	616	628	593
087+00402901	2	140	654	642	682	632	699	636	620	663	566					
087+00402901	1	150	715	702	678	698	730	747	715	687	687	690	637	605	623	588
087+00402901	2	150	682	672	684	549	772	648	618	688	584					
087+00402901	1	160	691	655	630	535	615	625	613	600	581	647	582	539	561	531
087+00402901	2	160	614	604	607	582	699	596	575	640	531					
087+00402901	1	170	657	639	620	502	583	565	546	528	509	491	462	433	405	391
087+00402901	2	170	502	502	507	474	604	498	475	543	434					
087+00402901	1	180	685	670	615	505	594	584	568	552	536	520	479	465	452	423
087+00402901	2	180	527	509	522	474	567	491	483	543	449					
COMMENT 03321A0 OMEGA 8.2 17 FEB 76 59 F 70 PGT 29.92 IN HG 74-004-029 02																
COMMENT 03321A0 1-38A AIRCRAFT ENG. J85-GE-5A																
70 % RPM ENG RUNUP 70 % RPM																
087+00402902	1	0	670	655	641	644	680	745	717	656	606	660	642	606	613	601
087+00402902	2	0	657	687	667	557	724	831	683	718	736					
087+00402902	1	10	652	640	624	526	665	735	705	635	620	697	655	601	626	601
087+00402902	2	10	632	672	612	552	727	808	673	720	744					
087+00402902	1	20	662	649	635	635	694	765	750	654	645	680	687	636	621	601
087+00402902	2	20	669	659	692	672	739	831	690	733	761					
087+00402902	1	30	678	664	688	644	683	760	742	684	640	635	682	623	621	611
087+00402902	2	30	627	657	649	529	714	805	680	638	731					
087+00402902	1	40	691	688	652	652	685	775	745	677	665	690	680	626	618	621
087+00402902	2	40	642	637	634	557	697	788	770	635	729					
087+00402902	1	50	666	643	632	641	680	752	737	680	640	647	645	535	601	608
087+00402902	2	50	642	684	652	653	682	751	653	658	714					
087+00402902	1	60	675	666	654	668	696	795	780	690	655	697	650	621	626	616
087+00402902	2	60	632	662	657	544	677	771	668	660	711					
087+00402902	1	70	685	678	673	668	715	795	777	690	672	682	670	608	608	603
087+00402902	2	70	637	632	604	592	622	726	630	603	650					
087+00402902	1	80	636	688	654	666	707	795	770	692	672	637	685	613	596	593
087+00402902	2	80	544	552	552	552	589	708	610	573	619					
087+00402902	1	90	702	681	652	566	710	785	745	656	655	667	660	588	591	578
087+00402902	2	90	539	562	552	527	577	681	573	593	579					
087+00402902	1	100	700	681	651	663	715	785	705	685	680	700	687	608	618	608
087+00402902	2	100	507	564	543	522	553	600	555	578	576					
087+00402902	1	110	705	634	631	598	727	812	777	732	712	745	750	585	688	676
087+00402902	2	110	602	532	563	562	592	650	670	606	601					
087+00402902	1	120	725	720	707	711	756	812	795	740	722	745	736	718	713	691
087+00402902	2	120	634	642	624	604	614	641	605	600	629					

087+00402902	1	130	732	722	710	737	777	812	772	722	750	757	745	631	731	633	661
087+00402902	2	130	634	132	654	552	669	698	643	638	671						
087+00402902	1	140	715	720	631	730	770	810	705	680	702	730	725	630	671	626	610
087+00402902	2	140	672	652	657	634	702	636	636	633	664						
087+00402902	1	150	715	706	676	714	747	802	765	710	702	702	692	611	641	601	611
087+00402902	2	150	694	702	727	677	717	696	650	650	706						
087+00402902	1	160	680	684	643	677	702	745	702	656	670	635	637	623	638	623	636
087+00402902	2	160	709	112	732	702	757	738	683	673	684						
087+00402902	1	170	654	638	616	500	582	565	547	529	511	433	475	453	431	415	426
087+00402902	2	170	522	534	547	504	502	561	503	503	526						
087+00402902	1	180	670	645	594	504	615	625	591	556	521	467	492	453	414	394	412
087+00402902	2	180	467	477	499	459	512	516	470	478	526						

[illegible]

NOISE PRODUCED ON THE GROUND BY

T-38A AIRCRAFT

DURING GROUND RUN-JP OPERATIONS

TEST 7+004-029
AIRCRAFT CODE: 033
PROFILE VERSION: M
COMPUTER PROGRAM OMEGA 11.1

PAGE

NORMALIZED DATA AS A FUNCTION OF ANGLE AND FREQUENCY

NORMALIZED SOUND PRESSURE LEVEL	C
NOISE LEVEL AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE	C
PERCEIVED NOISE LEVEL	D
TONE-CORRECTED, PERCEIVED NOISE LEVEL	E
A-WEIGHTED OVERALL SOUND LEVEL	F
TONE-CORRECTED, A-WEIGHTED OVERALL SOUND LEVEL	G
NOISE LEVEL AS A FUNCTION OF ANGLE AROUND SOURCE	J

15 MAR 82

AERUS PAC-3 MEDICAL RESERCH LABORATORY
 AIRIGHT-PATTERSON AIR FORCE BASE, O-110

[illegible]

SUMMARY OF I/O FOR TEST 74-004-029 FOR THE T-30A AIRCRAFT

PROGRAM: OMEGA 11.1
 AIRCRAFT CODE: 033
 PROFILE VERSION CODE: M
 COMDECK REVISION IDENTIFIER: 0
 DATE: 15 MAR 62
 DELTA N (OR DELN) = 2.00 DB

```
***** INPUT DATA *****
COMDECK NAME      FLAG  OPC  IFI  POWER  TEST  RUN  POWER DESCRIPTION
              03  03  1  100 % RPM  74-004-029  04  MAX PWR A/B
              04  04  0  100 % RPM  74-004-029  03  MIL PWR
              13  0  0  48 % RPM  74-004-029  01  IDLE
              21  0  0  70 % RPM  74-004-029  02  70 % RPM ENG RUNUP

***** NOISE SOURCE/SUBJECT *****
COMDECK NAME      PART 1      PART 2      DATE OF
              T-30A      T-30A      NORM. RUN
              03303A0      03303A0      17 FEB 76
              03304A0      03304A0      17 FEB 76
              03313A0      03313A0      17 FEB 76
              03321A0      03321A0      17 FEB 76
```

```
***** OUTPUT DATA *****
MEASURES COMPUTED:  PMLT(P)--YES  AL(A)--YES  ALT(T)--YES
ANGLE SELECTION MODE:  PROFILE DATA FOR 10 ANGLES WRITTEN ON FILE 'TAPE2'
MAX ERROR PERMITTED IN PROFILE DATA ANGLE SELECTION (FILE TAPE2) = 3.5 DB
METEOROLOGY:  TEMP = 70 F
              BAR PRESS = 29.50 IN HG
              REL HUMID = 60 %
```

TEST NUMBER FOR ALL RUNS: 74-004-029
 NOISE SOURCE/SUBJECT FOR ALL RUNS, PART 1: T-30A AIRCRAFT
 PART 2: ENG. J65-GE-5A

```
PROFILE ID      OPC  NO  POWER  NORMALIZED COMDECKS  POWER DESCRIPTION
              03395W0  95  01  100 % RPM  03303A0  MAX PWR A/B
              03396W0  96  02  50 % RPM  03313A0  MIL PWR
              03397W0  97  03  100 % RPM  03304A0
```

```
***** GENERAL INFORMATION *****
JPC --- OPERATION POWER CODE
FLAG IFI=1 --- REFERENCE DATA ARE FOR AFTERBURNER, WEI OR WITH JETS
              IFI=0 --- NORMAL REFERENCE DATA WHICH CAN BE INTERPOLATED
PROFILE COMDECK NAME = SYMBOL P, A OR T + PROFILE ID LISTED ABOVE
```

TABLE: NORMALIZED SOUND PRESSURE LEVEL (DB)																
1/3 OCTAVE BAND																
DISTANCE = 250 FEET																
NOISE SOURCE/SUBJECT:																
T-38A AIRCRAFT																
ENG. J85-GE-5A																
OPERATION:																
MAX PWR A/B																
100 % RPM																
METEOROLOGY:																
TEMP = 59 F																
BAR PRESS = 29.92 IN HG																
REL HUMID = 70 %																
DELTA N = 2.0 DB																
IDENTIFICATION:																
OMEGA 11.1																
TEST 74-004-029																
AIRCRAFT CODE 033																
OPERATION CODE 03																
PROFILE VERSION M																
15 MAR 82																
PAGE C1																
BAND CENTER																
FREQ (HZ)																
50	83	84	83	83	80	87	85	88	88	91	96	100	103	100	87	80
63	84	85	85	86	87	88	88	89	91	91	94	100	104	106	104	86
80	86	86	86	87	87	89	91	91	92	94	97	104	107	109	106	84
100	89	88	89	90	89	93	94	95	96	97	101	104	113	112	109	84
125	90	89	92	92	92	94	95	96	97	99	102	105	112	115	111	84
160	92	92	93	94	94	95	97	99	98	101	103	107	112	117	116	85
200	90	91	92	92	93	94	95	96	97	99	102	107	113	114	113	85
250	89	89	90	91	92	94	95	97	97	99	101	107	115	112	111	83
315	87	88	90	92	94	94	95	96	97	100	101	107	115	117	112	83
400	89	91	92	94	96	96	98	98	99	100	103	105	111	120	118	81
500	91	93	94	95	94	98	100	102	102	105	109	112	121	121	120	81
630	88	88	90	91	95	94	97	100	97	100	107	109	118	118	115	79
800	82	85	88	91	93	94	95	97	98	101	103	110	112	119	114	75
1000	86	87	84	87	91	92	93	95	95	100	105	108	113	114	106	74
1250	81	84	85	87	90	92	91	97	95	101	102	109	109	112	107	73
1600	82	84	86	87	91	92	91	94	94	98	98	105	103	111	106	71
2000	82	83	83	85	88	90	89	94	94	99	95	105	107	109	103	69
2500	81	83	84	85	88	83	88	84	92	92	95	103	105	106	101	67
3150	76	80	80	82	86	87	84	92	91	95	96	99	103	104	101	65
4000	83	86	85	84	80	87	85	92	90	94	97	100	102	105	101	65
5000	75	79	79	83	85	82	88	86	86	90	93	98	93	103	98	61
6300	75	78	77	79	81	83	80	86	86	87	89	96	96	100	93	61
8000	72	85	85	82	82	82	84	82	83	87	94	94	100	91	81	58
10000	70	72	72	74	73	76	74	79	77	79	83	89	90	96	88	51
OVERALL	100	101	102	103	105	107	110	109	112	115	120	126	126	122	95	91

TABLE: NORMALIZED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 250 FEET																			
NOISE SOURCE/SUBJECT: (OPERATION:) METEOROLOGY:) IDENTIFICATION:)																			
T-38A AIRCRAFT (MIL PMR) TEMP = 59 F) AIRCRAFT CODE 033)																			
ENG. J85-GE-5A (100 % RPM) BAR PRESS = 29.92 IN HG) OPERATION CODE 04)																			
((REL HUMID = 70 %) PROFILE VERSION W)																			
((DELTA N = 2.0 DB) PAGE C2)																			
) RUN)																			
BAND CENTER																			
FREQ (HZ)																			
0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
50	73	74	72	74	76	75	75	76	73	80	80	83	85	91	94	94	86	83	82
63	74	75	75	77	79	77	77	78	81	82	83	86	90	94	97	97	88	78	79
80	76	76	76	79	78	79	81	81	82	84	84	88	93	98	99	99	86	74	77
100	79	79	80	81	81	82	83	85	85	88	88	91	96	101	104	102	87	75	73
125	80	81	82	82	83	84	85	87	88	90	92	94	98	103	108	102	89	76	74
160	83	84	86	85	87	85	86	90	91	94	95	98	102	105	111	105	91	78	75
200	82	85	87	86	86	85	83	90	91	92	94	98	103	106	108	102	87	76	74
250	81	83	84	84	85	86	87	88	90	91	94	96	103	108	103	101	86	75	73
315	81	84	84	85	86	88	88	89	92	94	96	99	104	111	107	102	87	80	74
400	83	87	89	88	90	89	90	92	95	98	99	102	107	111	111	104	87	79	74
500	86	90	91	90	92	91	93	95	96	99	100	104	109	114	110	103	88	80	75
630	83	83	87	90	89	88	93	91	92	94	98	100	105	109	105	98	85	79	72
800	81	85	89	88	90	89	90	93	94	98	100	103	107	111	108	97	84	77	69
1000	82	87	83	89	89	83	91	92	93	96	101	103	107	105	92	83	73	67	
1250	83	86	86	89	90	90	91	93	95	96	98	102	104	104	105	91	81	72	67
1600	81	85	87	88	88	90	92	91	94	93	96	99	103	98	103	88	77	69	64
2000	82	85	88	89	89	90	92	92	95	94	97	99	103	96	101	87	78	68	63
2500	81	84	87	88	88	90	91	92	95	92	96	98	102	97	98	86	75	66	61
3150	78	81	84	86	86	88	89	90	92	90	94	94	93	96	93	82	72	63	59
4000	83	81	84	85	86	88	89	90	92	90	95	93	93	97	90	81	72	63	58
5000	75	76	80	82	82	85	87	88	90	88	91	91	97	91	88	79	68	60	55
6300	75	75	79	81	80	84	85	85	88	86	88	88	95	89	88	77	67	59	56
8000	81	73	76	74	78	82	83	82	86	84	86	86	93	87	85	75	64	55	52
10000	70	66	69	71	71	76	77	77	80	81	83	84	83	82	79	69	60	50	45
OVERALL	95	98	93	100	101	101	103	104	106	107	109	112	116	120	119	113	99	90	87

TABLE: NURMALIZED SOUND PRESSEPE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 250 FEET																			
IDENTIFICATION:																			
OMEGA 11.1																			
TEST 74-004-029																			
RUN																			
NOISE SOURCE/SUBJECT:																			
T-38A AIRCRAFT																			
ENG. J85-GE-5A																			
OPERATION:																			
LOLE 48 X RPM																			
TEMP = 59 F																			
BAR PRESS = 29.92 IN HG																			
REL HUMID = 70 %																			
DELTA N = 2.0 DB																			
AIRCRAFT CODE 033																			
OPERATION CODE 13																			
PROFILE VERSION W																			
15 MAR 82																			
PAGE C3																			
BAND CENTER																			
FREQ (HZ)																			
0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	100
70	69	69	71	72	72	71	72	71	73	74	73	70	74	74	74	71	68	71	
63	67	67	68	71	71	69	70	71	71	72	72	72	72	73	74	72	68	66	69
80	66	67	67	67	67	69	68	68	68	70	69	71	70	72	70	65	64	64	
100	68	67	68	66	69	69	69	69	70	71	72	72	74	75	72	66	62	63	
125	70	72	71	71	71	71	72	72	74	75	74	74	76	78	75	64	60	61	
160	73	74	75	75	75	77	76	77	79	79	78	76	78	79	77	65	59	60	
200	70	68	71	72	71	70	74	73	75	76	73	75	74	75	74	63	57	59	
250	63	65	67	65	67	67	68	69	70	71	70	72	71	69	71	62	55	57	
315	66	69	67	68	72	71	71	71	72	74	73	73	74	73	71	61	53	56	
400	69	70	68	71	72	69	69	71	72	74	75	74	74	73	71	67	51	54	
500	66	68	69	68	69	64	67	67	68	72	73	74	74	73	71	66	58	48	50
630	63	63	65	64	62	59	62	62	65	68	69	72	71	64	63	56	45	49	
800	60	65	61	62	63	62	64	62	63	63	64	68	71	68	65	64	58	43	47
1000	62	61	61	61	61	60	59	58	60	63	65	63	66	61	61	55	41	44	
1250	63	62	61	64	63	60	58	57	57	60	63	66	64	61	63	55	43	47	
1500	71	68	70	68	69	68	67	63	61	60	61	64	67	69	67	70	63	52	55
2000	69	67	70	70	71	68	67	61	58	57	58	63	65	67	66	69	62	52	53
2500	65	65	69	65	67	63	58	57	55	54	56	61	65	69	68	70	63	53	54
3150	62	60	67	63	64	63	60	58	54	53	53	59	63	67	65	67	60	49	49
4000	83	83	81	79	78	69	75	73	68	64	63	70	65	71	72	79	72	62	59
5000	69	70	70	71	70	65	68	66	60	57	56	61	63	67	66	67	62	52	51
6300	68	70	71	71	70	67	65	63	57	57	55	61	61	66	64	64	60	50	50
8000	79	80	81	81	81	75	75	74	67	66	65	69	63	73	68	71	66	56	56
10000	67	66	70	70	70	63	65	63	57	55	54	57	58	60	59	60	55	45	47
OVERALL	86	86	85	86	86	83	84	84	83	84	85	85	85	86	86	85	79	73	75

TABLE: NORMALIZED SOUND PRESSURE LEVEL (DB)																			
1/3 OCTAVE BAND																			
DISTANCE = 250 FEET																			
NOISE SOURCE/SUBJECT:																			
1-38A AIRCRAFT																			
ENG. J45-GE-5A																			
OPERATION:																			
70 % RPM ENG RUNUP																			
70 % RPM																			
REL HUMID = 70 %																			
DELTA N = 2.0 DB																			
METEOROLOGY:																			
TEMP = 59 F																			
BAR PRESS = 29.92 IN HG																			
PROFILE VERSION W																			
15 MAR 82																			
PAGE C4																			
AIRCRAFT CODE 033																			
OPERATION CODE 21																			
TEST 74-004-029																			
OMEGA 11.1																			
IDENTIFICATION:																			
RUN																			
ANGLE (DEGREES)																			
BAND CENTER																			
FREQ (HZ)																			
0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
50	69	67	68	70	71	69	70	71	72	72	73	75	75	74	74	70	67	69	
63	68	66	67	68	71	68	69	70	71	70	71	74	75	74	73	68	66	67	
80	66	64	67	67	67	67	68	69	67	68	71	73	73	71	70	66	64	61	
100	66	65	66	66	67	66	69	69	69	68	72	73	76	75	73	70	62	62	
125	70	69	71	71	71	70	72	74	73	74	78	77	80	79	77	72	60	64	
160	77	76	79	78	80	77	82	82	82	81	83	83	83	83	82	77	59	65	
200	74	73	77	76	77	76	80	73	77	79	80	82	79	79	79	72	57	61	
250	69	66	67	68	70	70	71	71	71	68	71	75	76	74	70	73	68	55	
315	63	64	67	66	69	66	68	69	69	68	70	73	74	77	72	72	69	53	
400	68	72	70	72	71	67	72	70	72	69	72	77	78	78	75	72	71	51	
500	66	68	71	70	70	67	71	69	71	68	71	77	73	77	75	71	72	50	
630	63	62	68	64	65	62	64	63	63	61	63	71	76	71	66	63	65	47	
800	63	65	64	64	64	62	65	63	62	61	64	71	74	75	69	66	66	45	
1000	62	62	62	63	64	63	64	62	61	60	63	70	73	70	65	62	64	44	
1250	62	63	62	64	64	65	63	62	62	59	62	67	71	68	64	63	66	45	
1600	65	65	69	65	66	66	65	62	56	56	59	62	67	71	69	71	73	54	
2000	71	69	58	68	72	70	68	65	57	58	58	61	66	70	67	72	73	55	
2500	69	69	71	67	70	67	68	62	57	57	57	59	64	68	69	75	75	57	
3150	68	67	69	65	68	68	66	61	57	55	54	58	62	67	71	70	72	52	
4000	74	75	75	73	72	70	70	64	61	60	58	61	63	69	72	74	78	58	
5000	83	83	85	83	81	77	79	75	73	70	69	68	65	72	72	72	76	58	
6300	70	69	71	70	69	67	69	65	63	59	59	59	63	66	66	67	70	52	
8000	74	74	75	72	72	68	68	62	53	57	60	63	68	66	65	68	69	52	
10000	76	76	78	75	75	73	73	68	64	60	60	62	65	69	68	73	70	55	
OVERALL	80	86	85	87	87	84	87	86	86	84	85	88	83	89	88	88	86	73	

TABLE 1 PERCEIVED NOISE LEVEL (PNDB)																			
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																			
NOISE SOURCE/SUBJECT:		OPERATIONS:				METEOROLOGY:				AIRCRAFT CODE 033				IDENTIFICATION:					
T-38A AIRCRAFT		MAX PHR A/B				TEMP = 70 F				OPERATION CODE 95				OMEGA 11.1					
ENG. J85-GE-5A		100 % RPM				WAK PRESS = 29.50 IN HG				PROFILE VERSION W				TEST 74-004-029					
						REL HUMID = 60 %				15 MAR 82				RUN 01					

TABLE: TONE-CORRECTED, PERCEIVED NOISE LEVEL (PNDB)																	
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																	
DISTANCE (FEET)	ANGLE (DEGREES)										METEOROLGY:						
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	
200	114.0	116.0	115.5	115.5	117.3	110.6	110.5	121.4	121.5	125.6	126.2	131.0	137.9	138.5	137.1	130.0	101.1
250	111.7	113.7	113.2	113.3	115.2	116.4	116.3	119.2	119.3	123.4	124.0	128.8	135.8	136.3	135.0	127.9	98.9
315	109.3	111.3	110.9	111.0	113.0	114.1	114.2	117.0	117.0	121.0	121.6	126.6	133.6	134.2	132.9	125.8	96.8
400	106.9	108.6	108.5	108.7	110.7	111.6	111.9	114.7	114.8	118.9	119.6	124.3	131.4	132.0	130.7	123.6	94.5
500	104.4	106.3	105.9	106.3	108.4	109.5	109.6	112.2	112.5	116.5	117.3	122.0	129.2	129.7	128.4	121.4	92.1
630	101.7	103.6	103.3	103.9	106.0	107.0	107.2	109.7	110.1	114.0	114.9	119.6	126.8	127.3	126.1	119.1	89.7
800	99.0	100.7	100.5	101.4	103.5	104.5	104.8	107.2	107.6	111.4	112.4	117.1	124.4	124.9	123.7	116.7	87.1
1000	96.3	97.6	98.1	98.7	100.8	101.9	102.2	104.6	105.0	108.7	109.8	114.5	121.9	122.3	121.2	114.2	84.4
1250	93.4	94.7	95.2	95.8	98.0	99.1	99.4	101.8	102.2	106.0	107.1	111.8	119.3	119.7	118.6	111.6	81.6
1600	90.4	91.7	92.2	92.8	95.1	96.1	96.5	98.9	99.3	103.0	104.2	108.9	116.5	116.9	115.8	108.8	78.6
2000	87.1	88.5	89.0	89.6	92.0	92.9	93.4	95.7	96.2	99.9	101.2	105.8	113.6	113.9	112.9	105.8	75.4
2500	83.6	84.9	85.3	86.2	88.6	89.5	90.0	92.3	92.8	96.5	97.9	102.5	110.3	110.6	109.6	102.5	71.8
3150	79.5	80.8	81.4	82.1	84.6	85.4	86.1	88.3	88.8	92.6	93.9	98.5	105.5	106.7	105.8	98.6	67.6
4000	74.4	75.7	76.5	77.3	80.0	80.7	81.2	83.9	84.1	87.9	89.6	94.2	102.0	102.4	101.2	94.2	62.8
5000	68.9	70.3	71.1	72.2	75.0	75.6	76.6	79.0	79.0	82.8	84.8	89.4	97.0	97.7	96.2	89.5	57.6
6300	63.2	64.6	65.5	66.7	69.7	70.3	71.4	74.0	73.7	77.5	79.8	84.4	91.9	92.7	91.0	84.6	51.9
8000	58.3	59.8	60.9	62.3	65.4	65.9	67.1	69.8	69.3	73.1	75.8	80.3	87.8	88.9	86.9	80.8	47.4
10000	53.3	54.8	56.0	57.5	60.7	61.1	62.6	65.3	64.7	68.4	71.5	75.9	83.3	84.3	82.5	76.7	42.3
12500	48.2	49.8	50.9	52.5	55.8	56.2	57.7	60.4	59.8	63.5	66.7	71.1	78.8	80.0	78.1	72.2	36.5
16000	42.2	43.8	45.3	46.9	50.4	50.8	52.5	55.0	54.4	58.1	61.4	65.8	73.8	75.0	73.1	67.3	29.2
20000	35.0	37.0	38.3	39.9	44.0	44.3	46.2	48.9	48.4	52.1	55.5	60.0	68.2	69.4	67.6	61.7	19.4
25000	25.4	27.7	29.2	31.3	36.1	36.4	38.4	41.6	40.8	45.0	48.8	53.3	61.8	63.1	61.4	55.4	9.7

TABLE: A-WEIGHTED OVERALL SOUND LEVEL (DBA)																			
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																			
NOISE SOURCE/SUBJECT:																			
T-30A AIRCRAFT																			
ENG. J85-GE-5A																			
OPERATIONS:																			
MAX PWR A/B																			
100 % RPM																			
METEOROLOGY:																			
TEMP = 70 F																			
BAR PRESS =29.50 IN HG																			
REL HUMID = 60 %																			
AIRCRAFT CODE 033																			
OPERATION CODE 95																			
PROFILE VERSION M																			
15 MAR 62																			
PAGE F1																			
IDENTIFICATION:																			
OMEGA 11.1																			
TEST 74-004-029																			
RUN 01																			
ANGLE (DEGREES)																			
DISTANCE	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
(FEET)																			
200	97.3	94.0	99.7	101.3	104.1	104.8	105.3	109.0	108.0	112.2	114.6	119.5	125.0	126.9	123.6	118.1	87.8	84.7	81.9
250	95.1	96.9	97.5	99.1	102.0	102.6	103.2	106.8	105.9	110.0	112.5	117.4	122.9	124.9	121.5	116.1	85.7	82.7	79.8
315	92.9	94.6	92.4	97.0	94.8	100.5	101.1	104.7	103.8	107.9	110.3	115.3	120.8	122.7	119.5	114.0	83.6	80.6	77.7
400	90.7	92.4	93.1	94.8	97.0	98.3	99.0	102.5	101.6	105.7	108.2	113.1	118.7	120.5	117.4	111.9	81.5	78.4	75.6
500	88.4	90.1	90.9	92.5	95.4	96.1	96.8	100.3	99.4	103.5	106.0	110.9	116.5	118.4	115.2	109.7	79.3	76.2	73.3
530	86.1	87.7	88.6	90.2	93.2	93.8	94.0	98.0	97.1	101.2	103.7	108.6	114.3	116.2	113.0	107.5	77.1	74.0	71.0
500	83.7	85.3	86.2	87.9	90.9	91.4	92.3	95.7	94.8	98.8	101.5	106.3	112.1	114.8	110.8	105.3	74.8	71.6	68.7
1000	81.3	82.6	83.8	85.5	88.5	89.0	89.9	93.3	92.4	96.4	99.1	104.0	109.8	111.7	108.6	103.0	72.4	69.2	66.3
1250	78.8	80.3	81.3	83.0	86.0	86.5	87.5	90.8	89.9	93.9	96.7	101.5	107.4	109.3	106.2	100.5	69.9	66.7	63.7
1500	76.2	77.6	78.7	80.5	83.5	83.9	85.0	88.2	87.4	91.3	94.2	98.9	105.0	106.3	103.8	98.1	67.2	64.1	61.1
2000	73.5	74.9	76.0	77.8	80.8	81.2	82.4	85.5	84.7	88.6	91.6	96.3	102.5	104.3	101.3	95.5	64.5	61.4	58.3
2500	70.9	71.9	73.0	74.8	77.9	78.2	79.5	82.6	81.7	85.6	88.8	93.3	99.7	101.4	98.5	92.6	61.4	58.3	55.3
3150	67.1	68.5	69.0	71.4	74.6	74.9	76.2	79.3	78.3	82.2	85.6	90.0	96.4	98.2	95.1	89.2	58.0	54.9	51.8
4000	63.3	64.7	65.8	67.6	70.8	71.1	72.5	75.6	74.6	78.5	81.9	86.4	92.7	94.5	91.4	85.5	54.1	51.0	48.0
5000	59.0	60.4	61.5	63.4	66.6	66.3	68.3	71.4	70.3	74.3	77.8	82.2	88.5	90.4	87.1	81.2	49.8	46.7	43.7
5300	54.5	55.9	56.9	58.8	62.1	62.3	63.7	67.0	65.8	69.7	73.3	77.7	84.0	85.3	82.6	76.7	45.2	42.1	39.1
8000	50.6	51.9	53.0	54.9	58.1	58.3	59.9	62.9	61.8	65.6	69.3	73.6	80.2	82.3	78.9	72.9	41.4	38.3	35.2
10000	46.4	47.7	48.9	50.7	53.9	53.9	55.6	58.5	57.4	61.1	64.9	69.1	75.1	77.7	74.8	68.8	37.3	34.1	31.0
12500	41.8	43.1	44.4	46.0	49.2	49.2	51.0	53.7	52.7	56.3	60.1	64.2	71.6	73.0	70.3	64.2	32.9	29.6	26.4
16000	36.8	38.1	39.4	40.9	44.1	44.1	45.9	48.5	47.5	51.1	54.8	58.8	65.5	67.3	65.4	59.2	28.0	24.7	21.4
20000	31.3	32.6	33.9	35.3	38.4	38.4	40.2	42.6	41.6	45.3	49.0	52.9	60.9	61.3	59.8	53.7	22.8	19.4	16.0
25000	25.3	26.4	27.8	29.1	32.1	32.1	33.9	36.2	35.3	38.9	42.4	46.4	54.5	55.3	53.5	47.5	17.2	13.7	10.2

TABLE 1 NOISE LEVEL AS A FUNCTION OF ANGLE AROUND SOURCE

DISTANCE = 250 FEET

NOISE SOURCE/SUBJECT: () IDENTIFICATION:
 T-38A AIRCRAFT () OMEGA 11.1
 ENG. J05-GE-5A () TEST 74-004-029

() METEOROLOGY: () AIRCRAFT CODE 033
 () MAX PMR A/S () OPERATION CODE 95
 () 100 % RPM () PROFILE VERSION W
 () () 15 MAR 82
 () () PAGE J1

	P=NL											T=AL										
	A=AL											A=AL										
	40	50	60	70	80	90	100	110	120	130	140	40	50	60	70	80	90	100	110	120	130	140
0																						
10																						
20																						
30																						
40																						
50																						
60																						
70																						
80																						
90																						
100																						
110																						
120																						
130																						
140																						
150																						
160																						
170																						
180																						

PROFILE DATA WRITTEN ON FILE "TAPE2" AS FOLLOWS:

FILE DATA FOR ANGLES: 0 60 70 80 90 100 120 140 150 160 180

FILE DATA FOR ANGLES: 0 60 70 80 90 100 120 130 150 160 180

FILE DATA FOR ANGLES: 0 60 70 80 90 100 120 140 150 160 180

TABLE-1 PERCEIVED NOISE LEVEL (PNDL)																			
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																			
NOISE SOURCE/SUBJECT:																			
T-38A AIRCRAFT																			
ENG. J85-GE-5A																			
OPERATION:																			
50 % RPM																			
TEMP = 70 F																			
BAR PRESS = 29.50 IN HG																			
REL HUMID = 60 %																			
METEOROLOGY:																			
ANGLE (DEGREES)																			
DISTANCE																			
(FEET)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
200	103.1	103.3	103.0	101.9	101.4	96.8	98.5	97.0	93.6	92.4	92.5	96.0	95.5	98.3	97.9	101.2	94.8	84.6	83.4
250	101.7	100.9	100.5	99.5	99.0	94.3	96.1	94.6	91.2	90.1	90.2	93.7	93.2	95.3	95.5	98.8	92.4	82.2	81.0
315	90.3	95.4	98.2	97.0	96.5	91.6	93.6	92.2	88.8	87.7	87.9	91.3	90.8	93.5	93.1	96.4	90.0	79.7	76.5
400	95.6	95.2	95.5	94.4	93.8	88.8	91.1	89.6	86.3	85.2	85.5	88.8	88.4	91.0	90.6	93.8	87.4	77.3	76.0
500	92.5	93.0	92.8	91.6	91.2	86.0	88.3	86.9	83.6	82.6	83.0	86.2	85.8	88.2	87.9	91.2	84.7	74.3	73.3
530	89.9	90.1	89.8	88.7	88.2	83.1	85.4	84.0	80.7	80.0	80.5	83.4	83.1	85.5	85.1	88.3	81.8	71.4	70.3
800	86.7	86.9	86.5	85.5	85.1	80.0	82.3	80.9	77.7	77.4	77.9	80.4	80.5	82.5	82.1	85.3	78.7	68.2	67.2
1000	83.3	83.5	83.2	82.0	81.7	76.7	78.9	77.5	74.4	74.6	75.1	77.3	77.7	79.4	78.9	82.0	75.3	64.6	63.7
1250	79.5	79.7	79.4	78.3	77.9	73.2	75.2	73.8	70.8	71.6	72.1	74.2	74.6	76.1	75.3	78.3	71.6	60.8	59.9
1500	75.2	75.5	75.2	74.1	73.8	69.5	71.1	69.7	67.5	68.4	69.1	71.1	71.7	72.5	71.4	74.3	67.5	56.4	55.6
2000	70.5	70.8	70.5	69.4	69.2	65.2	66.6	65.2	64.1	65.1	65.8	67.3	68.5	69.1	67.8	69.9	63.0	51.3	50.7
2700	65.1	65.4	65.2	64.1	64.1	61.2	61.3	60.2	59.6	60.8	61.6	63.8	64.8	64.3	63.6	64.8	57.6	44.9	45.0
3150	59.0	59.3	59.1	58.1	58.8	56.2	56.0	55.2	54.7	55.9	57.0	59.3	60.5	60.2	58.7	59.0	51.8	36.2	37.9
4000	52.5	52.5	52.9	52.4	53.4	50.8	50.3	49.4	49.1	50.7	52.1	54.3	55.6	55.3	53.4	53.7	45.4	27.0	29.7
5000	45.9	44.7	46.1	45.4	46.8	44.1	43.6	42.6	42.3	44.7	46.5	48.9	50.2	49.5	47.4	47.2	38.4	13.0	17.9
8300	37.3	37.4	38.4	37.8	38.6	35.7	35.7	35.0	34.3	38.1	40.1	42.5	44.0	43.1	40.5	39.0	29.0	6.1	
8000	28.3	30.6	31.4	31.2	32.5	27.6	29.8	28.1	28.9	32.6	34.3	37.3	38.6	37.5	34.4	31.5	19.9		
10000	17.2	22.0	22.5	22.0	24.3	15.9	20.8	20.3	22.2	27.2	29.0	31.8	33.0	31.2	27.4	21.2	10.6		
12500	7.3	12.8	12.9	13.7	14.9	4.2	10.1	12.1	13.4	18.7	21.6	25.5	25.5	24.0	19.4	12.3	1.1		
16000		3.5	3.3	5.3	5.4			3.8	4.5	10.5	12.4	15.9	17.6	13.3	9.7	3.3			
20000										2.3	3.2	6.2	8.1	3.5					
25000																			

TABLE: TONE-CORRECTED, PERCEIVED NOISE LEVEL (PNDB)																			
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																			
NOISE SOURCE/SUBJECT:										IDENTIFICATIONS:									
T-30A AIRCRAFT										) OMEGA 11.1									
ENG. J65-GE-5A										) TEST 74-004-029									
) OPERATION:										) RUN 02									
) METEOROLOGY:										) AIRCRAFT CODE 033									
) TEMP = 70 F										) OPERATION CODE 96									
) BAR PRESS = 29.50 IN HG										) PROFILE VERSION M									
) REL HUMID = 60 %										) 15 MAR 82									
))										) PAGE E2									
ANGLE (DEGREES)																			
DISTANCE																			
(FEET)																			
0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
200	108.3	103.2	107.2	105.9	105.0	98.4	101.3	100.6	97.3	95.6	95.3	99.1	96.4	99.8	99.9	105.0	98.2	88.3	86.1
250	105.9	100.8	104.8	103.5	102.6	95.9	99.0	98.3	95.0	93.3	93.0	96.8	94.1	97.5	97.6	102.7	95.9	85.9	83.7
300	103.4	103.3	102.3	101.0	100.2	93.2	96.5	95.8	92.5	90.9	90.6	94.4	91.8	95.1	95.2	100.2	93.4	83.4	81.2
400	100.6	100.7	99.7	98.4	97.6	90.4	93.9	93.2	90.0	88.4	88.3	91.9	89.3	92.5	92.7	97.7	90.9	80.8	78.6
500	98.0	98.0	96.9	95.6	94.8	87.0	91.2	90.5	87.3	85.8	85.9	89.3	86.7	89.3	90.0	95.0	88.1	78.0	75.3
600	95.1	95.0	94.0	92.7	91.9	84.7	88.3	87.6	84.5	83.2	83.4	86.5	84.0	87.1	87.2	92.2	85.3	75.1	73.0
700	91.9	91.9	90.8	89.5	88.7	81.6	85.2	84.5	81.5	80.5	80.7	83.5	81.4	84.1	84.2	89.1	82.2	71.9	69.8
800	88.4	88.4	87.4	86.0	85.3	78.3	81.8	81.1	78.2	77.7	77.9	80.4	79.7	81.0	80.9	85.6	78.8	68.3	66.4
900	84.6	84.6	83.6	82.2	81.5	74.8	78.1	77.4	74.0	74.7	75.0	77.3	75.7	77.5	77.4	82.2	75.1	64.5	62.6
1000	80.4	80.4	79.4	78.1	77.4	71.2	74.0	73.3	71.2	71.6	72.0	74.2	72.7	74.1	73.5	78.2	71.0	60.1	58.3
1200	75.7	75.7	74.7	73.4	72.9	67.2	69.2	68.8	67.8	68.2	68.7	71.0	69.4	70.7	69.9	73.8	66.4	55.0	53.3
1400	70.3	70.4	69.4	68.1	67.7	62.8	64.2	63.9	63.4	63.9	64.5	66.9	65.7	66.5	65.6	68.7	61.0	48.6	47.7
1600	64.1	64.2	63.3	62.1	62.5	57.8	58.0	58.0	58.4	59.1	59.9	62.4	61.4	61.9	60.7	62.8	55.2	39.9	40.6
1800	58.6	58.4	58.2	55.6	56.3	52.1	52.6	52.3	52.1	53.2	54.4	56.8	56.3	56.5	55.1	56.7	48.2	29.9	31.8
2000	49.0	47.6	48.5	47.7	48.7	45.0	45.3	44.8	44.5	46.6	48.2	50.8	50.8	50.5	48.7	49.5	40.5	15.2	19.5
2200	35.4	39.4	40.1	39.4	40.0	36.4	36.9	36.4	36.4	39.4	41.2	43.8	44.4	43.7	41.3	40.6	30.3	.6	7.1
2400	29.3	31.0	32.3	32.0	33.2	27.9	30.3	28.8	29.7	33.2	34.9	37.9	38.8	37.3	34.8	32.2	20.6		
2600	17.2	22.0	22.5	22.0	24.3	15.9	20.8	20.3	22.2	27.2	29.0	31.8	33.0	31.2	27.4	21.2	10.6		
2800	7.3	12.0	12.9	13.7	14.9	4.2	10.1	12.1	13.4	18.7	21.6	25.5	26.5	24.0	19.4	12.3	1.1		
3000	3.5	3.3	3.3	5.3	5.4		3.8	4.5	10.5	12.4	15.3	17.0	13.9	9.7	3.3				
25000									2.3	3.2	6.2	8.1	3.5						

TABLE 1 A-WEIGHTED OVERALL SOUND LEVEL (DBA)																			
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																			
NOISE SOURCE/SUBJECT:										IDENTIFICATIONS:									
T-38A AIRCRAFT										OMEGA 11.1									
ENG. J05-GE-5A										TEST 74-004-029									
OPERATION:										RUN 02									
50 % RPM										AIRCRAFT CODE 033									
METEOROLOGY:										OPERATION CODE 96									
TEMP = 70 F										PROFILE VERSION W									
BAR PRESS = 29.50 IN HG										15 MAR 82									
REL HUMID = 60 %										PAGE F2									
DISTANCE																			
(FEET)																			
ANGLE (DEGREES)																			
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180																			
200	83.1	84.1	87.3	87.3	86.0	81.9	83.0	81.3	77.3	78.2	78.8	81.1	81.9	83.2	81.8	85.0	78.9	68.3	67.2
250	85.7	85.7	85.4	84.7	84.1	79.4	80.5	78.9	75.7	76.0	76.6	78.9	73.8	80.3	73.6	82.7	76.5	65.9	64.9
315	83.1	83.1	82.0	82.0	81.4	76.9	77.9	76.4	73.4	73.8	74.5	76.7	77.6	78.5	77.2	80.2	74.1	63.4	62.5
400	80.4	80.4	80.0	79.2	78.7	74.2	75.3	73.7	71.0	71.6	72.3	74.4	75.4	76.2	74.9	77.7	71.5	60.8	60.0
500	77.5	77.5	77.1	76.2	75.8	71.5	72.5	71.0	68.6	69.3	70.1	72.1	73.2	73.3	72.4	75.1	68.9	58.2	57.4
530	74.5	74.5	74.1	73.1	72.7	68.6	69.6	68.1	65.1	66.9	67.7	69.7	70.9	71.3	69.8	72.4	66.1	56.3	54.8
500	71.3	71.2	70.8	69.8	69.6	65.8	66.6	65.2	63.5	64.5	65.4	67.3	68.5	68.7	67.2	69.5	63.2	52.4	52.0
1000	67.8	67.8	67.4	66.4	66.3	62.8	63.5	62.2	60.3	62.1	63.0	64.8	66.1	66.1	64.5	66.4	60.1	49.2	49.1
1250	64.1	64.1	63.8	62.9	62.9	59.7	60.3	59.1	58.1	59.5	60.4	62.2	63.6	63.4	61.6	63.2	56.9	45.8	46.0
1500	60.2	60.2	60.0	59.2	59.5	56.6	57.0	55.9	55.3	56.8	57.6	59.6	61.0	60.5	58.7	59.7	53.6	42.3	42.8
2000	56.0	56.2	56.1	55.5	56.0	53.4	53.6	52.7	52.4	54.0	55.1	56.9	58.3	57.7	55.7	56.2	50.1	38.5	39.5
2500	51.7	51.9	52.1	51.6	52.2	49.8	50.0	49.1	49.0	50.8	52.0	53.8	55.3	54.5	52.2	52.3	46.3	34.4	35.8
3150	47.2	47.4	47.8	47.4	48.1	45.9	46.0	45.1	45.2	47.0	48.4	50.3	51.9	50.3	48.4	48.1	42.2	30.1	31.8
4000	42.6	42.9	43.3	43.1	43.7	41.7	41.8	40.9	41.0	42.9	44.4	46.3	48.1	47.0	44.2	43.7	37.8	25.5	27.4
5000	37.7	38.1	38.6	38.3	39.0	37.1	37.3	36.3	36.4	39.4	39.9	41.9	43.9	42.5	39.6	38.9	33.0	20.5	22.7
6300	32.6	33.2	33.6	33.4	33.9	32.1	32.4	31.5	31.7	33.7	35.3	37.3	39.3	37.3	34.8	33.8	27.9	15.3	17.6
9000	27.8	28.3	28.2	29.0	29.6	27.5	28.2	27.7	28.0	30.1	31.7	33.6	35.4	33.3	30.9	29.3	23.4	10.8	13.2
10000	22.8	24.5	24.7	24.6	25.2	22.8	23.9	23.7	24.1	26.3	27.7	29.6	31.1	29.7	26.9	24.7	18.9	6.4	8.9
12500	17.8	19.8	20.0	20.0	20.6	18.0	19.4	19.4	19.9	22.1	23.4	25.2	26.5	25.2	22.5	20.0	14.2	2.2	4.6
16000	12.6	14.8	15.1	15.1	15.9	13.1	14.7	14.9	15.4	17.6	18.7	20.3	21.4	20.2	17.9	15.2	9.3		
20000	7.2	9.5	9.9	9.9	10.8	8.1	9.7	10.1	10.5	12.6	13.6	15.1	15.8	14.9	13.0	10.3	4.2		
25000	1.6	3.8	4.3	4.4	5.3	3.0	4.5	5.0	5.3	7.3	8.1	9.3	9.7	9.0	7.8	5.2			

TABLE 1: TONE-CORRECTED, A-WEIGHTED OVERALL SOUND LEVEL (OBA)																				
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																				
NOISE SOURCE/SUBJECT:																				
T-30A AIRCRAFT																				
ENG. J83-GE-5A																				
OPERATION:																				
50 % RPM																				
METEOROLOGY:																				
TEMP = 70 F																				
BAR PRESS = 29.50 IN HG																				
REL HUMID = 60 %																				
IDENTIFICATION:																				
OMEGA 11.1																				
TEST 74-004-029																				
AIRCRAFT CODE 033																				
OPERATION CODE 96																				
PROFILE VERSION M																				
15 MAR 82																				
PAGE 62																				
ANGLE (DEGREES)																				
DISTANCE	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	
(FEET)																				
200	93.3	93.1	92.1	91.3	90.3	89.5	88.8	88.0	87.1	86.1	85.0	84.2	83.4	82.9	84.3	83.9	88.9	82.3	72.0	69.9
250	93.0	92.8	91.8	91.0	90.0	89.2	88.4	87.5	86.6	85.6	84.7	83.8	82.9	82.0	81.6	86.5	80.0	69.6	67.6	
300	92.7	92.5	91.5	90.7	89.7	88.9	88.1	87.2	86.3	85.3	84.4	83.5	82.6	81.7	81.3	86.1	79.5	67.1	65.2	
400	92.4	92.2	91.2	90.4	89.4	88.6	87.8	86.9	86.0	85.1	84.2	83.3	82.4	81.5	81.1	85.9	78.9	64.5	62.7	
500	92.1	91.9	90.9	90.1	89.1	88.3	87.5	86.6	85.7	84.8	83.9	83.0	82.1	81.2	80.8	85.6	79.0	64.3	62.4	
600	91.8	91.6	90.6	89.8	88.8	88.0	87.2	86.3	85.4	84.5	83.6	82.7	81.8	80.9	80.5	85.4	78.8	64.0	62.1	
800	91.5	91.3	90.3	89.5	88.5	87.7	86.9	86.0	85.1	84.2	83.3	82.4	81.5	80.6	80.2	85.3	78.7	63.7	61.8	
1000	91.2	91.0	90.0	89.2	88.2	87.4	86.6	85.7	84.8	83.9	83.0	82.1	81.2	80.3	80.0	85.4	78.4	63.4	61.5	
1200	90.9	90.7	89.7	88.9	87.9	87.1	86.3	85.4	84.5	83.6	82.7	81.8	80.9	80.0	79.7	85.5	78.1	63.1	61.2	
1500	90.6	90.4	89.4	88.6	87.6	86.8	86.0	85.1	84.2	83.3	82.4	81.5	80.6	79.7	79.4	85.2	77.7	62.8	60.9	
2000	90.3	90.1	89.1	88.3	87.3	86.5	85.7	84.8	83.9	83.0	82.1	81.2	80.3	79.4	79.1	85.0	77.4	62.5	60.6	
3000	90.0	89.8	88.8	88.0	87.0	86.2	85.4	84.5	83.6	82.7	81.8	80.9	80.0	79.1	78.8	84.8	77.2	62.2	60.3	
4000	89.7	89.5	88.5	87.7	86.7	85.9	85.1	84.2	83.3	82.4	81.5	80.6	79.7	78.8	78.5	84.5	76.9	61.9	59.9	
5000	89.4	89.2	88.2	87.4	86.4	85.6	84.8	83.9	83.0	82.1	81.2	80.3	79.4	78.5	78.2	84.2	76.6	61.6	59.6	
6000	89.1	88.9	87.9	87.1	86.1	85.3	84.5	83.6	82.7	81.8	80.9	80.0	79.1	78.2	77.9	84.1	76.5	61.3	59.3	
8000	88.8	88.6	87.6	86.8	85.8	85.0	84.2	83.3	82.4	81.5	80.6	79.7	78.8	77.9	77.6	84.0	76.4	61.0	59.0	
10000	88.5	88.3	87.3	86.5	85.5	84.7	83.9	83.0	82.1	81.2	80.3	79.4	78.5	77.6	77.3	83.7	76.1	60.7	58.7	
12000	88.2	88.0	87.0	86.2	85.2	84.4	83.6	82.7	81.8	80.9	80.0	79.1	78.2	77.3	77.0	83.4	75.8	60.4	58.4	
15000	87.9	87.7	86.7	85.9	84.9	84.1	83.3	82.4	81.5	80.6	79.7	78.8	77.9	77.0	76.7	83.1	75.5	60.1	58.1	
20000	87.6	87.4	86.4	85.6	84.6	83.8	83.0	82.1	81.2	80.3	79.4	78.5	77.6	76.7	76.4	82.8	75.2	59.8	57.8	
25000	87.3	87.1	86.1	85.3	84.3	83.5	82.7	81.8	80.9	80.0	79.1	78.2	77.3	76.4	76.1	82.5	74.9	59.5	57.5	

TABLE: TONE-CORRECTED, PERCEIVED NOISE LEVEL (PNDB)																			
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																			
NOISE SOURCE/SUBJECT:																			
T-38A AIRCRAFT																			
ENG. J85-GE-5A																			
OPERATION:																			
MIL PKW																			
100 % RPM																			
70 F																			
BAR PRESS =29.50 IN HG																			
REL HUMID = 60 %																			
METEOROLOGY:																			
AIRCRAFT CODE 033																			
OPERATION CODE 97																			
PROFILE VERSION W																			
15 MAR 82																			
PAGE E3																			
IDENTIFICATION:																			
OMEGA 11.1																			
TEST 74-004-029																			
RUN 03																			
ANGLE (DEGREES)																			
DISTANCE	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
200	111.5	111.3	113.9	113.6	114.2	115.5	110.9	118.9	120.1	120.6	122.5	124.5	128.9	131.3	128.8	120.6	106.9	98.0	93.5
250	109.2	109.1	111.7	111.4	112.0	113.2	114.7	116.7	117.9	117.9	116.4	120.3	122.3	126.7	129.2	126.6	118.5	104.7	95.8
315	106.8	106.8	109.4	109.1	109.7	110.9	112.4	114.4	115.6	115.1	118.0	120.1	124.4	127.1	124.5	116.3	102.5	93.6	89.1
400	104.4	104.5	107.0	106.6	107.3	108.6	110.0	112.0	113.2	113.8	115.6	117.7	122.1	124.3	122.3	114.2	100.3	91.3	86.8
500	101.8	102.1	104.5	104.3	104.9	106.1	107.5	109.6	110.7	111.3	113.2	115.3	119.7	122.5	120.1	111.9	98.0	89.0	84.4
630	99.0	99.5	102.0	101.7	102.3	103.5	104.9	107.0	108.2	108.8	110.6	112.8	117.1	120.2	117.7	109.6	95.6	86.5	82.0
800	96.6	99.3	99.0	99.6	100.7	102.2	104.2	107.0	108.2	108.4	110.1	112.8	117.1	120.2	117.7	109.6	95.6	86.5	82.0
1000	92.9	94.0	90.4	95.1	90.7	97.8	99.3	101.3	102.5	103.3	105.1	107.3	111.6	115.3	112.8	104.7	90.5	81.4	76.8
1250	89.4	91.0	93.4	93.0	93.6	94.6	96.1	98.2	99.4	100.3	102.0	104.2	108.6	112.7	110.1	102.1	87.6	78.7	74.0
1600	86.1	87.9	90.1	89.7	90.3	91.2	92.7	94.8	96.0	97.2	98.8	101.0	105.7	109.3	107.3	99.2	84.7	75.7	71.1
2000	82.7	84.6	86.6	86.2	86.8	87.5	89.2	91.2	92.3	94.0	95.2	97.8	102.6	107.0	104.4	96.2	81.5	72.6	67.8
2500	79.2	81.4	83.0	82.3	83.2	83.6	85.3	87.6	88.2	90.6	91.6	94.4	99.2	103.7	100.8	92.4	78.1	69.2	64.2
3150	75.0	77.4	79.9	79.2	79.3	81.1	83.5	85.8	86.6	87.5	89.4	93.2	99.3	103.7	96.9	88.1	74.0	65.0	60.0
4000	69.9	72.7	74.2	73.5	74.7	74.6	76.6	78.7	79.3	81.9	83.1	86.1	90.8	95.3	92.4	83.7	69.5	60.4	55.1
5000	64.5	67.6	69.0	68.5	69.7	69.4	71.7	73.6	74.3	76.9	78.4	81.5	85.9	90.3	87.6	78.9	64.5	55.2	49.5
6300	58.7	62.2	63.6	63.2	64.5	63.9	66.4	68.1	69.0	71.6	73.3	76.5	80.8	85.2	82.5	73.9	59.2	49.8	43.3
8000	53.7	57.7	59.0	58.6	60.1	59.4	61.8	63.4	64.5	66.8	68.6	71.9	76.7	81.0	78.4	70.0	54.9	45.0	38.1
10000	48.2	52.6	53.8	53.6	55.2	54.4	56.8	58.4	59.7	61.9	64.0	67.3	72.2	76.5	74.0	65.9	50.3	39.5	32.5
12500	42.1	47.2	48.4	48.2	49.9	48.9	51.3	53.1	54.5	56.9	58.8	62.3	67.3	72.0	69.4	61.3	44.9	34.0	26.2
16000	35.2	40.6	41.9	41.5	43.6	42.3	45.4	47.3	48.5	51.2	53.2	56.7	61.3	66.3	64.2	56.3	38.6	27.5	17.4
20000	27.4	33.2	34.5	34.0	36.2	34.6	37.4	40.0	41.8	44.8	46.8	50.6	55.9	61.2	58.4	50.5	30.5	17.0	8.5
25000	14.7	24.4	25.3	24.6	26.9	25.1	28.8	31.4	32.8	36.0	39.1	43.1	49.1	54.7	51.8	43.6	19.8	6.4	

TABLE 1 A-WEIGHTED OVERALL SOUND LEVEL (OBA)																
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																
DISTANCE (FEET)	ANGLE (DEGREES)										METEOROLOGY:					
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
200	95.1	97.9	100.0	100.7	101.3	102.1	103.8	104.6	106.7	107.0	109.9	111.4	116.4	118.3	116.7	107.8
250	92.9	95.8	97.8	98.5	99.2	99.9	101.6	102.4	104.5	104.9	107.7	110.2	114.2	116.3	114.6	105.8
315	90.6	93.6	95.6	96.3	97.0	97.7	99.4	100.2	102.3	102.7	105.5	108.1	112.1	114.5	112.5	103.7
400	88.3	91.4	93.4	94.0	94.7	95.4	97.1	98.0	100.0	100.5	103.3	105.9	109.9	112.4	110.4	101.6
500	86.0	89.2	91.1	91.7	92.4	93.1	94.8	95.6	97.6	98.3	101.0	103.6	107.6	110.2	108.2	99.5
630	83.5	86.9	88.8	89.3	90.1	90.6	92.4	93.3	95.2	95.8	98.6	101.4	105.3	108.0	106.0	97.3
800	81.1	84.5	86.4	86.9	87.7	88.1	89.9	90.8	92.7	93.6	96.2	99.0	103.0	105.8	103.7	95.0
1000	78.5	82.1	83.9	84.4	85.2	85.5	87.4	88.3	90.1	91.2	93.7	96.6	100.5	103.2	101.4	92.7
1250	75.9	79.6	81.3	81.7	82.6	82.8	84.7	85.6	87.4	88.6	91.1	94.1	98.0	101.2	99.0	90.3
1500	73.1	76.9	78.6	79.0	79.8	80.0	81.9	82.9	84.6	85.0	88.5	91.4	95.4	98.7	96.5	87.8
2000	70.3	74.2	75.8	76.1	77.1	77.1	79.1	80.0	81.7	83.3	85.7	88.7	92.7	96.2	93.9	85.2
2500	67.2	71.2	72.7	73.1	74.0	73.9	76.0	77.0	78.5	80.3	82.6	85.7	89.7	93.3	90.9	82.1
3150	63.0	67.9	69.3	69.7	70.6	70.4	72.6	73.5	75.0	77.0	79.3	82.4	86.4	90.1	87.5	78.6
4000	60.1	64.2	65.6	65.9	66.8	66.6	68.8	69.8	71.2	73.3	75.6	78.8	82.7	86.4	83.8	74.7
5000	57.8	60.0	61.3	61.7	62.6	62.3	64.6	65.6	66.9	69.1	71.4	74.6	78.5	82.3	79.6	70.3
6300	51.2	55.4	56.8	57.1	58.0	57.6	59.9	61.0	62.3	64.6	66.9	70.1	73.9	77.9	75.1	65.7
8000	47.0	51.3	52.5	52.8	53.7	53.2	55.6	56.7	57.9	60.4	62.6	65.9	69.8	74.0	71.1	62.1
10000	42.5	46.8	47.9	48.2	49.2	48.4	51.0	52.0	53.2	55.8	58.0	61.2	65.4	69.7	66.7	58.0
12500	37.6	42.0	42.9	43.1	44.2	43.3	46.0	47.0	48.1	50.8	52.9	56.2	60.5	65.1	61.9	53.7
16000	32.2	36.7	37.4	37.6	38.8	37.7	40.5	41.5	42.6	45.4	47.4	50.6	55.2	59.3	56.7	48.8
20000	26.4	30.8	31.4	31.6	32.8	31.7	34.5	35.6	36.7	39.4	41.3	44.5	49.3	54.2	51.0	43.5
25000	20.0	24.3	24.8	24.9	26.2	25.1	27.7	29.0	30.1	32.8	34.5	37.8	42.8	47.3	44.8	37.7

IDENTIFICATION:
) OMEGA 11.1
) TEST 74-004-029
) RUN 03
) AIRCRAFT CODE 033
) OPERATION CODE 97
) PROFILE VERSION W
) 15 MAR 82
) PAGE F3

NOISE SOURCE/SUBJECT:
) I-JBA AIRCRAFT
) ENG. J65-GE-5A

OPERATION:
) MIL PWK
) 100 % RPM

METEOROLOGY:
) TEMP = 70 F
) BAR PRESS = 29.50 IN HG
) REL HUMID = 60 %

TABLE: TONE-CORRECTED, A-WEIGHTED OVERALL SOUND LEVEL (UBA)																			
AS A FUNCTION OF ANGLE AND DISTANCE FROM SOURCE																			
NOISE SOURCE/SUBJECT:																			
T-36A AIRCRAFT																			
ENG. J85-GE-5A																			
OPERATION:																			
MIL. PKM																			
100 % RPM																			
METEOROLOGY:																			
TEMP = 70 F																			
BAR PRESS =29.50 IN HG																			
REL HUMID = 60 %																			
IDENTIFICATION:																			
OMEGA 11.1																			
TEST 74-004-029																			
RUN 03																			
AIRCRAFT CODE 033																			
OPERATION CODE 97																			
PROFILE VERSION W																			
15 MAR 82																			
PAGE 63																			
ANGLE (DEGREES)																			
DISTANCE (FEET)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
200	97.4	93.0	101.1	100.7	101.3	102.1	103.8	105.6	106.7	108.3	109.9	112.4	116.4	120.0	117.2	107.8	94.3	86.0	80.5
220	92.1	96.8	93.0	98.5	93.2	99.9	101.0	103.7	104.5	106.2	107.7	110.2	114.2	117.3	115.2	105.8	92.2	83.9	78.5
315	92.9	94.7	90.8	96.3	97.0	97.7	99.4	101.4	102.3	104.0	105.5	108.1	112.1	115.3	113.0	103.7	90.1	81.8	76.4
400	90.6	92.5	94.2	94.0	94.7	95.4	97.1	99.2	100.0	101.8	103.3	105.9	109.3	113.7	110.9	101.6	88.0	79.7	74.2
500	88.2	90.2	92.2	91.7	92.4	93.1	94.8	96.9	97.6	99.6	101.0	103.6	107.6	111.5	108.7	99.5	85.8	77.6	72.1
630	85.8	87.9	89.3	89.3	90.1	90.6	92.4	94.5	95.2	97.3	98.6	101.4	105.3	109.4	106.5	97.3	83.6	75.4	69.9
800	83.3	85.0	87.5	86.9	87.7	88.1	89.9	92.0	92.7	94.9	96.2	99.0	103.0	107.2	104.3	95.0	81.3	73.1	67.6
1000	80.8	83.1	85.0	84.4	85.2	85.5	87.4	89.5	90.1	92.5	93.7	95.6	100.5	104.3	101.9	92.7	79.0	70.8	65.3
1250	78.1	80.6	82.4	81.7	82.6	82.8	84.7	86.8	87.4	89.9	91.1	94.1	98.0	102.5	99.5	90.3	76.5	68.4	62.8
1500	75.4	78.0	79.7	79.0	79.8	80.0	81.9	84.1	84.6	87.3	88.5	91.4	95.4	100.1	97.0	87.8	74.0	65.9	60.3
2000	72.6	75.3	76.3	76.1	77.0	77.1	79.1	81.3	81.7	84.6	85.7	88.7	92.7	97.5	94.4	85.2	71.3	63.3	57.6
2500	69.5	72.3	73.8	73.1	74.0	73.9	76.0	78.2	78.5	81.6	82.6	85.7	89.7	94.7	91.4	82.1	68.3	60.4	54.6
3150	66.1	69.0	70.4	69.7	70.6	70.4	72.6	74.8	75.0	78.3	79.3	82.4	86.4	91.4	88.0	78.6	65.0	57.1	51.3
4000	61.9	65.0	66.4	65.9	66.8	66.6	68.8	70.8	71.2	74.3	75.6	78.8	82.7	87.3	84.2	74.7	61.3	53.4	47.5
5000	57.2	60.6	62.0	61.7	62.6	62.3	64.6	66.3	66.3	69.9	71.4	74.6	78.5	83.1	79.9	70.3	57.1	49.2	43.2
6300	52.1	55.8	57.2	57.1	58.0	57.6	59.9	61.5	62.3	65.1	66.9	70.1	73.9	78.4	75.3	65.7	52.6	44.7	38.7
8000	47.5	51.5	52.7	52.8	53.7	53.2	55.6	56.9	57.9	60.7	62.6	65.9	69.8	74.3	71.2	62.1	48.7	40.8	34.8
10000	42.5	46.8	47.3	48.2	49.2	48.4	51.0	52.0	53.2	55.3	58.0	61.2	65.4	69.7	66.7	58.0	44.3	36.6	30.7
12500	37.6	42.0	42.9	43.1	44.2	43.3	46.0	47.0	48.1	50.8	52.9	56.2	60.5	65.1	61.9	53.7	39.6	32.0	26.1
15000	32.2	36.7	37.4	37.6	38.8	37.7	40.3	41.5	42.5	45.4	47.4	50.6	55.2	59.3	56.7	48.8	34.5	26.8	21.2
20000	26.4	30.0	31.4	31.6	32.8	31.7	34.5	35.6	36.7	39.4	41.3	44.5	49.3	54.2	51.0	43.5	28.8	21.1	15.7
25000	20.0	24.3	24.8	24.9	26.2	25.1	27.7	29.0	30.1	32.8	34.5	37.8	42.8	47.8	44.8	37.7	22.8	14.8	9.9

IDENTIFICATION:
 OMEGA 11.1
 TEST 74-004-029
 RUN 03
 AIRCRAFT CODE 033
 OPERATION CODE 97
 PROFILE VERSION W
 15 MAR 82
 PAGE J3

NOISE SOURCE/SUBJECT:
 T-30A AIRCRAFT
 ENG. J05-0E-5A

OPERATIONS:
 MI. PMR
 100 % QPH

METEOROLOGY:
 TEMP = 70 F
 BAR PRESS = 29.50 IN HG
 REL HUMID = 60 %

	A=AL										T=ALT									
	P=PNLT																			
0																				
10																				
20																				
30																				
40																				
50																				
60																				
70																				
80																				
90																				
100																				
110																				
120																				
130																				
140																				
150																				
160																				
170																				
180																				

PROFILE DATA WRITTEN ON FILE "TAPE2" AS FOLLOWS:
 PNL1: DATA FOR ANGLES: 0 90 110 120 130 140 150 160 170 180
 ALT: DATA FOR ANGLES: 0 20 70 110 130 140 150 160 170 180
 PNL1: DATA FOR ANGLES: 0 90 110 120 130 140 150 160 170 180

END OF OMEGA11 JOB

OMEGA 11 PROFILE DATASET OUTPUT FILE (FILE TAPE2)1

*COMDECK P03355W0

PNLT 03395 0 114.0 111.7 109.3 106.9 104.4 101.7 1
 COMMENT 03395W0 OMEGA11.1 15 MAR 82 70 F 60 PCT 29.50 IN HG 74-004-029 01
 COMMENT 03395W0 T-38A AIRCRAFT ENG. J85-GE-5A N03303A0

03395W0	MAX PWR A/B	90.4	87.1	83.0	79.5	74.4	2
99.0	90.3	33.4	90.4	87.1	83.0	79.5	2
60.9	63.2	58.3	53.3	48.2	42.2	35.0	3
03395	00	110.5	116.3	114.2	111.9	109.6	4
104.8	102.2	99.4	96.5	93.4	90.0	86.1	5
70.6	71.4	67.1	62.6	57.7	52.5	46.2	6
03395	80	121.5	119.3	117.0	114.8	112.5	7
107.6	105.0	102.2	99.3	96.2	92.8	88.8	8
79.0	73.7	69.3	64.7	59.8	54.4	48.4	9
03395	90	125.6	123.4	121.2	118.9	116.5	10
111.4	108.7	106.0	103.0	99.9	96.5	92.6	11
62.8	77.2	73.1	68.4	63.2	58.1	52.1	12
03395	100	126.2	124.0	121.8	119.6	117.3	13
112.4	109.8	107.1	104.2	101.2	97.9	93.9	14
64.8	79.8	75.8	71.5	66.7	61.4	55.5	15
03395	120	137.9	135.8	133.6	131.4	129.2	16
124.4	121.9	119.3	116.5	113.8	110.3	106.5	17
97.0	91.9	87.8	83.3	78.8	73.8	68.2	18
03395	140	137.1	135.0	132.9	130.7	128.4	19
123.7	121.2	118.6	115.8	112.9	109.6	105.8	20
96.2	31.0	86.9	82.5	78.1	73.1	67.6	21
03395	150	130.0	127.9	125.8	123.6	121.4	22
110.7	114.2	111.6	108.8	105.8	102.5	98.6	23
69.5	84.6	80.8	76.7	72.2	67.3	61.7	24
03395	160	101.1	98.9	95.8	92.1	89.7	25
87.1	84.4	81.6	78.6	75.4	71.8	67.6	26
57.6	51.9	47.4	42.3	36.2	29.2	19.4	27
03395	180	95.3	93.1	90.0	88.4	85.0	28
60.6	78.1	75.3	72.2	69.0	65.4	61.1	29
50.6	44.6	39.3	33.4	28.0	16.0	3.4	0

*COMDECK A03395W0

AL 03395 0 114.0 111.7 109.3 106.9 104.4 101.7 1
 COMMENT 03395W0 OMEGA11.1 15 MAR 82 70 F 60 PCT 29.50 IN HG 74-004-029 01
 COMMENT 03395W0 T-38A AIRCRAFT ENG. J85-GE-5A N03303A0

03395W0	MAX PWR A/B	90.4	87.1	83.0	79.5	74.4	2
63.7	61.3	70.8	70.2	73.2	70.5	67.1	2
59.0	54.5	50.6	46.4	41.0	36.8	31.3	3
03395	60	105.3	103.2	101.1	99.0	96.6	4
52.3	49.4	47.5	45.0	42.4	39.5	36.2	5
68.3	63.7	59.9	55.0	51.0	45.5	40.2	6
03395	70	109.0	106.8	104.7	102.5	100.3	7
92.7	93.3	90.8	88.2	85.5	82.6	79.3	8
71.4	67.0	62.4	58.5	53.7	48.1	42.6	9
03395	80	108.0	105.9	103.6	101.6	99.4	10
94.8	92.4	89.9	87.4	84.7	81.7	78.3	11
70.3	65.6	61.8	57.4	52.7	47.5	41.8	12
03395	100	114.6	112.2	110.3	108.2	105.0	13
101.5	94.1	90.7	86.2	81.5	76.6	71.9	14

77.8 73.3 69.3 64.9 60.1 54.8 49.0 42.4 15
 03395 120 125.0 122.9 120.8 118.7 116.5 114.3 16
 112.1 109.8 107.4 105.0 102.5 99.7 96.4 32.7 17
 88.5 84.0 80.2 76.1 71.6 66.5 60.9 54.5 18
 03395 130 126.9 124.8 122.7 120.6 118.4 116.2 114.0 19
 114.0 111.7 109.3 106.9 104.3 101.4 98.2 94.5 20
 90.4 85.9 82.0 77.7 73.0 67.8 61.9 55.5 21
 03395 150 118.1 116.1 114.0 111.9 109.7 107.5 105.3 22
 105.3 103.0 100.5 98.1 95.5 92.6 89.2 85.5 23
 81.2 78.7 76.2 73.6 70.9 68.2 65.4 62.6 24
 03395 160 87.8 85.7 83.6 81.5 79.3 77.1 74.9 25
 74.8 72.4 69.9 67.2 64.5 61.4 58.0 54.1 26
 49.8 45.2 41.4 37.3 32.9 28.0 22.8 17.2 27
 03395 180 81.9 79.8 77.7 75.6 73.3 71.0 68.7 66.3 28
 68.7 66.3 63.7 61.1 58.3 55.3 51.0 48.0 29
 43.7 39.1 35.2 31.0 26.4 21.4 16.0 10.2
 *CHECK 103395M0
 ALT 03395 0 99.8 97.7 95.5 93.3 91.0 88.7 1
 COMMENT 03395M0 OMEGA11.1 15 MAR 92 70 F 60 PCT 29.50 IN HG 74-004-029 01
 COMMENT 03395M0 1-38A AIRCRAFT ENG. J85-GE-5A N03303A0
 COMMENT 03395M0 MAX PWR A/B 100 % RPM

66.3 83.9 81.4 78.8 76.1 73.1 69.7 65.4 2
 60.6 55.5 51.1 46.4 41.8 36.8 31.3 25.3 3
 03395 60 106.1 104.0 101.3 99.7 97.5 95.3 93.1 4
 93.0 90.7 88.2 85.7 83.1 80.2 76.9 73.1 5
 68.7 64.0 60.0 55.8 51.0 45.9 40.2 33.9 6
 03395 80 109.2 107.1 104.9 102.7 100.5 98.3 96.1 7
 95.9 93.5 91.1 88.5 85.8 82.6 79.5 75.5 8
 71.0 66.3 62.0 57.4 52.7 47.5 41.8 35.5 9
 03395 90 113.3 111.2 109.1 106.9 104.7 102.4 100.2 10
 100.0 97.6 95.1 92.5 89.8 86.8 83.4 79.4 11
 75.0 70.2 65.8 61.1 56.3 51.1 45.3 38.9 12
 03395 100 114.6 112.5 110.3 108.2 105.0 103.7 101.5 13
 101.5 99.1 96.7 94.2 91.6 88.6 85.6 81.9 14
 77.8 73.3 69.3 64.9 60.1 54.8 49.0 42.4 15
 03395 120 126.2 124.1 122.0 119.9 117.7 115.5 113.3 16
 113.3 111.0 108.6 106.2 103.7 100.5 97.6 93.7 17
 89.2 84.5 80.5 76.1 71.6 66.5 60.9 54.5 18
 03395 140 125.0 123.0 120.9 118.8 116.6 114.4 112.2 19
 112.2 110.0 107.6 105.2 102.7 99.9 96.5 92.5 20
 88.0 83.2 79.2 74.8 70.3 65.4 59.8 53.5 21
 03395 150 118.1 116.1 114.0 111.9 109.7 107.5 105.3 22
 105.3 103.0 100.5 98.1 95.5 92.6 89.2 85.5 23
 81.2 78.7 76.2 73.6 70.9 68.2 65.4 62.6 24
 03395 160 87.8 85.7 83.6 81.5 79.3 77.1 74.9 25
 74.8 72.4 69.9 67.2 64.5 61.4 58.0 54.1 26
 49.8 45.2 41.4 37.3 32.9 28.0 22.8 17.2 27
 03395 180 81.9 79.8 77.7 75.6 73.3 71.0 68.7 66.3 28
 68.7 66.3 63.7 61.1 58.3 55.3 51.0 48.0 29
 43.7 39.1 35.2 31.0 26.4 21.4 16.0 10.2
 *CHECK 103395M0
 PNT 03396 0 108.3 105.9 103.4 100.8 98.0 95.1 1
 COMMENT 03396M0 OMEGA11.1 15 MAR 82 70 F 60 PCT 29.50 IN HG 74-004-029 02
 COMMENT 03396M0 1-38A AIRCRAFT ENG. J85-GE-5A N03313A0-21A0
 COMMENT 03396M0 50 % RPM

91.9	88.4	84.6	80.4	75.7	70.3	64.1	58.6	2
49.0	39.4	29.3	17.2	7.3	-2.7	-12.6	-22.6	3
03396	40	105.0	102.6	100.2	97.6	94.8	91.9	4
86.7	85.3	81.6	77.4	72.3	67.7	62.5	58.3	5
40.7	40.0	33.2	24.3	14.9	5.4	-4.0	-13.5	6
03396	50	98.4	95.9	93.2	90.4	87.6	84.7	7
81.6	78.3	74.8	71.2	67.2	62.6	57.8	52.1	8
45.0	36.4	27.9	15.9	4.2	-7.5	-19.2	-30.9	9
03396	60	101.3	99.0	96.5	93.9	91.2	88.3	10
85.2	81.8	76.1	74.0	69.5	64.2	58.8	52.6	11
45.3	36.9	30.3	20.8	10.1	-7	-11.4	-22.2	12
03396	100	95.3	93.0	90.8	88.3	85.9	83.4	13
80.7	77.9	75.0	72.0	68.7	64.5	59.9	54.4	14
48.2	41.2	34.9	29.0	21.6	12.4	3.2	-6.0	15
03396	140	99.9	97.6	95.2	92.7	90.0	87.2	16
64.2	60.9	57.4	53.5	49.9	46.6	43.7	40.9	17
48.7	41.3	34.8	27.4	13.4	9.7	-0	-9.7	18
03396	120	105.0	102.7	100.2	97.7	95.0	92.2	19
84.1	85.8	82.2	78.2	73.8	68.7	62.8	56.7	20
49.5	40.6	32.2	21.2	12.3	3.3	-2.6	-14.5	21
03396	160	98.2	95.9	93.4	90.9	88.1	85.3	22
40.5	30.3	20.6	10.0	1.1	-8.4	-17.8	-27.3	23
03396	170	96.3	95.9	93.4	90.9	88.1	85.3	24
71.9	68.3	64.5	60.1	55.0	46.6	34.9	23.9	25
15.2	0	-14.1	-28.6	-42.7	-56.6	-70.6	-84.5	26
03396	180	86.1	83.7	81.2	78.6	75.3	73.0	27
69.8	66.4	62.6	58.3	53.3	47.7	40.5	31.8	28
19.5	7.1	-5.2	-17.5	-29.3	-41.1	-52.9	-64.7	29
*COMDECK A03396H0								
AL	0	88.1	85.7	83.1	80.4	77.5	74.5	1
03396	0	88.1	85.7	83.1	80.4	77.5	74.5	1
CUMMENT 03396H0	OMEGA11.1	15 MAR 82	70 F	80 PUI	29.50	IN HG	74-004-029 02	
CUMMENT 03396H0	T-38A	AIRCRAFT	ENG. J85-GE-5A	50 % RPM			N03313A0-21A0	
03396H0	71.3	67.8	64.1	60.2	56.0	51.7	47.2	2
37.7	32.6	27.8	22.8	17.8	12.6	7.2	1.6	3
03396	40	86.6	84.1	81.4	78.7	75.8	72.7	4
69.6	66.3	62.9	59.5	56.0	52.2	49.1	43.7	5
39.0	33.9	29.6	25.2	20.6	15.9	10.8	5.3	6
03396	50	81.9	79.4	76.9	74.2	71.5	68.6	7
65.8	62.8	59.7	56.6	53.4	49.8	45.9	41.7	8
37.1	32.1	27.5	22.8	18.0	13.1	8.1	3.0	9
03396	60	83.0	80.5	77.9	75.3	72.5	69.6	10
66.6	63.5	60.3	57.0	53.6	50.0	46.0	41.8	11
37.3	32.4	28.2	23.9	19.4	14.7	9.7	4.5	12
03396	80	77.9	75.7	73.4	71.0	68.6	66.1	13
63.5	60.9	58.1	55.3	52.4	49.0	45.2	41.0	14
36.4	31.7	28.0	24.1	19.9	15.4	10.5	5.3	15
03396	130	83.2	80.9	78.0	76.2	73.8	71.3	16
68.7	66.1	63.4	60.6	57.7	54.5	50.9	47.0	17
42.2	37.9	33.9	29.7	25.2	20.2	14.0	9.0	18
03396	150	82.7	80.2	77.1	74.1	70.1	66.1	19
69.1	66.4	63.2	59.7	56.2	52.3	48.1	43.7	20
30.9	33.6	29.3	24.7	20.0	15.2	10.3	5.2	21
03396	160	76.9	74.5	71.1	67.5	63.9	60.1	22

63.2 60.1 56.9 53.0 50.1 46.3 42.2 37.8 23
 33.6 27.9 23.4 18.9 14.2 9.3 4.2 -1.2 24
 03396 170 68.3 65.9 63.4 60.6 58.2 55.3 25
 52.4 49.2 45.8 42.3 38.5 34.4 30.1 25.5 26
 24.5 15.3 10.6 8.4 2.2 -1.9 -5.0 -9.8 27
 03396 180 67.2 64.9 62.5 60.0 57.4 54.8 28
 52.0 49.1 46.0 42.8 39.5 37.4 27.4 29
 22.7 17.0 13.2 8.9 4.6 -3.8 -7.6

*COMDECK T03396M0

ALT 03396 0 93.3 90.8 88.2 85.5 82.7 79.6 1
 COMMENT 03396M0 OMEGA11.1 15 MAR 82 70 F 60 PCT 29.50 IN HG 74-004-029 02
 COMMENT 03396M0 T-38A AIRCRAFT ENG. J85-GE-5A N03313A0-21A0
 COMMENT 03396M0 50 % RPM

76.4 73.0 69.3 65.4 61.2 56.6 52.3 46.7 2
 40.8 34.7 28.8 22.8 17.8 12.6 7.2 1.6 3
 03396 40 90.3 87.7 85.1 82.3 79.4 76.4 4
 73.2 70.0 66.6 63.2 59.7 55.9 51.8 46.7 5
 41.2 35.4 30.3 25.2 20.6 15.9 10.8 5.3 6
 03396 50 83.5 81.1 78.5 75.8 73.1 70.3 7
 67.4 64.4 61.4 58.2 55.0 51.4 47.5 43.0 8
 38.0 32.7 27.8 22.8 18.0 13.1 8.1 3.0 9
 03396 60 85.8 83.4 80.8 78.1 75.4 72.5 10
 69.5 66.4 63.2 59.9 56.5 52.8 48.9 44.1 11
 39.0 33.6 28.8 23.9 19.4 14.7 9.7 4.5 12
 03396 80 81.7 79.4 77.1 74.7 72.3 69.8 13
 67.2 64.6 61.9 59.0 56.2 52.7 48.9 44.0 14
 36.7 33.2 28.8 24.1 19.9 15.4 10.5 5.3 15
 03396 140 83.9 81.6 79.3 76.9 74.5 71.3 16
 69.3 66.5 63.7 60.7 57.7 54.3 50.5 45.9 17
 40.9 35.7 31.4 26.9 22.5 17.9 13.0 7.8 18
 03396 150 88.9 86.5 84.1 81.6 79.0 76.2 19
 73.3 70.3 67.0 63.6 60.0 56.1 52.0 46.8 20
 47.2 35.3 30.0 24.7 20.0 15.2 10.3 5.2 21
 03396 160 82.3 80.0 77.5 75.0 72.3 69.6 22
 66.7 63.6 60.4 57.0 53.6 49.7 45.5 40.5 23
 35.1 29.3 24.1 18.9 14.2 9.3 4.2 -1.2 24
 03396 170 72.0 69.6 67.1 64.5 61.9 59.0 25
 56.1 52.9 49.5 46.0 42.2 38.1 33.6 28.4 26
 22.7 16.8 11.5 6.4 2.2 -1.9 -6.0 -9.8 27
 03396 180 69.9 67.6 65.2 62.7 60.1 57.4 28
 54.7 51.6 46.7 45.5 42.2 38.5 34.5 29.6 29
 24.3 18.7 13.8 8.9 4.6 -3.8 -7.8

*COMDECK P03397M0

PWLT 03397 0 111.5 109.2 106.8 104.4 101.6 99.0 1
 COMMENT 03397M0 OMEGA11.1 15 MAR 82 70 F 60 PCT 29.50 IN HG 74-004-029 03
 COMMENT 03397M0 T-38A AIRCRAFT ENG. J85-GE-5A N03304A0
 COMMENT 03397M0 100 % RPM

96.0 92.9 89.4 86.1 82.7 79.2 75.0 69.9 2
 64.5 58.7 53.7 48.2 42.1 35.2 27.4 14.7 3
 03397 40 120.6 118.4 116.1 113.6 111.3 109.8 4
 106.1 103.2 100.3 97.2 94.0 90.6 85.5 81.9 5
 76.9 71.6 66.8 61.5 56.3 51.2 44.8 36.0 6
 03397 110 124.5 122.3 120.1 117.7 115.3 112.8 7
 114.1 107.3 104.2 101.0 97.8 94.4 90.4 86.1 8
 81.5 76.5 71.9 67.3 62.3 56.7 50.6 43.1 9

*COMDECK A03397M0		AL		03397		120		128.9		126.7		124.4		122.1		119.7		117.1			
03397	114.4	111.0	108.6	105.7	102.6	99.2	96.2	93.2	90.2	87.2	84.2	81.2	78.2	75.2	72.2	69.2	66.2	63.2	60.2	57.2	54.2
03397	85.9	80.8	76.7	72.2	67.3	62.4	57.5	52.6	47.7	42.8	37.9	33.0	28.1	23.2	18.3	13.4	8.5	3.6	-1.3	-6.4	-11.5
03397	131.3	127.0	123.0	119.0	115.0	111.0	107.0	103.0	99.0	95.0	91.0	87.0	83.0	79.0	75.0	71.0	67.0	63.0	59.0	55.0	51.0
03397	117.8	115.3	112.7	109.9	107.0	104.1	101.2	98.3	95.4	92.5	89.6	86.7	83.8	80.9	78.0	75.1	72.2	69.3	66.4	63.5	60.6
03397	90.3	85.2	81.0	76.6	72.0	67.4	62.8	58.2	53.6	49.0	44.4	39.8	35.2	30.6	26.0	21.4	16.8	12.2	7.6	3.0	-1.6
03397	115.3	112.8	110.1	107.3	104.4	101.5	98.6	95.7	92.8	89.9	87.0	84.1	81.2	78.3	75.4	72.5	69.6	66.7	63.8	60.9	58.0
03397	87.6	82.5	78.4	74.0	69.4	64.8	60.2	55.6	51.0	46.4	41.8	37.2	32.6	28.0	23.4	18.8	14.2	9.6	5.0	0.4	-4.2
03397	120.6	118.5	116.3	114.2	112.1	110.0	107.9	105.8	103.7	101.6	99.5	97.4	95.3	93.2	91.1	89.0	86.9	84.8	82.7	80.6	78.5
03397	104.7	102.1	99.2	96.2	93.2	90.2	87.2	84.2	81.2	78.2	75.2	72.2	69.2	66.2	63.2	60.2	57.2	54.2	51.2	48.2	45.2
03397	78.9	73.9	70.0	65.9	61.3	56.7	52.1	47.5	42.9	38.3	33.7	29.1	24.5	19.9	15.3	10.7	6.1	1.5	-3.1	-7.5	-11.9
03397	160	106.9	104.7	102.5	100.3	98.0	95.8	93.6	91.3	89.0	86.8	84.6	82.4	80.2	78.0	75.8	73.6	71.4	69.2	67.0	64.8
03397	93.1	87.6	84.7	81.5	78.1	74.0	70.0	66.0	62.0	58.0	54.0	50.0	46.0	42.0	38.0	34.0	30.0	26.0	22.0	18.0	14.0
03397	59.2	54.9	50.3	44.9	38.6	30.5	19.8	86.5	60.4	82.0	52.1	-3.3									
03397	170	98.0	95.8	93.6	91.3	89.0	86.8	84.6	82.4	80.2	78.0	75.8	73.6	71.4	69.2	67.0	64.8	62.6	60.4	58.2	56.0
03397	84.0	81.4	78.7	75.7	72.0	69.2	65.0	60.4	55.2	50.2	45.2	40.2	35.2	30.2	25.2	20.2	15.2	10.2	5.2	0.2	-4.8
03397	55.2	49.8	45.0	39.5	34.0	27.5	17.0	6.4	82.0	52.1	-3.3										
03397	180	93.5	91.3	89.1	86.8	84.6	82.4	80.2	78.0	75.8	73.6	71.4	69.2	67.0	64.8	62.6	60.4	58.2	56.0	53.8	51.6
03397	79.4	76.8	74.0	71.1	67.8	64.2	60.0	52.1	-3.3												
03397	49.5	43.3	38.1	32.5	26.2	17.4	8.5														
03397	0	95.1	92.9	90.6	88.3	86.0															
03397	OMEGA11.1	15	MAX 32	70 F	60	PCY	29.50	IN	HG												
03397	I-38A	AIRCRAFT	ENG. J85-GE-5A	100 %	RPM																
03397	MIL PMR																				
03397	81.1	78.5	75.9	73.1	70.3	67.2	63.8	60.1	56.4	52.7	48.9	45.2	41.4	37.7	33.9	30.2	26.4	22.7	18.9	15.2	11.4
03397	55.6	51.2	47.0	42.5	37.6	32.2	26.4	20.0	13.6	7.2	0.8	-5.6	-11.2	-16.8	-22.4	-28.0	-33.6	-39.2	-44.8	-50.4	-56.0
03397	20	100.0	97.8	95.6	93.4	91.1	88.8	86.5	84.2	81.9	79.6	77.3	75.0	72.7	70.4	68.1	65.8	63.5	61.2	58.9	56.6
03397	86.4	83.3	80.2	77.1	74.0	70.9	67.8	64.7	61.6	58.5	55.4	52.3	49.2	46.1	43.0	39.9	36.8	33.7	30.6	27.5	24.4
03397	61.3	56.8	52.5	47.9	42.9	37.4	31.4	24.8	17.8	10.8	3.8	-3.2	-10.2	-17.2	-24.2	-31.2	-38.2	-45.2	-52.2	-59.2	-66.2
03397	70	104.6	102.4	100.2	98.0	95.8	93.6	91.4	89.2	87.0	84.8	82.6	80.4	78.2	76.0	73.8	71.6	69.4	67.2	65.0	62.8
03397	88.3	85.6	82.9	80.0	77.0	73.5	69.8	66.1	62.4	58.7	55.0	51.3	47.6	43.9	40.2	36.5	32.8	29.1	25.4	21.7	18.0
03397	65.6	61.0	56.7	52.0	47.0	41.5	35.6	29.0	22.4	15.8	9.2	2.6	-4.0	-10.4	-16.8	-23.2	-29.6	-36.0	-42.4	-48.8	-55.2
03397	110	112.4	110.2	108.1	105.9	103.6	101.4	99.2	97.0	94.8	92.6	90.4	88.2	86.0	83.8	81.6	79.4	77.2	75.0	72.8	70.6
03397	96.6	94.1	91.4	88.7	85.7	82.4	78.8	75.1	71.4	67.7	64.0	60.3	56.6	52.9	49.2	45.5	41.8	38.1	34.4	30.7	27.0
03397	70.1	65.9	61.2	56.2	50.6	44.5	37.8	30.8	23.8	16.8	9.8	2.8	-4.2	-10.6	-17.0	-23.4	-29.8	-36.2	-42.6	-49.0	-55.4
03397	130	118.6	116.6	114.5	112.4	110.2	108.0	105.8	103.6	101.4	99.2	97.0	94.8	92.6	90.4	88.2	86.0	83.8	81.6	79.4	77.2
03397	103.5	101.2	98.7	96.2	93.3	90.1	86.4	82.7	79.0	75.3	71.6	67.9	64.2	60.5	56.8	53.1	49.4	45.7	42.0	38.3	34.6
03397	82.3	77.8	74.0	69.7	65.1	59.9	54.2	47.8	40.4	33.0	25.6	18.2	10.8	3.4	-4.0	-10.6	-17.2	-23.8	-30.4	-37.0	-43.6
03397	140	116.7	114.6	112.5	110.4	108.2	106.0	103.8	101.6	99.4	97.2	95.0	92.8	90.6	88.4	86.2	84.0	81.8	79.6	77.4	75.2
03397	103.7	101.4	99.0	96.5	93.9	90.9	87.5	83.8	79.3	74.7	70.1	65.5	60.9	56.3	51.7	47.1	42.5	37.9	33.3	28.7	24.1
03397	79.6	75.1	71.1	66.7	61.9	56.7	51.0	44.8	38.3	31.7	25.1	18.5	11.9	5.3	-1.3	-7.7	-14.1	-20.5	-26.9	-33.3	-39.7
03397	150	107.8	105.8	103.7	101.6	99.5	97.4	95.3	93.2	91.1	89.0	86.9	84.8	82.7	80.6	78.5	76.4	74.3	72.2	70.1	68.0
03397	92.7	90.3	87.8	85.2	82.1	78.6	74.7	70.6	66.5	62.4	58.3	54.2	50.1	46.0	41.9	37.8	33.7	29.6	25.5	21.4	17.3
03397	65.7	62.1	58.0	53.7	48.8	43.5	37.7	31.4	24.9	18.4	11.9	5.4	-1.1	-7.6	-14.1	-20.6	-27.1	-33.6	-40.1	-46.6	-53.1
03397	160	94.3	92.2	90.1	88.0	85.8	83.6	81.3	79.1	76.9	74.7	72.5	70.3	68.1	65.9	63.7	61.5	59.3	57.1	54.9	52.7
03397	81.3	79.0	76.5	74.0	71.3	68.3	65.0	61.3	57.6	53.9	50.2	46.5	42.8	39.1	35.4	31.7	28.0	24.3	20.6	16.9	13.2
03397	57.1	52.6	48.7	44.3	39.3	34.5	29.7	24.8	19.9	15.0	10.1	5.2	0.3	-4.6	-9.7	-14.8	-19.9	-25.0	-30.1	-35.2	-40.3
03397	170	86.0	83.3	81.8	79.7	77.6	75.4	73.1	70.9	68.7	66.5	64.3	62.1	59.9	57.7	55.5	53.3	51.1	48.9	46.7	44.5
03397	73.1	70.8	68.4	65.9	63.3	60.4	57.1	53.4	49.4	45.4	41.4	37.4	33.4	29.4	25.4	21.4	17.4	13.4	9.4	5.4	1.4
03397	49.2	44.7	40.8	36.0	32.0	26.6	21.1	14.8	8.3	1.8	-4.7	-10.2	-15.7	-21.2	-26.7	-32.2	-37.7	-43.2	-48.7	-54.2	-59.7
03397	180	90.5	88.5	86.5	84.5	82.5	80.5	78.5	76.5	74.5	72.5	70.5	68.5	66.5	64.5	62.5	60.5	58.5	56.5	54.5	52.5
03397	67.1	65.3	62.8	60.3	57.5	54.6	51.7	48.8	45.9	43.0	40.1	37.2	34.3	31.4	28.5	25.6	22.7	19.8	16.9	14.0	11.1
03397	43.2	38.7	34.6	30.7	26.1	21.2	15.7	9.9	4.1	-1.6	-7.1	-12.6	-18.1	-23.6	-29.1	-34.6	-40.1	-45.6	-51.1	-56.6	-62.1

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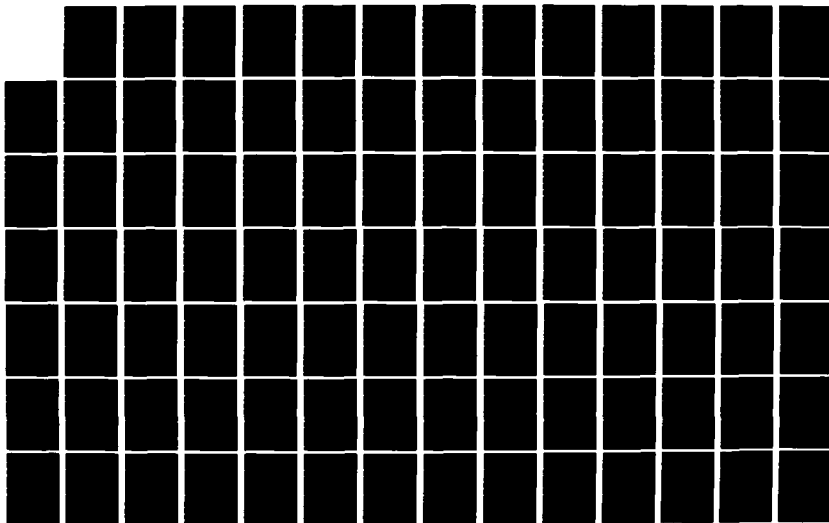
COMPUTER PROGRAMS FOR PRODUCING SINGLE-EVENT AIRCRAFT
NOISE DATA FOR SPEC. (U) DAYTON UNIV OH RESEARCH INST
H T MOHLMAN APR 83 UDR-TR-82-30 AFAMRL-TR-83-020
F33615-78-C-0500

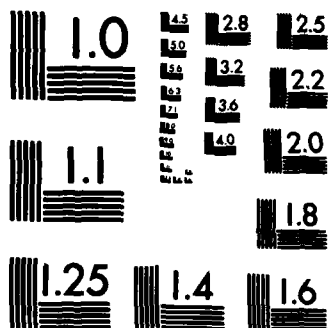
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

*COYUECK T0339/M0		0		97.4		95.1		92.9		90.6		88.2		85.8		1	
ALT 03397		OMEGA11.1		15 MAR 92		70 F		60 PCT		29.50		IN HG		74-004-029 03			
COMMENT 03397M0 1-38A		AIRCRAFT						ENG. J85-GE-5A						N03304A0			
COMMENT 03397M0 MIL PHR								100 % RPM									
63.3	80.8	78.1	75.4	72.6	59.5	65.1	61.2	56.2	50.6	44.5	37.8	30.8	23.8	16.5	9.9	2	
57.2	52.1	47.5	42.5	37.0	32.2	26.4	20.0	14.8	9.4	4.8	0.0	-4.8	-9.4	-14.8	-20.0	3	
03397	90	108.3	106.2	104.0	101.8	99.6	97.4	95.2	93.0	90.8	88.6	86.4	84.2	82.0	79.8	4	
94.9	92.5	89.9	87.3	84.6	81.6	78.3	74.3	70.3	66.3	62.3	58.3	54.3	50.3	46.3	42.3	5	
69.9	65.1	60.7	55.8	50.8	45.4	39.4	32.8	26.8	20.8	14.8	8.8	2.8	-3.2	-8.8	-13.8	6	
03397	110	112.4	110.2	108.1	105.9	103.6	101.4	99.2	97.0	94.8	92.6	90.4	88.2	86.0	83.8	7	
94.0	46.6	44.1	41.4	38.7	35.7	32.4	28.4	24.4	20.4	16.4	12.4	8.4	4.4	0.4	-4.4	8	
74.6	70.1	65.9	61.2	56.2	50.6	44.5	37.8	30.8	23.8	16.5	9.9	2				9	
03397	120	116.4	114.2	112.1	109.9	107.6	105.3	103.0	100.7	98.4	96.1	93.8	91.5	89.2	86.9	10	
103.0	100.5	98.0	95.4	92.7	89.7	86.4	82.7	78.4	74.1	69.8	65.5	61.2	56.9	52.6	48.3	11	
78.5	73.9	69.8	65.4	60.5	55.2	49.3	42.8	35.8	28.8	21.8	14.8	7.8	0.8	-4.2	-9.2	12	
03397	130	120.0	117.9	115.3	113.7	111.6	109.4	107.2	105.0	102.8	100.6	98.4	96.2	94.0	91.8	13	
107.2	104.9	102.6	100.1	97.6	94.7	91.4	87.5	83.1	78.4	73.7	68.4	62.7	56.4	49.7	42.0	14	
83.1	78.4	74.3	69.7	65.1	59.9	54.2	47.8	40.8	33.8	26.8	19.8	12.8	5.8	-1.2	-6.2	15	
03397	140	117.2	115.2	113.0	110.9	108.7	106.5	104.3	102.1	99.9	97.7	95.5	93.3	91.1	88.9	16	
104.3	101.9	99.5	97.0	94.4	91.4	88.0	84.2	80.4	76.6	72.8	68.4	64.0	59.6	55.2	50.8	17	
79.9	75.3	71.2	66.7	61.9	56.7	51.0	44.8	38.6	32.4	26.2	19.9	13.7	7.5	1.3	-4.9	18	
03397	150	107.8	105.0	103.7	101.6	99.5	97.3	95.1	92.9	90.7	88.5	86.3	84.1	81.9	79.7	19	
95.0	92.7	90.3	87.8	85.2	82.1	78.6	74.7	70.8	66.9	62.9	58.9	54.9	50.9	46.9	42.9	20	
70.3	65.7	62.1	58.0	53.7	48.8	43.5	37.7	31.4	25.1	18.8	12.5	6.2	0.0	-4.3	-8.6	21	
03397	160	94.3	92.2	90.1	88.0	85.8	83.6	81.4	79.2	77.0	74.8	72.6	70.4	68.2	66.0	22	
61.3	57.9	54.5	50.7	46.3	41.3	36.3	31.3	26.3	21.3	16.3	11.3	6.3	1.3	-3.7	-8.7	23	
57.1	52.6	48.7	44.3	39.6	34.5	28.8	22.8	16.8	10.8	4.8	-1.2	-6.2	-11.2	-16.2	-21.2	24	
03397	170	86.0	83.9	81.8	79.7	77.6	75.4	73.2	71.0	68.8	66.6	64.4	62.2	60.0	57.8	25	
73.1	70.6	68.4	65.9	63.3	60.4	57.1	53.4	49.7	45.9	42.2	38.4	34.7	30.9	27.2	23.4	26	
49.2	44.7	40.8	36.0	32.0	26.8	21.1	14.8	8.8	2.8	-3.2	-8.2	-13.2	-18.2	-23.2	-28.2	27	
03397	180	80.5	78.5	76.4	74.2	72.1	69.9	67.8	65.6	63.4	61.2	59.0	56.8	54.6	52.4	28	
67.6	65.3	62.8	60.3	57.6	54.6	51.3	47.5	43.7	39.9	36.1	32.3	28.5	24.7	20.9	17.1	29	
43.2	38.7	34.8	30.7	26.1	21.2	15.7	9.9										

APPENDIX E
CARD FORMAT FOR THE FLIGHT NOISE REFERENCE DATASETS

This Appendix contains a description of the content and format of the flight noise reference datasets required as input to the OMEGA 10 program. These datasets are stored in NOISEFILE 4 in CDC UPDATE format. They are read from file TAPE7 by the OMEGA 10 program.

CARD FORMAT FOR FLIGHT NOISE AVERAGE
REFERENCE DATASETS

Card Number 1 (COMDECK card)

Column	Format	Data Description
1-8	A8	*COMDECK
9	Blank	
10	A1	"N" for normalized data
11-13	A3	Aircraft code number (eg. 031; include leading zeros)
14-15	A2	Operation power code (eg. 01; include leading zeros)
16	A1	Operation type code (eg. 1)
17	A1	Profile version code (eg. A; this code does not apply to the reference datasets; it is included to be consistent with the profile datasets.)
18	A1	Revision identifier 0 for original 1 for first revision 2 for second revision, etc.
19-80	Blank	

Card Number 2 (Comment card)

1-7	A7	"Comment"
8	Blank	
9-11	A3	Aircraft code number (eg. 031)
12-13	A2	Operation power code (eg. 01)
14	A1	Operation type code (eg. 1)
15	A1	Profile version code (eg. A)
16	A1	Revision identifier 0 for original 1 for first revision, etc.
17	Blank	
18-22	A5	"OMEGA"
23	Blank	
24-26	F3	Analysis program (eg. 6.6)
27	Blank	
28-36	A9	Date of OMEGA 6.6 run (eg. 10 JUL 75)
37	Blank	
38-44	A7	Aircraft name (eg. F-4)
45	Blank	
46-49	I4	Reference minimum slant range (from OMEGA 5)
50	Blank	
41-52	A2	"FT"

Card Number 2 (Comment card) - Continued

Column	Format	Data Description
53-54	Blank	
55-57	I3	Reference airspeed (from OMEGA 5)
58	Blank	
59-61	A3	"KTS"
62-63	Blank	
64-66	I3	Standard day temperature (59°F)
67	Blank	
68	A1	"F"
69-70	Blank	
71-73	I3	Standard day relative humidity (70%)
74	Blank	
75-77	A5	"PCT"

Card Number 3 (Comment card)

1-7	A7	"Comment"
8	Blank	
9-17		Same as card number 3
18-32	A15	Engine type (eg. Reciprocating)
33	Blank	
34-58	A25	Drag Configuration (eg. Gear Down, 20 Deg Flaps)

Card Number 4 (Comment card)

1-7	A7	"Comment"
8	Blank	
9-17		Same as card number 3
18-37	A20	Power Description
38	Blank	
39-43	A5	1st engine power setting value
44	Blank	
45-50	A6	1st engine power setting units
51-52	Blank	
53-57	A5	2nd engine power setting value
58	Blank	
59-64	A6	2nd engine power setting units
65-66	Blank	
67-71	A5	3rd engine power setting value
72	Blank	
73-78	A6	3rd engine power setting units

Card Number 5 (Data card)

Column	Format	Data Description
1*	A1	"2" (formerly BBN-2 dataset)
2-3*	A2	Program version number (eg. 66)
4-6*	A3	Aircraft code
7*	A1	Operation type code
8-9*	A2	Operation power code
10-15*	A6	Date on which OMEGA 6 data were computed (eg. 171273 is 17 Dec 73)
16	I1	Card sequence number (1)
17-26	A10	Aircraft name
27-46	2A10	Operation power description
47-50	I4	Number of records for this power setting
51-55	I5	S(0)--reference minimum slant range in feet
56-60	I5	V(0)--reference airspeed in knots
61-65	I5	Mean angle THETA in degrees (nearest tenth without decimal)

Card Number 6 (Data card)**

1-15*		Same as card 1 above
16	I1	Card sequence number (2)
17-20	I4	Mean PNL in PNdB
21-24	I4	Mean PNLT in PNdB
25-28	I4	Mean AL in dBA
29-32	I4	Mean ALT in dBA
33-36	I4	Mean EPNL in EPNdB
37-40	I4	Mean SEL in dB
41-44	I4	Mean SELT in dB
45-48	I4	Mean C in dB
49-80	8I4	Mean SPL spectrum in dB re $.00002 \text{ N/M}^2$ for frequency band numbers 17 through 24.

Card Number 7 (Data Card)**

1-15*		Same as card 1
16	I1	Card sequence number (3)
17-80	16I4	Mean SPL spectrum in dB re $.00002 \text{ N/M}^2$ for frequency band numbers 25 through 40.

NOTE: The above data cards (cards 5, 6 and 7) can be used as normalized data input to the OMEGA 6 program.

*Columns 1 to 15 will always be numeric and can be read with an integer format.

**Data in columns 16 through 80 are punched to the nearest tenth with the decimal omitted; eg. 101.2 is punched as 1012.

APPENDIX F
CARD FORMAT FOR THE FLIGHT NOISE PROFILE DATASETS

This Appendix contains a description of the content and format of the flight noise profile datasets written on file TAPE3 by the OMEGA 10 program. This is the format required by the NOISEMAP program.

CARD FORMAT FOR FLIGHT NOISE PROFILE DATASETS

Card Number 1 (COMDECK card)

Column	Format	Data Description
1- 8	A8	*COMDECK
9	Blank	
10	A1	Identifier for type of noise descriptor E for EPNL S for SELT L for SEL
11-13	A3	Aircraft code number (eg. 031; include leading zeros)
14-15	A2	Operation power code (eg. 01; include leading zeros)
16	A1	Operation type code (eg. 1)
17	A1	Profile version code (eg. A for standard temperature and relativity humidity)
18	A1	Revision identifier 0 for original 1 for first revision 2 for second revision, etc.
19-80	Blank	

Card Number 2 (Data card)

1- 6	A6	Type of noise descriptor (eg. SEL, SELT or EPNL)
7- 8	Blank	
9-11	A3	Aircraft code number (eg. 031)
12-13	A2	Operation power code (eg. 01)
14	A1	Operation type code (eg. 1)
22	I1	Air to Ground Identifier = 2
23-30	F8	Noise level at 200 ft. (air to ground)
31-38	F8	Noise level at 250 ft. (air to ground)
39-46	F8	Noise level at 315 ft. (air to ground)
47-54	F8	Noise level at 400 ft. (air to ground)
55-62	F8	Noise level at 500 ft. (air to ground)
63-70	F8	Noise level at 630 ft. (air to ground)
71-77	A7	Aircraft name (eg. F-4)
78-79	Blank	
80	I1	Data card sequence number = 1

CARD FORMAT FOR FLIGHT NOISE PROFILE DATASETS

Card Number 3 (Comment card)

Column	Format	Data Description
1- 7	A7	"Comment"
8	Blank	
9-11	A3	Aircraft code number (eg. 031)
12-13	A2	Operation power code (eg. 01)
14	A1	Operation type code (eg. 1)
15	A1	Profile version code (eg. A)
16	A1	Revision identifier 0 for original 1 for first revision, etc.
17	Blank	
18-22	A5	"OMEGA"
23	Blank	
24-26	F3	Analysis program (eg. 6.6)
27	Blank	
28-36	A9	Date of OMEGA 6.6 run (eg. 10 JUL 75)
37	Blank	
38-44	A7	Aircraft name (eg. F-4)
45	Blank	
46-49	I4	Reference distance **
50	Blank	
51-52	A2	"FT"**
53-54	Blank	
55-57	I3	Reference speed
58	Blank	
59-61	A3	"KTS"
62-63	Blank	
64-66	I3	Temperature (°F)
67	Blank	
68	A1	"F"
69-70	Blank	
71-73	I3	Relative Humidity (%)
74	Blank	
75-77	A3	"PCT"

** Not included in profile datasets written by the OMEGA 10 program.

CARD FORMAT FOR FLIGHT NOISE PROFILE DATASETS

Card Number 4 (Comment card)

Column	Format	Data Description
1- 7	A7	"Comment"
8	Blank	
9-17		Same as card number 3
18-32	A15	Engine type (eg. Reciprocating)
33	Blank	
34-58	A25	Drag Configuration (eg. Gear Down, 20 Deg Flaps) **

Card Number 5 (Comment card)

1- 7	A7	"Comment"
8	Blank	
9-17		Same as card number 3
18-37	A20	Power Description
38	Blank	
39-43	A5	1st engine power setting value
44	Blank	
45-50	A6	1st engine power setting units
51-52	Blank	
53-57	A5	2nd engine power setting value **
58	Blank	
59-64	A6	2nd engine power setting units **
65-66	Blank	
67-71	A5	3rd engine power setting value **
72	Blank	
73-78	A6	3rd engine power setting units **

Card Number 6 (Data card)

1- 6	Blank	
7-14	F8	Noise level at 800 ft. (air to ground)
15-22	F8	Noise level at 1000 ft. (air to ground)
23-30	F8	Noise level at 1250 ft. (air to ground)
31-38	F8	Noise level at 1600 ft. (air to ground)
39-46	F8	Noise level at 2000 ft. (air to ground)
47-54	F8	Noise level at 2500 ft. (air to ground)
55-62	F8	Noise level at 3150 ft. (air to ground)
63-70	F8	Noise level at 4000 ft. (air to ground)
71-79		Same as card number 2
80	I1	Data card sequence number = 2

**Not included in profile datasets written by the OMEGA 10 program; see note after Card Number 10.

CARD FORMAT FOR FLIGHT NOISE PROFILE DATASETS

Card Number 7 (Data card)

Column	Format	Data Description
1- 6	Blank	
7-14	F8	Noise level at 5000 ft. (air to ground)
15-22	F8	Noise level at 6300 ft. (air to ground)
23-30	F8	Noise level at 8000 ft. (air to ground)
31-38	F8	Noise level at 10000 ft. (air to ground)
39-46	F8	Noise level at 12500 ft. (air to ground)
47-54	F8	Noise level at 16000 ft. (air to ground)
55-62	F8	Noise level at 20000 ft. (air to ground)
63-70	F8	Noise level at 25000 ft. (air to ground)
71-79		Same as card number 2
80	11	Data card sequence number = 3

Card Number 8 (Data card)

1- 8	Blank	
9-14		Same as card number 2
22	11	Ground to ground identifier = 1
23-30	F8	Noise level at 200 ft. (ground to ground)
31-38	F8	Noise level at 250 ft. (ground to ground)
39-46	F8	Noise level at 315 ft. (ground to ground)
47-54	F8	Noise level at 400 ft. (ground to ground)
55-62	F8	Noise level at 500 ft. (ground to ground)
63-70	F8	Noise level at 630 ft. (ground to ground)
71-79		Same as card number 2
80	11	Data card sequence number = 4

Card Number 9 (Data card)

1- 6	Blank	
7-14	F8	Noise level at 800 ft. (ground to ground)
15-22	F8	Noise level at 1000 ft. (ground to ground)
23-30	F8	Noise level at 1250 ft. (ground to ground)
31-38	F8	Noise level at 1600 ft. (ground to ground)
39-46	F8	Noise level at 2000 ft. (ground to ground)
47-54	F8	Noise level at 2500 ft. (ground to ground)
55-62	F8	Noise level at 3150 ft. (ground to ground)
63-70	F8	Noise level at 4000 ft. (ground to ground)
71-79		Same as card number 2
80	11	Data card sequence number = 5

CARD FORMAT FOR FLIGHT NOISE PROFILE DATASETS

Card Number 10 (Data card)

Column	Format	Data Description
1- 6	Blank	
7-14	F8	Noise level at 5000 ft. (ground to ground)
15-22	F8	Noise level at 6300 ft. (ground to ground)
23-30	F8	Noise level at 8000 ft. (ground to ground)
31-38	F8	Noise level at 10000 ft. (ground to ground)
39-46	F8	Noise level at 12500 ft. (ground to ground)
47-54	F8	Noise level at 16000 ft. (ground to ground)
55-62	F8	Noise level at 20000 ft. (ground to ground)
63-70	F8	Noise level at 25000 ft. (ground to ground)
71-79		Same as card number 2
80	Blank	

NOTE: Flight noise profile datasets are written by both the OMEGA 6 and OMEGA 10 programs. There are minor differences in the content of the datasets written by the two programs (see footnotes on pages F-3 and F-4). In addition to the differences (deletions) noted on the previous pages, the OMEGA 10 version of the profile datasets also contains the following data:

- (1) On card number 4 (second comment card):
 - (a) Columns 35 to 43 contain the name of the reference file dataset used as a reference in the Δ^6 interpolation or extrapolation.
 - (b) Columns 45 to 53 and 55 to 63 contain the names of the reference file datasets used to determine the Δ^6 slope line. If a second slope line is required, the additional reference file dataset name is in columns 65 to 73.
- (2) A fourth comment card is added after card number 5 when the extrapolation limit was exceeded. This card contains the usual ID information plus the following:

"Power Setting Extrapolation Limited by AMRL/BBE, WPAFB."

APPENDIX G
CARD FORMAT FOR THE GROUND RUNUP NOISE REFERENCE DATASETS

This Appendix contains a description of the content and format of the ground runup noise reference datasets required as input to the OMEGA 11 program. These datasets are stored in NOISEFILE 4 in CDC UPDATE format. They are read from file TAPE7 by the OMEGA 11 program.

CARD FORMAT FOR GROUND RUNUP NOISE REFERENCE DATASETS

This reference dataset contains sound pressure level data normalized to 250 feet and standard day conditions. The data cards (cards 5 to 42) can be used as OMEGA 8 input to the OMEGA 8 program.

Card Number 1 (COMDECK card)

Column	Format	Data Description
1-8	A8	*COMDECK
9	Blank	
10	A1	"N" for normalized data
11-13	A3	Noise source code (eg. 061; include leading zero)
14-15	A2	Operation code (eg. 30; include leading zero)
16	A1	Profile version code (eg. A; this code does not apply to the reference datasets; it is included to be consistent with the profile datasets)
17	A1	Revision identifier 0 for original 1 for first revision 2 for second revision, etc.
18-80	Blank	

Card Number 2 (Comment card)

1-7	A7	"Comment"
8	Blank	
9-11	A3	Noise source code (eg. 061)
12-13	A2	Operation power code (eg. 30)
14	A1	Profile version code (eg. A)
15	A1	Revision identifier 0 for original 1 for first revision 2 for second revision, etc.
16	Blank	
17-21	A5	"OMEGA"
22	Blank	
23-25	F3	Analysis program (eg. 8.2)
26	Blank	
27-35	A9	Date of OMEGA 8.2 run (eg. 10 JUL 75)
36	Blank	
37-39	I3	Standard day temperature (59°F)
40	Blank	
41	A1	"F"
42	Blank	
43-45	I3	Standard day relative humidity (70%)
46	Blank	
47-49	A3	"PCT"

Card Number 2 (Comment card) - Continued

Column	Format	Data Description
50-51	Blank	
52-56	F5.2	Standard day barometric pressure (29.92 in Hg)
57	Blank	
58-62	A5	"IN HG"
63-65	Blank	
66-75	A10	Test number (eg. 74-004-010)
76	Blank	
77-78	A2	Run number (eg. 02)

Card Number 3 (Comment card)

1-7	A7	"Comment"
8-16		Same as comment card number 1
17-41	A25	Noise source description, part 1 (eg. aircraft name)
42	Blank	
43-67	A25	Noise source description, part 2 (eg. propulsion system type)

Card Number 4 (Comment card)

1-7	A7	"Comment"
8-16		Same as comment card number 1
17	Blank	
18-37	A20	Power Description
38-39	Blank	
40-44	A5	1st source power setting value
45	Blank	
46-51	A6	1st source power setting units
52-53	Blank	
54-58	A5	2nd source power setting value
59	Blank	
60-65	A6	2nd source power setting units
66-67	Blank	
68-72	A5	3rd source power setting value
73	Blank	
74-79	A6	3rd source power setting units

Card Number 5 (Data card) *

Column	Format	Data Description
1-2	I2	Dataset number: 08
3-10	I8	Test number (eg. 74-001-002 is 74001002).
11-12	I2	Run number (eg. 01)
15	I1	Card sequence number within each angle (1)
16-20	I5	Angle in degrees (0 to 180)
21-24	I4	Band 17
25-28	I4	Band 18
29-32	I4	Band 19
33-36	I4	Band 20
37-40	I4	Band 21
41-44	I4	Band 22
45-48	I4	Band 23
49-52	I4	Band 24
53-56	I4	Band 25
57-60	I4	Band 26
61-64	I4	Band 27
65-68	I4	Band 28
69-72	I4	Band 29
73-76	I4	Band 30
77-80	I4	Band 31

Bands 17 to 31 of the SPL spectrum normalized to reference conditions in dB re .00002 N/M². **

Card Number 6 (Data card) *

1-12		Same as card number 5 above
15	I1	Card sequence number within each angle (2)
16-20	I5	Angle in degrees (0 to 180)
21-24	I4	Band 32
25-28	I4	Band 33
29-32	I4	Band 34
33-36	I4	Band 35
37-40	I4	Band 36
41-44	I4	Band 37
45-48	I4	Band 38
49-52	I4	Band 39
53-56	I4	Band 40

Bands 32 to 40 of the SPL spectrum normalized to reference conditions in dB re .00002 N/M². **

*These two cards are repeated for each SPL spectrum. Each dataset will contain a 19 spectra (38 data cards) for a total of 42 cards.
 **Data are punched to the nearest tenth with the decimal omitted; e.g., 101.2 is punched as 1012. Data could be read using a F4.1 format.

APPENDIX H
CARD FORMAT FOR THE GROUND RUNUP NOISE PROFILE DATASETS

This Appendix contains a description of the content and format of the ground runup noise profile datasets written on file TAPE2 by the OMEGA 11 program. This is the format required by the NOISEMAP program.

CARD FORMAT FOR GROUND RUNUP NOISE PROFILE DATASETS

COMDECK Card

Column	Format	Data Description
1- 8	A8	*COMDECK
9	Blank	
10	A1	Identifier for type of noise A for AL T for ALT P for PNLT
11-13	A3	Noise source code (eg. 061; include leading zero)
14-15	A2	Operation code (eg. 30; include leading zero)
16	A1	Profile version code (eg. A for standard temperature and relative humidity)
17	A1	Revision identifier 0 for original 1 for first revision 2 for second revision, etc.
18-80	Blank	

Data Card Number 1 (Angle = 0°)

1- 6	A6	Type of noise descriptor (eg. AL, ALT or PNLT)
7- 9	Blank	
10-12	A3	Noise source code (eg. 061)
13-14	A2	Operation code (eg. 30)
15-19	Blank	
20-22	I3	Angle (= 0)
23-30	F8	Noise value for 200 ft.
31-38	F8	Noise value for 250 ft.
39-46	F8	Noise value for 315 ft.
47-54	F8	Noise value for 400 ft.
55-62	F8	Noise value for 500 ft.
63-70	F8	Noise value for 630 ft.
71-78	Blank	
79-80	I2	Data card sequence number = 1

CARD FORMAT FOR GROUND RUNUP NOISE PROFILE DATASETS

Comment Card Number 1

Column	Format	Data Description
1- 7	A7	"Comment"
8	Blank	
9-11	A3	Noise source code (eg. 061)
12-13	A2	Operation power code (eg. 30)
14	A1	Profile version code (eg. A)
15	A1	Revision identifier 0 for original 1 for first revision 2 for second revision, etc.
16	Blank	
17-21	A5	"OMEGA"
22	Blank	
23-25	F3	Analysis program (eg. 8.2)
26	Blank	
27-35	A9	Date of OMEGA 8.2 run (eg. 10 JUL 75)
36	Blank	
37-39	I3	Temperature (*F)
40	Blank	
41	A1	"F"
42	Blank	
43-45	I3	Relative Humidity (%)
46	Blank	
47-49	A3	"PCT"
50-51	Blank	
52-56	F5.2	Barometric pressure (in Hg)
57	Blank	
58-62	A5	"IN HG"
63-65	Blank	
66-75	A10	Test number (eg. 74-004-010)
76	Blank	
77-78	A2	Run number (eg. 02)

Comment Card Number 2

1- 7	A7	"Comment"
8-16		Same as comment card number 1
17-41	A25	Noise source description, part 1 (eg. aircraft name)
42	Blank	
43-67	A25	Noise source description, part 2 (eg. propulsion system type)
68-80	A13	Name of reference datasets used to interpolate this profile data (OMEGA 11 only).

CARD FORMAT FOR GROUND RUNUP NOISE PROFILE DATASETS

Comment Card Number 3

Column	Format	Data Description
1- 7	A7	"Comment"
8-16		Same as comment card number 1
17	Blank	
18-37	A20	Power Description
38-39	Blank	
40-44	A5	1st source power setting value
45	Blank	
46-51	A6	1st source power setting units
52-53	Blank	
54-58	A5	2nd source power setting value
59	Blank	
60-65	A6	2nd source power setting units
66-67	Blank	
68-72	A5	3rd source power setting value
73	Blank	
74-79	A6	3rd source power setting units

Data Card Number 2 (Angle = 0°)

1- 6	Blank	
7-14	F8	Noise value at 800 ft.
15-22	F8	Noise value at 1000 ft.
23-30	F8	Noise value at 1250 ft.
31-38	F8	Noise value at 1600 ft.
39-46	F8	Noise value at 2000 ft.
47-54	F8	Noise value at 2500 ft.
55-62	F8	Noise value at 3150 ft.
63-70	F8	Noise value at 4000 ft.
71-78	Blank	
79-80	I2	Data card sequence number = 2

Data Card Number 3 (Angle = 0°)

1- 6	Blank	
7-14	F8	Noise value at 5000 ft.
15-22	F8	Noise value at 6300 ft.
23-30	F8	Noise value at 8000 ft.
31-38	F8	Noise value at 10000 ft.
39-46	F8	Noise value at 12500 ft.
47-54	F8	Noise value at 16000 ft.
55-62	F8	Noise value at 20000 ft.
63-70	F8	Noise value at 25000 ft.
71-78	Blank	
79-80	I2	Data card sequence number = 3

CARD FORMAT FOR GROUND RUNUP NOISE PROFILE DATASETS

Data Card Number 1 (For a maximum of 8 angles between 10° and 170°)

Column	Format	Data Description
1- 6	Blank	
7-14		Same as data card number 1 (angle = 0°)
15-22	18	Angle in degrees
23-78		Same as data card number 1 (angle = 0°)
79-80	12	Data card sequence number

Data Card Number 2 (For a maximum of 8 angles between 10° and 170°)

1- 6	Blank	
7-78		Same as data card number 2 (angle = 0°)
79-80	12	Data card sequence number

Data Card Number 3 (For a maximum of 8 angles between 10° and 170°)

1- 6	Blank	
7-78		Same as data card number 3 (angle = 0°)
79-80	12	Data card sequence number

Data Card Number 1 (Angle = 180°)

1- 6	Blank	
7-14		Same as data card number 1 (angle = 0°)
15-22	18	Angle in degrees (= 180°)
23-78		Same as data card number 1 (angle = 0°)
79-80	12	Data card sequence number

Data Card Number 2 (Angle = 180°)

1- 6	Blank	
7-78		Same as data card number 2 (angle = 0°)
79-80	12	Data card sequence number

Data Card Number 3 (Angle = 180°)

1- 6	Blank	
7-78		Same as data card number 3 (angle = 0°)
79-80	Blank	

APPENDIX I
OMEGA 10 PROGRAM LISTING

The listing for the OMEGA 10 program is provided in the following pages. Included at the end of the program listing is a Super Index which lists all variable names defined in this program as well as all routines in which they are used.

```

      PROGRAM OMEGA10(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7,TAPE3) 000100
      JECK MAIN OMEGA10 000120
      ***** 000140
      ***** 000160
      ***** 000180
      THIS OMEGA 10 SUMMARY PROGRAM WAS WRITTEN BY THE UNIVERSITY OF DAYTON 000200
      RESEARCH INSTITUTE UNDER CONTRACT F33615-75-C-5040 WITH THE 6570 000220
      AEROSPACE MEDICAL RESEARCH LABORATORY (AMRL/88E) AT WRIGHT-PATTERSON 000240
      AIR FORCE BASE, OHIO 45433. 000260
      ***** 000280
      ***** 000300
      ***** 000320
      OMEGA 10 PROGRAM VERSION 3 (25 SEPT 1981) 000340
      ***** 000360
      ***** 000380
      ***** 000400
      THE FOLLOWING SUBROUTINES ARE USED BY THIS PROGRAM: 000420
      ***** 000440
      DK1----ALPH 000460
      DK2----ATKN 000480
      DK3----ICV 000500
      DK4----HEAD 000520
      DK5----IPA 000540
      DK6----OUTG 000560
      DK7----CUIS 000580
      DK8----CPNL 000600
      DK9----FNOY 000620
      DK10---CPTC 000640
      DK11---CAL 000660
      DK12---OUTH 000680
      DK13---OUTJ 000700
      DK14---PPFUAT 000720
      DK15---TITPG 000740
      DK16---SETUP06 000760
      DK17---DELTA6 000780
      DK18---SUMRY 000800
      ***** 000820
      ***** 000840
      ***** 000860
      ***** 000880
      ***** 000900
      ***** 000920
      ***** 000940
      ***** 000960
      ***** 000980
      THE FOLLOWING ARRAYS ARE USED IN THIS PROGRAM: 001000
      ATNR --- ATMOSPHERIC ABSORPTION COEFFICIENTS FOR STANDARD 001020
      TEMPERATURE (59 F) AND HUMIDITY (70 %). 001040
      ATNC --- ATMOSPHERIC ABSORPTION COEFFICIENTS FOR PROFILE 001060
      OUTPUT TEMPERATURE AND HUMIDITY (ITEMP AND IRHUM). 001080
      SX --- DISTANCE DATA FOR 22 DISCRETE DISTANCES IN FEET. 001100
      OPC --- OPERATION POWER CODE FOR EACH INPUT POWER SETTING (REF). 001120
      OPCC --- OPERATION POWER CODE FOR EACH OUTPUT POWER SETTING. 001140
      OPDC --- DEFAULT OPERATION POWER CODES. 001160
      OFCR --- OPERATION POWER CODE FOR THE REFERENCE DATA FROM WHICH THE 001180
      OPCC DATA ARE COMPUTED AND THE OPERATION DESCRIPTION TAKEN. 001190

```


VX	---	AIRCRAFT VELOCITY FOR EACH OUTPUT POWER SETTING (KNOTS).	001200
IV	---	REFERENCE AIRCRAFT VELOCITY FOR EACH POWER SETTING (KNOTS)	001220
IMS	---	REFERENCE MINIMUM SLANT RANGE FOR EACH POWER SETTING (FEET)	001240
DRAG	---	DRAG CONFIGURATION	001260
ET	---	ENGINE TYPE	001280
PS	---	INPUT POWER SETTING FOR EACH OPC FROM THE REFERENCE FILE.	001300
PSIF	---	INPUT POWER SETTING FOR EACH OPC (ARRAY--FLOATING POINT).	001320
PSC	---	OUTPUT POWER SETTING FOR EACH OPCC.	001340
PSCF	---	OUTPUT POWER SETTING FOR EACH OPCC (ARRAY--FLOATING POINT).	001360
P	---	POWER SETTING DESCRIPTION FOR INPUT DATA.	001380
PC	---	POWER SETTING DESCRIPTION FOR OUTPUT DATA.	001400
NK	---	NUMBER OF RUNS (MEASURE LOCATIONS) USED TO COMPUTE THE MEAN REFERENCE DATA IN THE OMEGA 6 PROGRAM.	001420
SR	---	NORMALIZED REFERENCE DATA FOR EACH POWER SETTING (SEE SUBROUTINE 'COIST').	001480
PP	---	PLOT ARRAY DEFINED IN SUBROUTINE 'IPA' AND USED IN SUBROUTINES 'OUTG' AND 'OUTJ'.	001500
ISC	---	ISC IS DEFINED AND USED IN SUBROUTINES 'OUTG' AND 'OUTJ'.	001520
GRD	---	DEFINES ORDINATE ID FOR TAB PLOTS--- DEFINED IN SUBROUTINE 'IPA' AND USED IN SUBROUTINE 'OUTJ'.	001540
ISNG	---	INTEGER FORM OF THE MEAN SPL USED TO PLOT SPL DATA IN SUBROUTINE 'OUTG'.	001560
SPLX	---	SPL SPECTRA FOR THE PROFILE DISTANCES.	001600
EPNLX	---	EPNL FOR PROFILE DISTANCES AT OUTPUT P.S. AND AIR SPEED.	001620
SELTX	---	SEL FOR PROFILE DISTANCES AT OUTPUT P.S. AND AIR SPEED.	001640
SELX	---	SEL FOR PROFILE DISTANCES AT OUTPUT P.S. AND AIR SPEED.	001660
PNLTX	---	PNLT FOR PROFILE DISTANCES AT OUTPUT P.S. AND AIRSPEED.	001700
PNLX	---	PNL FOR PROFILE DISTANCES AT OUTPUT P.S. AND AIRSPEED.	001720
ALTIX	---	ALT FOR PROFILE DISTANCES AT OUTPUT P.S. AND AIRSPEED.	001740
ALX	---	AL FOR PROFILE DISTANCES AT OUTPUT P.S. AND AIRSPEED.	001760
PRUA	---	AIR-TO-GROUND EPNL, SELT ---> AL PROFILE DATA COMPUTED FROM REFERENCE DATA AND ADJUSTED TO THE PROGRAM REFERENCE AIRSPEED (RV).	001800
PRDG	---	GROUND-TO-GROUND EPNL, SELT ---> AL PROFILE DATA COMPUTED FROM REFERENCE DATA AND ADJUSTED TO THE PROGRAM REFERENCE AIRSPEED (RV).	001820
PRUC	---	EPNL, SELT ---> AL DATA FOR AIR-TO-GROUND AND GROUND-TO-GROUND FOR ONE OUTPUT POWER SETTING --- COMPUTED BY SUBROUTINE 'DELTA6'.	001840
OPP	---	OPERATION POWER CODE ARRAY DEFINED IN SUB.'SETUP06'.	001900
MEAS	---	COMPUTE OUTPUT EPNL, SELT, AND SEL MEASURE DATA FOR MEAS>0: WHERE MEAS(1) --- EPNL MEAS(2) --- SELT MEAS(3) --- SEL	001920
CUMJ	---	PART OF THE 'COMDECK' NAME USED IN THE SUMMARY PAGE OUTPUT; CONTAINS INPUT OPC, OTC, PV, AND CRI.	001940
LFLG	---	EXTRAPOLATION LIMIT FLAG (SEE SUBROUTINE 'DELTA5'). LFLG=1 -- LIMIT WAS EXCEEDED FOR THIS POWER SETTING. LFLG=0 -- DATA ARE 'OK' FOR THIS POWER SETTING. LFLG=-1 -- ALL DATA ARE OMITTED FOR THIS POWER SETTING.	001960
IKEF	---	SEE SUBROUTINE 'DELTA6'.	002000
			002020
			002040
			002060
			002080
			002100
			002120
			002140
			002160
			002180
			002200
			002220
			002240
			002260
			002280

THE FOLLOWING ARE A PARTIAL LIST OF THE NON-DIMENSIONED VARIABLES

```

0000 USED IN THIS PROGRAM: 002300
0001 IBNL --- LOWEST FREQUENCY BAND NUMBER INDEX---IBNL=1 CORRESPONDS TO 002320
0002     BAND NUMBER 17 (IBNL MUST BE 1 IN THIS PROGRAM). 002340
0003 IBNH --- HIGHEST FREQUENCY BAND NUMBER INDEX---IBNH=41 CORRESPONDS TO 002350
0004     BAND NUMBER 40 (IBNH MUST BE 24 IN THIS PROGRAM). 002380
0005 IVER --- PROGRAM VERSION NUMBER (ONE DIGIT INTEGER) 002400
0006 IPKOP--- PROPAGATION PARAMETER; 1---AIR TO GROUND; 2---GROUND TO GROUND 002420
0007 DATE --- CURRENT DATE IN THE FORM: 15 DEC 73 002440
0008 DATEN--- CURRENT DATE IN THE FORM: 151273 002460
0009 OTC --- OPERATION TYPE CODE 002480
0010 ITEMP--- OUTPUT (PROFILE DATA) SURFACE TEMPERATURE (F) 002500
0011 IRHUM--- OUTPUT (PROFILE DATA) RELATIVE HUMIDITY (PERCENT) 002520
0012 ACC --- AIRCRAFT CODE READ FROM SETUP CARD 002540
0013 NM --- MAXIMUM NUMBER OF INPUT POWER SETTINGS PER AIRCRAFT (6) 002560
0014 NPM --- MAXIMUM NUMBER OF OUTPUT POWER SETTINGS PER AIRCRAFT (12) 002580
0015 N --- NUMBER OF INPUT POWER SETTINGS READ FROM THE REFERENCE FILE 002600
0016 NP --- NUMBER OF OUTPUT POWER SETTINGS FOR WHICH PROFILE DATA ARE 002620
0017     REQUESTED FOR THIS AIRCRAFT. 002640
0018 KV --- PROGRAM REFERENCE AIRSPEED (250.0 KNOTS). 002660
0019 MOPC --- NUMBER OF OPERATION POWER CODES IN ARRAY UPP(SUB,'SETUPD6') 002680
0020 DOPC --- OPERATION POWER CODE READ FROM REFERENCE DATASET CARD. 002700
0021 AC --- AIRCRAFT NAME READ FROM NORMALIZED DATASET CARD. 002720
0022 IORD --- DISTANCE OR FREQUENCY DATA USED BY SUBROUTINES 'OUTG', 002740
0023     'OUTH' AND 'OUTJ' FOR PRINTOUT ONLY. 002760
0024 PV --- PROFILE VERSION CODE 002780
0025 CRI --- CUMDECK REVISION IDENTIFIER 002800
0026 IPTC --- BAND NUMBER FROM WHICH TONE CORRECTION WAS COMPUTED 002820
0027     FOR REFERENCE DISTANCE SPECTRUM (PROFILE DATA). 002840
0028 IPR --- PROGRAM CODE SHEET PRINT CONTROL FLAG. 002860
0029     IPR=0 --- NO PRINTOUT ON OUTPUT FILE (TAPE6). 002880
0030     IPR=1 --- TAB DATA PRINTED ON THE OUTPUT FILE. 002900
0031 IPRK --- SPECIAL PRINT FLAG WHICH IS SET EQUAL TO 2 FOR NP=0. 002920
0032     FOR NP>0, IPRK=IPR. 002940
0033 IPU --- FLAG WHICH CONTROLS THE PROFILE DATASET OUTPUT ON FILE 002960
0034     'TAPE3'; DATA PRINTED FOR IPU=1. FOR 'IPR'=0, DEFAULT 002980
0035     IPU=1. FOR 'IPR'=1, DEFAULT IPU=0. 003000
0036 DELN --- INCREMENTAL CHANGE IN NOISE POWER OUTPUT RELATIVE TO THE 003020
0037     NOISE POWER AT REFERENCE CONDITIONS 003040
0038 LIM --- EXTRAPOLATION CHECK FLAG; WHEN LIM=1, 'EXTMX' IS LIMIT IS 003060
0039     CHECKED. CHECKED ONLY FOR FIRST AIR-TO-GROUND CALL TO 003080
0040     SUBROUTINE 'DELTA5' FOR EACH POWER SETTING. 003100
0041 EXTMX --- MAXIMUM PERMITTED EXTRAPOLATION OF THE MEASURE DATA 003120
0042     (EPNL ETC.) FROM THE REFERENCE (OPCR) MEASURE DATA AT 003140
0043     THE REFERENCE DISTANCE (1000 FEET). 003160
0044 ITP,IAP,IMP -- SEE SUBROUTINE 'SETUPD6'. 003180
0045 003200
0046 ..... 003220
0047 THE FOLLOWING INPUT DECK IS READ BY THIS PROGRAM: 003240
0048 003260
0049 003280
0050 READ(5,1001) DATE,DATEN,IPR,MEAS,IPU <-- (NOTE: ONLY ONE PER JOB) 003300
0051 READ THE FOLLOWING CARDS FOR EACH AIRCRAFT 'ACC' (AN END OF 003320
0052 FILE TERMINATES THE JOB): 003340
0053 READ(5,1002) ACC,ITEMP,IRHUM,PV,CRI,DELN,NP,PSU 003360
0054 THE FOLLOWING READ STATEMENT READS ONE OR TWO CARDS DEPENDING ON 003380

```

THE VALUE OF 'NP'. ONE CARD FOR NP<7; TWO FOR NP=7 TO 12.	003400
THE ENTIRE READ STATEMENT IS OMITTED WHEN 'NP'=0.	003420
READ(5,1010) (PSC(L),VX(L),OPCR(L),OPCC(L),L=1,NP)	003440
	003460
ALL REFERENCE DATASETS FOR AIRCRAFT 'ACC' ARE READ FROM FILE	003480
'TAPE7'.	003500
	003520
-----	003540
FORMATS OF CODE SHEET INPUT DATA:	003560
01000 FORMAT(A3,2I3,2(1X,A1),F6.0,I2,A6)	003580
01001 FORMAT(A10,A6,2I2)	003600
01010 FORMAT(6(A5,F3.0,2A2))	003620
	003640
	003660
*****	003680
	003700
THE PROFILE DATASETS ARE WRITTEN ON FILE 'TAPE3' WHICH COULD BE	003720
COPIED TO THE 'PUNCH'.FILE---SEE SUB. 'PPFDAT'.	003740
	003760
-----	003780
	003800
THE FOLLOWING ARE CHECKED FOR EACH AIRCRAFT RUN AND ERROR OR	003820
WARNING MESSAGES ARE PRINTED:	003840
	003860
I) SKIP AIRCRAFT DATA WHEN THE FOLLOWING OCCUR:	003880
1) POWER SETTING UNITS ON CODE SHEET AND IN REFERENCE FILE	003900
DON'T MATCH.	003920
2) REFERENCE FILE DATA CARD ERROR IN OPERATION POWER CODE,	003940
AIRCRAFT CODE, OR CARD SEQUENCE NUMBER.	003960
3) REFERENCE FILE MINIMUM SLANT RANGE IS NOT WITHIN 1% OF A	003980
STANDARD PROFILE DISTANCE.	004000
4) NO POWER SETTING DATA FOUND ON THE REFERENCE FILE FOR THIS	004020
AIRCRAFT.	004040
	004060
	004080
II) PRINT WARNING MESSAGES WHEN THE FOLLOWING OCCUR:	004100
1) REFERENCE FILE CONTAINS MORE THAN 'MM' DATASETS; ONLY THE	004120
FIRST 'MM' ARE READ FOR THIS AIRCRAFT (MM=6 INITIALLY).	004140
2) REFERENCE FILE MINIMUM SLANT RANGE NOT EQUAL TO 1000 FEET	004160
AS ASSUMED BY THE PROGRAM IN SUBROUTINES 'DELTA6' AND	004180
'PPFDAT'.	004200
3) THE REQUESTED POWER SETTING FOR 'NORMAL RATED THRUST'	004220
(OPC=12) IS NOT BETWEEN 'APPROACH' AND 'TAKEOFF' (OR	004240
'MAX RATED THRUST' OR 'INTERMEDIATE POWER (MIL)') AS	004260
REQUIRED FOR THIS POWER SETTING.	004280
	004300
III) REQUESTED OPERATION POWER CODES (OPCC) ARE OMITTED WHEN THE	004320
FOLLOWING OCCUR (ERROR MESSAGE PRINTED IN SUB. 'SETUP06'):	004340
1) THERE IS INSUFFICIENT DATA FOR EXTRAPOLATION OR	004360
INTERPOLATION TO REQUESTED POWER SETTING (PSC).	004380
2) REFERENCE FILE AND REQUESTED POWER SETTINGS (PS AND PSC) ARE	004400
NOT EQUAL AS REQUIRED FOR THIS OPERATION POWER CODE (OPCR).	004420
3) REFERENCE FILE AND REQUESTED AIRSPEED (IV AND VX) ARE NOT	004440
EQUAL AS REQUIRED FOR THIS OPERATION POWER CODE (OPCR).	004460
4) REQUESTED REFERENCE OPERATION POWER CODE (OPCR) WAS NOT	004480
FOUND IN THE REFERENCE FILE (TAPE7).	

```

004500
004520
004540
NOTE: IF NEW OPERATION POWER CODES ARE ADDED TO THE REFERENCE
004560
FILE, VARIABLE 'MOPC' AND DATA STATEMENT ARRAY 'JPP(20)'
004580
MUST BE UPDATED AND THE RULES GOVERNING THE NEW OPC'S MUST
004600
BE APPLIED, ALL IN SUBROUTINE 'SETUP06'.
004620
004640
004660
004680
004700
VERSION 1 ---> VERSION 2 CHANGES (29 NOV 1979):
004720
THE ONLY DECKS CHANGED WERE 'MAIN' AND 'COIST'.
004740
'MAIN' DECK: IVER WAS CHANGED FROM 1 TO 2;
004760
'COIST' DECK: D2X(I) WAS CHANGED FROM 0.5*D1 TO 0.3*D1.
004780
THIS CHANGES THE DISTANCE RATIO PART OF THE DURATION CORRECTION
004800
FROM 10*LOG(RATIO) TO 6*LOG(RATIO).
004820
004840
VERSION 2 ---> VERSION 3: ADD PNLTX, PNLX, ALTX AND ALX SINGLE EVENT
004860
DATA TO PAGES 'I' AND 'M' FOR INTERPOLATED AND/OR EXTRAPOLATED DATA.
004880
ALSO ADD THE TAB PLOT FOR THESE DATA ON PAGES 'J' AND 'N'.
004900
DECKS CHANGED: MAIN,COIST,CPTC,OUTH,OUTJ,PPFDAT---25 SEPT 81.
004920
004940
*****
004960
DIMENSION IREQ(6),ORAG(3,6),SOURCE(2,6),OPCC(12),SENX(22,7)
004980
1,COMD(6),LFLG(12),IREF(12),PSDM(6),JDM(7)
005000
COMMON IBNL,IBNH,L,SR(6,33),NR(6),ISRC(24),SPLX(22,24),
005020
1 PNLTX(22),PNLX(22),ALTX(22),ALX(22),EPNLX(22),SELT(22),SELX(22)
005040
2 ,PRDA(22,6,7),PRDG(22,6,7),PRLC(22,7,2)
005060
COMMON /COMPC/IV(6),IMS(5),P(2,6),OPC(6),OPCC(12),PS(2,6),PSC(12),
005080
1 PSU,PSIF(6),PSCF(12),IREQC(3,12),VX(12),SX(22),ATNC(24),ATNR(24),
005100
2 DELN,IPTC,IPROP,MEAS(3),OPCR(12),PC(2,12)
005120
COMMON /HEADC/ AC,DATE,ACC,IPAGE,IVX,ITEMP,IRHUM,IVER,PV,CRI,
005140
1 ET(2),OTC
005160
COMMON /OUTC/ORD(43),ISC(3),IORO(26),DASH,OOT,X,BLK,DATEN,PP(8,3)
005180
EQUIVALENCE (PNLTX(1),SENX(1,1))
005200
DATA IORO/50,63,80,100,125,160,200,250,315,400,500,630,800,1000,
005220
1 1250,1600,2000,2500,3150,4000,5000,6300,8000,10000,12500,16000,
005240
2 20000,25000/
005260
DATA BLK/1H /, DOT/1H./,X/1HX/,DASH/1H-/ ,W/1HW/,ZERO/1H0/
005280
DATA ATNR/0.07,0.09,0.11,0.14,0.16,0.23,0.29,0.36,0.45,0.55,0.73,
005300
1 0.92,1.17,1.47,1.65,2.39,3.05,4.02,5.44,7.63,9.01,12.75,18.54,
005320
2 27.15/,ICOM/1/,ASK/1H*/ ,RV/250.0/,IVER/3/,
005340
3 MM/6/,NPM/12/,IPAGE/0/,EXTMX/5.0/,
005360
4 OPCC/2H01,2H02,2H03,2H04,2H05,2H06,2H07,2H08,2H09,2H10,2H11,2H12/
005380
DATA JDM/3,2,1,4,5,6,7/
005400
IBNL=1
005420
IBNH=24
005440
ACC=BLK
005460
C IF MM OR NPM ARE INCREASED THE CORRESPONDING ARRAYS MUST BE CHANGED.
005480
C WHEN OPC'S ARE ADDED TO DATA ARRAY 'OPP', MUPC MUST BE CHANGED AND
005500
C THE DIMENSION OF ARRAY 'OPP' MUST BE CHANGED IN ALL SUBROUTINES.
005520
C
005540
C COMPUTE THE 22 DISCRETE DISTANCES USED IN SUBROUTINE 'COIST'.
005560
DO 1 I=1,22
005580
FN=FLOAT(I+22)*0.1
005600

```

1 SX(I)=10.0**FN	005600
3 READ CODE SHEET INPUT CARDS:	005620
3 IF 'IPR' > 0, DATA ARE PRINTED ON FILE 'TAPE6' (OR OUTPUT FILE).	005640
READ(5,1001) DATE,DATEH,IPR,MEAS,IPU	005660
3 SET IPR, IPU AND MEAS DEFAULT VALUES:	005580
IF (IPR) 2,2,5	005710
2 IPR=0	005720
IPU=1	005740
3 FOR 'IPR'=0, ONLY ONE MEASURE IS PERMITTED:	005760
IF (MEAS(1)+MEAS(2)+MEAS(3)-1) 4,10,4	005730
4 MEAS(3)=1	005800
MEAS(1)=0	005820
MEAS(2)=0	005840
GO TO 10	005860
5 MEAS(1)=1	005880
MEAS(2)=1	005900
MEAS(3)=1	005920
IPR=1	005940
IF (IPU .LT. 1) IPU=0	005960
10 JACC=ACC	005980
IF (IPR .GT. 1) IPR=1	006000
IPRR=IPR	006020
READ(5,1000) ACC,ITEMP,IRHUM,PV,CRI,DELN,NP,PSU	006040
3 JOB IS TERMINATED IF AN END OF FILE IS READ ON UNIT 5.	006060
IF (EOF(5)) 999,15	006080
15 IF (NP .GT. 0) GO TO 17	006100
3 IF (IPR) 970,970,16	006120
3 SET 'NP=0' DEFAULT VALUES (ADDITIONAL VALUES SET IN SUB. 'SETUP06'):	006140
16 IPRR=2	006160
GO TO 19	006180
17 IF (NP .GT. NPM) NP=NPM	006200
READ(5,1010) (PSC(L),VX(L),OPCR(L),OPCC(L),L=1,NP)	006220
DO 18 L=1,NP	006240
IF (OPCC(L) .EQ. BLK) OPCC(L)=OPCD(L)	006260
18 CONTINUE	006280
3 SET DEFAULT VALUES:	006300
19 IF (PV .EQ. BLK) PV=W	006320
IF (CRI .EQ. BLK) CRI=ZERO	006340
IF (ABS(DELN) .LT. 0.000001) DELN=0.0	006360
IF (ITEMP .LT. 1) GO TO 20	006380
3 SUBROUTINE 'ALPH' COMPUTES THE ATMOSPHERIC ABSORPTION COEFFICIENTS	006400
3 (ATNC) FOR THE PROFILE DISTANCE DATA IF ITEMP AND IRHUM ARE NOT	006420
3 STANDARD (59 F AND 70 %).	006440
CALL ALPH(FLOAT(IRHUM),FLOAT(ITEMP),ATNC,I8NL,I8NH)	006460
GO TO 30	006480
20 ITEMP=59	006500
IRHUM=70	006520
DO 25 J=I8NL,I8NH	006540
25 ATNC(J)= ATNR(J)	006560
3 IF ACC=DACC, REFERENCE DATA ARE ALREADY READ FOR THIS AIRCRAFT:	006580
30 IF (ACC .EQ. DACC) GO TO 155	006600
3 READ ALL REFERENCE DATA FOR AIRCRAFT 'ACC' FROM THE REFERENCE FILE	006620
3 (TAPE7)--HERE TO LABEL 150:	006640
REWIND 7	006660
L=0	006680

C 'ICOM' IS DEFINED AS FOLLOWS AFTER THE FIRST DATASET IS READ FROM	006700
C FILE 'TAPE7' (INITIALLY 'ICOM'=1):	006720
C ICOM=1 --- 'COMDECK' CARD IS PART OF THE NORMALIZED DATASET.	006740
C ICOM=0 --- 'COMDECK' CARD IS NOT PART OF THE NORMALIZED DATASET.	006760
50 IF (ICOM) 70,70,55	006780
C READ 'COMDECK' OR FIRST 'COMMENT' CARD (CO CHECKS CARD TYPE):	006800
55 READ(7,1205) CO,DACC,DOPC,DS1,DS2	006820
IF (EOF(7)) 100,60	006840
50 IF (CO .EQ. ASK) GO TO 70	006860
ICOM=0	006880
GO TO 75	006900
C READ 'COMDECK' CARD:	006920
65 READ(7,1205) CO	006940
IF (EOF(7)) 100,70	006960
C READ FIRST 'COMMENT' CARD:	006980
70 READ(7,1205) CO,DACC,DOPC,DS1,DS2	007000
IF (EOF(7)) 100,75	007020
75 IF (DACC .EQ. ACC) GO TO 90	007040
IF (L) 80,80,150	007060
C READ THROUGH THE NORMALIZED DATA DECK (5 CARDS).	007080
80 DO 85 I=1,5	007100
85 READ(7,1200) DACC	007120
IF (ICOM) 70,70,65	007140
80 L=L+1	007160
IF (L .GT. MM) GO TO 130	007180
OPC(L)=DOPC	007200
SOURCE(1,L)=DS1	007220
SOURCE(2,L)=DS2	007240
C READ SECOND 'COMMENT' CARD:	007260
READ(7,1200) DACC,DOPC,OTC,ET,(URAG(I,L),I=1,3)	007280
C READ THIRD 'COMMENT' CARD:	007300
READ(7,1210) DACC,COMO(L),PSDM	007320
IF (NP .LT. 1 .AND. PSU .EQ. BLK) GO TO 95	007340
C SELECT THE POWER SETTING WHICH MATCHES THE PSU UNITS:	007360
DO 92 I=2,6,2	007380
IF (PSU .EQ. PSDM(I)) GO TO 96	007400
92 CONTINUE	007420
GO TO 960	007440
95 I=2	007460
96 PS(1,L)=PSDM(I-1)	007480
PS(2,L)=PSDM(I)	007500
C READ AND CHECK THE 3 DATA CARDS:	007520
READ(7,1100) DACC,OTC,DOPC,IC,AC,P(1,L),P(2,L),NR(L),IMS(L),IV(L),	007540
1 SR(L,25)	007560
IF (DACC .NE. ACC .OR. DOPC .NE. OPC(L) .OR. IC .NE. 1) GO TO 950	007580
READ(7,1110) DACC,OTC,DOPC,IC, (SR(L,J),J=26,33),(SR(L,J),J=1,8)	007600
IF (DACC .NE. ACC .OR. DOPC .NE. OPC(L) .OR. IC .NE. 2) GO TO 950	007620
READ(7,1110) DACC,OTC,DOPC,IC, (SR(L,J),J= 9,24)	007640
IF (DACC .NE. ACC .OR. DOPC .NE. OPC(L) .OR. IC .NE. 3) GO TO 950	007660
IF (ICOM) 70,70,65	007680
100 IF (L .GT. 6) GO TO 150	007700
C NO REFERENCE DATA FOR 'ACC' FOUND IN THE REFERENCE FILE:	007720
WRITE(6,3100) ACC	007740
GO TO 10	007760
C WARNING --- MORE THAN 'MM' REFERENCE DATASETS FOUND IN THE REFERENCE	007780

C FILE:	007800
130 WRITE(6,3200) ACC,MM	007820
L=L-1	007840
150 N=L	007860
C SUBROUTINE 'SETUPD6' DETERMINES THE INPUT REFERENCE DATA REQUIRED TO	007880
C COMPUTE EACH REQUESTED OUTPUT POWER CONDITION (OPCC):	007900
155 CALL SETUPD6(IREQ,N,NF,ACC,ITP,IAP,IMP)	007920
C ADD EXTRA PRINT TO CHECK PROGRAM:	007940
WRITE(3,4000) (IREQ(II),II=1,N)	007960
WRITE(3,4100) ((IREQC(II,JJ),II=1,3),JJ=1,NP)	007980
04030 FORMAT(1X,6I5)	008000
04100 FORMAT(1X,10I4)	008020
C END OF EXTRA PRINTOUT*****	008040
IF (IPR) 170,170,160	008060
C SUBROUTINE 'TITPG' PRINTS THE TITLE (COVER) PAGE:	008080
160 CALL TITPG(IPRR)	008100
C	008120
C 'IPA' INITIALIZES THE PLOT ARRAYS FOR SUBROUTINES 'OUTG' AND	008140
C 'OUTJ'.	008160
C	008180
CALL IPA	008200
170 IPAGE=0	008220
IC=0	008240
C LABEL 600 LOOP -- COMPUTE THE PROFILE DATA FOR THE REQUIRED	008260
C (IREQ(L)=1) REFERENCE DATA POWER CONDITIONS AT THE PROGRAM	008280
C REFERENCE (RV) AIRSPEED:	008300
DO 600 L=1,N	008320
IF (IPRR .EQ. 2) LFLG(L)=0	008340
C IREQ(L)<1 --- OMIT REFERENCE DATA FOR LTH OPC:	008360
IF (IREQ(L)) 600,600,510	008380
510 IPAGE=IPAGE+1	008400
C IVX --- REFERENCE DATASET AIRSPEED HERE:	008420
IVX=IV(L)	008440
C	008460
C COMPUTE MEAN PNL, PNLT, AL AND ALT FROM MEAN SPL SPECTRUM.	008480
C MEAN PNL ---> ALT ARE STORED IN SR(L,26) ---> SR(L,29)	008500
C MEAN VALUES ARE PRINTED ON PAGE '3' AND ALSO USED IN SUBROUTINE	008520
C 'CDIST'.	008540
C	008560
ID=0	008580
CALL CAL(L,ID)	008600
IF (MEAS(1)+MEAS(2)) 535,535,512	008620
512 CALL CPTC(PTC,L,ID)	008640
SR(L,33)=PTC	008660
C COMPUTE ALT(L):	008680
SR(L,29)=SR(L,26)+PTC	008700
IF (MEAS(1)) 535,535,515	008720
515 CALL CPNL(L,ID)	008740
IF (SR(L,26).GT. 9990.0) GO TO 520	008760
C COMPUTE PNLT(L):	008780
SR(L,27)=SR(L,26)+PTC	008800
GO TO 525	008820
520 SR(L,27)=9999.0	008840
525 IF (IPR) 535,535,530.	008860
C PRINT OUTPUT PAGE 'G'.	008880

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530 CALL OUTG(DRAG,SOURCE)                                008900
535 GO 540 IPROP=1,2                                       008920
C COMPUTE SPL, PNL, PNLT, ETC. FOR 22 DISTANCES.          008940
  CALL CUIST(IRD,RV)                                       008960
C IRD IS THE INDEX OF THE STANDARD DISTANCE SET, SX(I),   008980
C CORRESPONDING TO THE REFERENCE DISTANCE, IMS(L).        009000
  IF (IRD .LT. 1) GO TO 940                                009020
C WRITE WARNING MESSAGE WHEN THE REFERENCE DISTANCE IS NOT EQUAL TO 009040
C 1000 FEET (IRD=8):                                       009060
  IF (IRD .NE. 8) WRITE(6,2910) ACC,OPC(L),IMS(L)         009080
C SUBROUTINES 'OUTH' AND 'OUTJ' ARE CALLED HERE ONLY IF IPR>0 FOR THE 009100
C 'NP=0' OPTION (IPRR IS SET EQUAL TO 2 BY THE PROGRAM):  009120
  IF (IPR*IPRK-3) >40,536,540                             009140
C SUBROUTINE OUTH PRINTS PAGES 'A', 'I', 'L' AND 'M'.     009160
538 IPF=1                                                  009180
  CALL OUTH(IRD,IPTC,SENX,IC,IPF)                         009200
C OUTJ(1) PRINTS PAGE 'J' DATA---PLOT OF 'PNLTx'---->'ALx' DISTANCE DATA009220
C OUTJ(1) PRINTS PAGE 'N' DATA---PLOT OF 'PNLTx'---->'ALx' DISTANCE DATA009240
  CALL OUTJ(IPF,SENX,IC)                                  009260
C OUTJ(2) PRINTS PAGE 'K' DATA---PLOT OF 'EPNLx'---->'SELTX' DISTANCE DATA009280
C OUTJ(2) PRINTS PAGE 'O' DATA---PLOT OF 'EPNLx'---->'SELTX' DISTANCE DATA009300
  IPF=2                                                    009320
  CALL OUTJ(IPF,SENX,IC)                                  009340
540 CONTINUE                                              009360
600 CONTINUE                                              009380
  IF (IPRR .EQ. 2 .AND. IPU .LE. 0) GO TO 710             009400
C WHEN IPRR=2 AND IPU>0, ENTER LOOP 700 ONLY TO SETUP ARRAY 'PRDC' FOR 009420
C WRITING PROFILE DATA ON FILE 'TAPE3'---NOT VERY EFFICIENT BUT WILL 009440
C SELDOM APPLY:                                           009460
C CALL SUBROUTINE 'DELTA6' FOR EACH OF THE REQUESTED OPCC'S: 009480
  IC=2                                                     009500
  IPAGE=0                                                  009520
  DO 700 L=1,NP                                           009540
C VFACT --- AIRSPEED ADJUSTMENT FROM PROGRAM REFERENCE (RV) TO REQUESTED 009560
C OUTPUT FOR LTH OPCC (KNOTS):                             009580
  VFACT=10.0*ALOG10(VX(L)/RV)                             009600
C IVX --- PROFILE DATASET AIRSPEED FOR LTH OPCC:          009620
  IVX=ICV(VX(L))                                          009640
  LIM=0                                                    009660
  LFLG(L)=0                                               009680
  IREF(L)=0                                               009700
  DO 620 I=1,7                                           009720
  J=JDM(I)                                                009740
  VFC=0.0                                                 009760
  IF (J .GT. 3) GO TO 605                                009780
  VFC=VFACT                                               009800
  IF (MEAS(J)) 620,620,610                                009820
605 IF (IPR) 620,620,610                                  009840
610 LIM=LIM+1                                             009860
C COMPUTE AIR-TO-GROUND PROFILE DATA FOR JTH MEASURE:    009880
  CALL DELTA6(PROG(1,1,J),PRDC(1,J,1),L,PSIF,PCSF,IREQC,LFLG(L),VFC 009900
  1,LIM,PSC,EXTMX,ITP,IAP,IMP,IREF(L))                  009920
C COMPUTE GROUND-TO-GROUND PROFILE DATA FOR JTH MEASURE: 009940
  CALL DELTA6(PROG(1,1,J),PRDC(1,J,2),L,PSIF,PCSF,IREQC,LFLG(L),VFC 009960
  1,IC,PSC,EXTMX,ITP,IAP,IMP,IREF(L))                   009980

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620 CONTINUE	010000
IF (LFLG(L)) 700,650,650	010020
630 IF (IPRK-1) 670,660,670	010040
660 IPAGE=IPAGE+1	010060
DO 665 IPRUP=1,2	010080
C PRINT PAGE 'I' OR 'N':	010100
IPF=3	010120
CALL OUTH(IKD,IPTC,PRDC(1,1,IPROP),LFLG(L),IPF)	010140
C PRINT PAGES 'J' FOR IPROP=1 OR PAGE 'N' FOR IPROP=2:	010160
IPF=4	010180
CALL OUTJ(IPF,PRDC(1,1,IPROP),LFLG(L))	010200
C PRINT PAGE 'K' FOR IPRUP=1 OR PAGE 'O' FOR IPROP=2:	010220
IPF=3	010240
665 CALL OUTJ(IPF,PRDC(1,1,IPROP),LFLG(L))	010260
670 IF (IPU) 700,700,680	010280
CALL SUB. 'PPFDAT' TO PUNCH THE EPNLX, SELTX AND/OR SELX PROFILE	010300
DATASETS:	010320
	010340
	010360
IREF(L)>0 -- SECOND SLOPE REFERENCE REQUIRED BECAUSE	010380
PSCF(L) AND PSIF(K) ARE ON OPPOSITE SIDES OF PSIF(IAP):	010400
630 ID=0	010420
IF (IREF(L)-1) 695,685,690	010440
635 ID=IMP	010460
GO TO 695	010480
690 ID=ITP	010500
695 CALL PPFDAT(PROC,LFLG(L),COND,ID)	010520
700 CONTINUE	010540
IF (IPR) 10,10,710	010560
C CALL SUBROUTINE 'SUMRY' TO PRINT SUMMARY PAGE:	010580
710 CALL SUMRY(IPU,COND,EXTMX,N,NF,SOURCE,LFLG,IREF,ITP,IAP,IMP)	010600
GO TO 10	010620
	010640
WRITE ERROR STATEMENTS.	010660
	010680
ERROR IN REFERENCE DISTANCE:	010700
940 WRITE(6,2900) ACC,OPC(L),IMS(L)	010720
GO TO 10	010740
C REFERENCE DATASET DATA CARD ERROR:	010760
950 WRITE(6,2760) ACC,ACC,DACC,OPC(L),DOPC,IC	010780
GO TO 10	010800
C INPUT/OUTPUT POWER SETTING UNITS ERROR:	010820
960 WRITE(6,2000) ACC,OPC(L),PSU,(PSDM(I),I=2,6,2)	010840
GO TO 10	010860
970 WRITE(6,2800) ACC	010880
DACC=BLK	010900
GO TO 10	010920
999 STOP	010940
*****	010960
*****	010980
1000 FORMAT(A3,2I3,2(1X,A1),F6.0,I2,A6)	011000
1001 FORMAT(A10,A6,5I2)	011020
1010 FORMAT(6(A5,F3.0,2A2))	011040
1100 FORMAT(3X,A3,A1,A2,6X,I1,3A10,I4,2I5,F5.1)	011060
1110 FORMAT(3X,A3,A1,A2,6X,I1,10F4.1)	011080

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1200 FORMAT( 8X,A3,A2,A1,3X,A10,A5,1X,2A10,A5) 011100
1205 FORMAT(A1,7X,A3,A2,4X,2A10) 011120
1210 FORMAT(6X,A3,A5,22X,3(A>,1X,A6,2X)) 011140
2000 FORMAT(*1 FOR ACC= *,A3,* AND OPC= *,A2/* POWER SETTING UNITS 011160
1 READ FROM NORMALIZED DATASET DO NOT MATCH UNITS ON CODE SHEET*/ 011180
2 * PSU=*,A6/* NORMALIZED DATASET UNITS ARE: *,3(A6,2X)/ 011200
3 * ALL DATA FOR THIS ACC DELETED FROM THIS JOB.* 011220
2700 FORMAT(*1 OMIT AIRCRAFT = *,A3,* FROM THIS JOB.* 011240
1 * ERROR IN AIRCRAFT CODE, OPERATION POS 011260
1WER CODE OR CARD SEQUENCE*// * ACC = *,A3,* DACC= *,A3/ 011280
2 * JPPC= *,A2,* JOPC= *,A2/* CARD SEQ NO. = *,I2) 011300
2800 FORMAT(*1 OMIT AIRCRAFT = *,A3,* FROM THIS JOB.* 011320
1 * CODE SHEET PARAMETER NP<1 IS NOT PERMITTED FOR NO-PRINT (IPR 011340
2=0) MODE.* 011360
2900 FORMAT(*1 FOR ACC= *,A3,* AND OPC= *,A2/* ALL DATA OMITTED FOR 011380
1R THIS AIRCRAFT BECAUSE THE REFERENCE DISTANCE=*,I5/4X,* IS NOT WITH 011400
2HIN 1% OF ANY OF THE STANDARD DISTANCES.*) 011420
2910 FORMAT(*1 FOR ACC= *,A3,* AND OPC= *,A2/* WARNING --- REFEREN 011440
1CE DISTANCE=*,I5/4X,* WHICH IS NOT 1000 FEET AS ASSUMED IN SUBROUT 011460
2NES DELTA6 AND PPFUAT.*) 011480
3100 FORMAT(*1 NO POWER SETTINGS WERE FOUND FOR AIRCRAFT CODE = *,A3) 011500
3200 FORMAT(*1 NOT ALL REFERENCE DATA WERE READ FOR AIRCRAFT CODE=*, 011520
1A3/* THERE ARE MORE THAN THE MAXIMUM NUMBER (*,12,*) OF REFEREN 011540
2GE DATASETS IN THE FILE.*) 011560
***** 011580
***** 011600
END 011620

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```

SUBROUTINE ALPH(REL,TEMP,ABC,IL,IH)                                011540
JECK 1  ALPH                                                       011660
*****                                                             011680
*****                                                             011700
IN THIS SUBROUTINE, THE PROCEDURE USED TO CALCULATE THE COEFFICIENTS 011720
OF ATMOSPHERIC ABSORPTION IS THE SAME AS DESCRIBED IN SAE ARP 866A. 011740
*****                                                             011760
SUBROUTINE ALPH(REL,TEMP,ABC,IL,IH)                                011780
WHERE.....                                                         011800
REL - RELATIVE HUMIDITY IN PERCENT                                011820
TEMP - TEMPERATURE IN DEGREES FAHRENHEIT                          011840
ABC - ARRAY CONTAINING THE COMPUTED COEFFICIENTS OF ATMOSPHERIC 011860
      ABSORPTION IN DB PER 1000 FEET                               011880
IL - FIRST BAND FOR WHICH ABC IS COMPUTED (IL=1 CORRESPONDS TO 011900
      BAND NUMBER 17).                                             011920
IH - LAST BAND FOR WHICH ABC IS COMPUTED (IH=24 CORRESPONDS TO 011940
      BAND NUMBER 40).                                             011960
*****                                                             011980
*****                                                             012000
*****                                                             012020
**012040
**012060
**012080
**012100
**012120
**012140
**012160
**012180
*****                                                             012200
NOTE:                                                                012220
THE FOLLOWING COMMENT CARDS CONTAIN SOME OF THE EQUATIONS AS      012240
DEFINED IN SAE ARP 866A.                                           012260
THE FOLLOWING F(TEMP,REL) IS THE SAME AS DEFINED IN THE PROGRAM 012280
BELOW:                                                                012300
F(TEMP,REL)=10.0** (ALOG10(REL)-1.9727+664+0.02288074*TEMP        012320
1-0.00009589*TEMP**2+0.0000003*TEMP**3)                          012340
ALMX=FT1*FREQ IS THE SAME AS THE FOLLOWING:                        012360
ALMX=10.0** (ALOG10(FREQ)-2.4215+0.281*TEMP/60.0)                 012380
FT2*(FREQ**2.05) IS THE SAME AS THE FOLLOWING:                     012400
10.0** (2.05*ALOG10(FREQ/1000.0)+0.000633*TEMP-1.45325)          012420
THE FOLLOWING TWO CARDS ARE REPLACED BY LABEL 60 IN THE PROGRAM: 012440
50 ALM=ALMX*ALN                                                     012460
ABC(J)=ALM+10.0** (2.05*ALOG10(FREQ/1000.0)+0.000633*TEMP-1.45325) 012500
*****                                                             012520
*****                                                             012540
*****                                                             012560
DIMENSION X(29),Y(29),FREQ3(24),ABC(24)                           012580
F(TEMP,REL)=0.01064764002*REL*10.0** (0.02288074*TEMP          012600
1-0.00009589*TEMP**2+0.0000003*TEMP**3)                          012620
DATA FREQ3/50.0,63.0,80.0,100.0,125.0,150.0,200.0,250.0,315.0, 012640
400.0,500.0,630.0,800.0,1000.0,1250.0,1500.0,2000.0,2500.0,3150.0, 012660
3400.0,4000.0,5000.0,6300.0,7096.0,8943.0/                       012680
DATA X/0.0,0.25,0.50,0.6,0.7,0.8,0.9,1.0,1.1,1.2,1.3,1.5,1.7,2.0, 012700
A2.3,2.5,2.8,3.0,3.3,3.6,4.15,4.45,4.8,5.25,5.7,6.05,6.5,7.0,10.0/ 012720

```

DATA Y/0.0,0.315,0.700,0.54,0.53,0.975,0.996,1.0,0.97,0.9,0.54,	012740
A0.75,0.67,0.57,0.495,0.45,0.4,0.37,0.33,0.3,0.26,0.245,0.23,0.22,	012760
B0.21,0.205,0.2,0.2,0.2/	012780
4 IF (IM .GT. 24) IM=24	012800
HA=F(TEMP,REL)	012820
FT1=0.003788785337*10.J** (0.004683333333*TEMP)	012840
FT2=2.49315913602E-6*10.0** (0.000633*TEMP)	012860
DO 160 J=IL,IM	012880
FREQ=FREQ3(J)	012900
15 HMX=(FREQ/1010.0)**0.5	012920
MN=HA/HMX	012940
IF (MN<0.50) 30,20,20	012960
20 ALN=0.2	012980
GO TO 60	013000
30 IF (MN) <0,40,50	013020
40 ALN=0.0	013040
GO TO 60	013060
50 ALN=ATKN(X,Y,29,2,MN)	013080
60 ABC(J)=FREQ*FT1*ALN+FT2*(FREQ**2.05)	013100
100 CONTINUE	013120
RETURN	013140
END	013160

FUNCTION ATKN(X,Y,N,K,XI)	013180
DECK 2 ATKN	013200
*****	013220
*****	013240
ATKN AITKEN INTERPOLATING FUNCTION ADAPTED TO THE OMEGA 5	013260
PROGRAM; USED BY SUBROUTINE ALPH.	013280
	013300
USAGE...	013320
	013340
Z=ATKN(X,Y,N,K,XI)	013360
	013380
WHERE...	013400
	013420
	013440
X - TABLE OF INDEPENDENT VARIABLE VALUES IN ASCENDING ORDER.	013460
Y - TABLE OF DEPENDENT VARIABLE VALUES.	013480
N - NO. OF POINTS IN TABLES X AND Y (29).	013500
K - DEGREE OF INTERPOLATION DESIRED (2).	013520
XI- X-VALUE FOR WHICH INTERPOLATION IS DESIRED.	013540
	013560
THE INTERPOLATED VALUE IS RETURNED AS THE FUNCTION VALUE.	013580
	013600
*****	013620
*****	013640
DIMENSION X(N), Y(N)	013660
DIMENSION XX(13),YY(13)	013680
K1=K+1	013700
10 IF (XI-X(1)) 20,20,30	013720
20 LL=0	013740
GO TO 200	013760
30 IF (X(N)-XI) 40,40,20	013780
40 LL=N-K1	013800
GO TO 200	013820
50 LL=1	013840
LU=N	013860
60 IF (LU-LL-1) 180,180,70	013880
70 LI=(LL+LU)/2	013900
IF (X(LI)-XI) 80,80,90	013920
80 LL=LI	013940
GO TO 60	013960
90 LU=LI	013980
GO TO 60	014000
130 LL=LL-(K1+1)/2	014020
IF (LL) 20,200,190	014040
190 IF (LL+K1-N) 200,200,40	014060
200 DO 210 I=1,K1	014080
II=LL+I	014100
XX(I)=X(II)-XI	014120
210 YY(I)=Y(II)	014140
DO 220 J=1,K	014160
DO 220 J=I,K	014180
220 YY(J+1)=(1./(XX(J+1)-XX(I)))*(YY(I)+XX(J+1)-YY(J+1)+XX(I))	014200
ATKN=YY(K1)	014220
RETURN	014240
END	014260

```

      FUNCTION ICV(DR)
C   JECK 3  CONVERTS DATA FROM FLOATING POINT TO INTEGER.
      R=DR
      ICV=R
      DD=R-FLOAT(ICV)
      IF (ABS(DD) .GE. 0.499999) ICV=ICV+ISIGN(1,ICV)
      RETURN
      END

```

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J14290
J14300
014320
J14340
014350
014380
014400
014420

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SUBROUTINE HEAD(IP)                                014440
DECK 4                                              014460
.....014480
.....014500
SUBROUTINE 'HEAD' PRINTS THE HEADING BLOCKS FOR PAGES H, I, L AND M. 014520
.....014540
.....014560
    DIMENSION PG(10),DH1(7),DH2(3,2),DI1(2),PAG(12) 014580
    COMMON I3NL,I3NM,L                             014600
    COMMON /COMPC/IV(6),IMS(6),P(2,6),OPC(6),OPCC(12),PS(2,6),PSC(12), 014620
1 PSU,PSIF(6),PSCF(12),IREQC(3,12),VX(12),SX(22),ATNC(24),ATNR(24), 014640
2 DELN,IPTC,IPROP,MEAS(3),JPRC(12),PC(2,12)         014660
    COMMON /HEADC/ AC,DATE,ACC,IPAGE,IVX,ITEMP,IRHUM,IVER,PV,CRI, 014680
1 ET(2),OTC                                           014700
    DATA PG/1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9,2H10,2H11,2H12/ 014720
    DATA ASK/1H*/ , DH1/10MSOUND FRES,10MSURE LEVEL,10M SPECTRA A, 014740
    DATA 10MS A FUNCTI,10MON OF SLAY,10MT DISTANCE,6H (DB)*/ ,DH2/10HAIR-TO 014760
    C-GRU, 10MUND PROPAG, SHATION, 10MGROUND-TO-,10MGROUND PRO, 014800
    U 10MPAGATION / , DI1/10MSINGLE EVE,10MNT NOISE A/ 014820
.....014840
    IP = 7 THROUGH 8 CORRESPONDS TO PAGES H, I, L AND M. 014860
.....014880
    IF (IP .EQ. 8) GO TO 220                          014900
210 WRITE(6,3000) DH1, (DH2(I,IPROP),I=1,3),IVER 014920
    GO TO 250                                           014940
220 WRITE(6,3000) DI1,DH1(4),DH1(5),DH1(6),ASK,BLK,(DH2(I,IPROP),I=1,3) 014960
    IVER                                              014980
230 IPP=IP+2*IPROP-2                                  015000
240 WRITE(6,3050) ACC                                  015020
    WRITE(6,3100) PC(1,L),PC(2,L),ITEMP,OTC, OPCC(L) 015040
    WRITE(6,3110) AC,PSC(L),PSU,IRHUM,PV             015060
    WRITE(6,3150) DATE,IVX,DELN, PG(IPP),PAG(IPAGE) 015080
3000 FORMAT(1H1/10X,1H(, 106(1H-),1H)/ 10X,*( TABLE: *,7A10, 8X,*)IDE 015100
    INTIFICATION: )*/ 10X,1H(, 68X,1H),17X,1H)/ 10X,1H(,10X, 3A10,48X, 015120
    2 *) OMEGA 10.*,11,5X,1H))                      015140
3050 FORMAT( 10X,1H(, 68(1H-),1H),17X,1H)/ 10X,11H( AIRCRAFT:, 18X, 015160
    1 12H( OPERATION:, 19X, 14H) METEOROLOGY:, 15X, 13H) A/C CODE:, 015180
    2 A3, 3H ))                                       015200
3100 FORMAT( 10X,1H(, 28X,1H(,4X,2A10,6X,14),7X,4MTEMP,6X,14=,I3,24 F, 015220
    1 5X,13H) UPS CODE:,A1,A2,3H ))                 015240
3110 FORMAT( 10X,1H(, 10X,A10,8X,1H(,4X,A5,1X,A6,14X, 1H),7X, 015260
    1 11MKEL HUMID =,I3,2H %,5X,3H) ,13MPROFILE VER:,A1,24 )) 015280
3150 FORMAT( 10X,1H(, 28X,1H(,30X, 1H),26X,1H),2X,A10,5X,1H) 015300
    1/ 10X,1H(,28X,1H(, 4X,10HAIRSPEED =,I4,6H KNOTS,6X,11H) DELTA N = 015320
    2, F5.1,3H DB,10X, 9H) PAGE ,A1,A2,6X,1H)/ 10X,1H(,106(1H-),1H) 015340
    RETURN                                           015360
    END                                              015380

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	SUBROUTINE IPA	015400
C	JECK 5	015420
C		015440
C		015460
C	SUBROUTINE 'IPA' INITIALIZES THE PLOT ARRAYS USED BY SUBROUTINES	015480
C	'OUTG' AND 'OUTJ'.	015500
C		015520
C		015540
	DIMENSION ORDJ(22)	015560
	COMMON /OUTG/ORD(43),ISC(9),IOKD(28),DASH,DOT,X,BLK,DATEN,	015580
	1 PB(64),PJ(64),PM(64)	015600
	DATA ORDJ/1HS,1HL,1HA,1HN,1HT,1H ,1HD,1HI,1HS,1HT,1HA,1HN,1HC,1HE,	015620
	1 1H ,1HI,1HN,1H ,1HF,1HE,1HE,1HT/	015640
C		015660
C	SET UP PLOT ARRAYS FOR TAB PLOTS PRINTED BY SUBROUTINES 'OUTG' AND	015680
C	'OUTJ' (PB, PD AND PM).	015700
		015720
815	DO 820 I=1,83,2	015740
	PJ(I)=DOT	015760
	PB(I)=BLK	015780
	PM(I)=DASH	015800
	K=I+1	015820
	PD(K)=BLK	015840
	PM(K)=DASH	015860
820	PB(K)=BLK	015880
	DO 830 I=3,83,10	015900
830	PB(I)=DOT	015920
	DO 840 I=1,22	015940
	K=I+10	015960
840	ORD(K)=ORDJ(I)	015980
	DO 850 I=1,10	016000
	K=I+32	016020
	ORD(I)=BLK	016040
850	ORD(K)=BLK	016060
	ORD(43)=BLK	016080
900	RETURN	016100
	END	016120


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      SUBROUTINE OUTG(ORAG,SOURCE)                                016140
      JECK 6  OUTG                                              016150
      .....                                                    016160
      .....                                                    016200
      SUBROUTINE 'OUTG' PRINTS A TAB PLOT OF THE NORMALIZED SPL 016220
      VERSUS FREQUENCY AND PRINTS THE PNL, PNL, ALT AND AL DATA 016240
      COMPUTED FROM THIS NORMALIZED SPECTRUM. ALL DATA ARE FOR THE L-TH 016260
      POWER SETTING. ADDITIONAL REFERENCE AND IDENTIFICATION DATA READ 016280
      FROM THE REFERENCE DATASET ARE ALSO PRINTED BELOW THE PLOT. 016300
      .....                                                    016320
      .....                                                    016340
      DIMENSION FQ(24),PB(75),ORAG(3,6),SOURCE(2,6)          016360
      COMMON IBNL,IBNH,L,SR(6,33),NR(6),ISRC(24)              016380
      COMMON /GUMPC/IV(6),IMS(6),P(2,6),OPC(6),OPCC(12),PS(2,6),PSC(12),016400
      1 PSU,PSIF(6),PSCF(12),IRELC(3,12),VX(12),SX(22),ATNC(24),ATN(24),016420
      2 UELN,IFTG,IPRUP,MEAS(3),JPCR(12),PC(2,12)             016440
      COMMON /HEADC/ AC,DATE,ACC,IPAGE,IVX,ITEMP,IRHUM,IVER,PV,CRI, 016460
      1 ET(2),OTC                                               016480
      COMMON /OUTC/ORD(44),ISC(6),IORD(28),DASH,UOT,X,BLK,DATEN,PP(84,3) 016500
      EQUIVALENCE (PP(1,1),PB(1))                             016520
      DATA FQ/4*(1H ),1HF,1HR,1HE,1HQ,1HU,1HE,1HN,1HC,1HY,1H ,1HI,1HN, 016540
      1 1H ,1MH,1MZ,5*(1H )/                                  016560
      C PRINT 'ID' BLOCK IN UPPER RIGHT CORNER:                016580
      WRITE(6,2000) IVER,AGU,OTC, OPC(L),DATE,IPAGE           016600
      WRITE(6,2100)                                             016620
      WRITE(6,2150) PB,BLK                                     016640
      MX=-1000                                                  016660
      C COMPUTE THE LARGEST 'SPL' VALUE:                         016680
      DO 25 J=1BNL,1BNH                                         016700
      ISRC(J)=ICV(SR(L,J))                                       016720
      MX=MAX0(MX,ISRC( J))                                       016740
      25 CONTINUE                                               016760
      MX=(MX+7)/10)*10                                           016780
      C COMPUTE THE ABSCISSA SCALE:                               016800
      DO 40 I=1,8                                                016820
      J=9-I                                                       016840
      40 ISC(J)=MX-10*I+10                                       016860
      MX=MX+2                                                     016880
      MN=ISC(1)-2                                                 016900
      IFQ=0                                                        016920
      DO 150 J=1BNL,1BNH                                         016940
      IFQ=IFQ+1                                                  016960
      C COMPUTE THE PLOT POSITION OF 'SPL' VALUE IN ISRC(J):    016980
      II=ISRC( J)-MN+1                                           017000
      IF (II .LT. 1 .OR. II .GT. 75) II=0                       017020
      .....                                                    017040
      C IFQ IS USED TO SET UP THE GRID PATTERN WHICH REPEATS EVERY 10 LINES. 017060
      LG=1 ---> PRINTS 5 DOTS PER INCH ON TAB PLOT.           017080
      LG=2 ---> PRINTS 1 DOT PER INCH ON TAB PLOT.             017100
      .....                                                    017120
      GO TO (60,75,75,60,75,75,60,75,75,70),IFQ              017140
      60 LG=2                                                     017160
      GO TO 60                                                    017180
      70 IFQ=0                                                    017200
      75 LG=1                                                     017220

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30 IF (II) 100,100,90                                017240
30 SAVE=PP(II,LG)                                     017260
   PP(II,LG)=X                                         017280
C PRINT THE PLOT LINE:                                 017300
130 WRITE(6,2300) FQ(J), IORD(J), (PF(I,LG), I=1,75), SR(L,J) 017320
   IF (II) 150,150,140                                017340
140 PP(II,LG)=SAVE                                     017360
150 CONTINUE                                           017380
   WRITE(6,2150) PB                                     017400
   WRITE(6,2100)                                       017420
C PRINT THE ABSCISSA SCALE:                             017440
   WRITE(6,2400) ISC                                  017460
C                                                       017480
C MEAN PNL, PNLT, AL AND ALT ARE STORED IN SR(L,26) ---> SR(L,29). 017500
C MEAN PNL, PNLT, AL AND ALT WERE COMPUTED FROM THE MEAN SPL SPECTRUM 017520
C IN THE MAIN DECK.                                   017540
C                                                       017560
C PRINT THE REFERENCE DATA SUMMARY BELOW THE TAB PLOT: 017580
   WRITE(6,2500) AC,P(1,L),P(2,L),PS(1,L),PS(2,L),LV(L),SR(L,27), 017600
   1 IMS(L),SR(L,26),SR(L,29)                         017620
   WRITE(6,2600) NK(L),IVER,ACC,OTC, OPC(L),DATEN,SR(L,23) 017640
   WRITE(6,2700) SR(L,33),SOURCE(1,L),SOURCE(2,L),SR(L,30),ET,SR(L,31) 017660
   1), (VRAG(I,L), I=1,3), SR(L,32), SR(L,25)          017680
   RETURN                                              017700
2000 FORMAT(1H1/120X9HOMEGA 10.,I1//120X,10HA/C CODE: ,A3/ 120X,10HOPS 017720
   1 CODE: ,A1,A2/ 120X, 6HDATE: ,A10// 120X, 7HPAGE G,I1//) 017740
2100 FORMAT(20X,1H(,75(1H-),14))                     017760
2150 FORMAT(20X,1H(,75A1,1H),A1,5H MEAN)              017780
2300 FORMAT( 13X,A1,I5,2H (,75A1,1H),F6.1)           017800
2400 FORMAT( 15X,6I10/39X,41HMEAN VALUE OF NORMALIZED 1/3 J3 SPL IN DB) 017820
2500 FORMAT(/20X,A10,5X,2A10,5X,A5,1X,A6//           16X,6HAIRESPEED, 7X,1H= 017840
   1,10,6H KNOTS,10X,4HTEMP, 6X, 7H= 55 F,18X,6HPNL =,F6.1,5H PND8/ 017860
   2 10X,16HSLANT DISTANCE =,A5, 5H FEET, 017880
   3 11X, 17HREL HUMID = 70 %,18X,6HPNL =,F6.1,5H PND8/ 88X,6HALT = 017900
   4,F6.1,4H DBA) 017920
2600 FORMAT( 10X, 16HNO. OF RECDRS =,I5, 16X, 10HIDENT: 10.,I1,1H-,A30 017940
   1,1H-,A1,A2,1H-,A5, 9X,6HAL =,F6.1,4H DBA) 017960
2700 FORMAT(65X,*C =*,F6.1,* DB*/16X,*DATA FROM *,A10, 017980
   1* JOB COMPUTED ON *,A10,25X,*EPNL =*,F6.1,* EPND8*/ 018000
   2 16X,*ENGINE TYPE: *,A10,A5,44X,*SEL =*,F6.1,* DB*/ 018020
   3 16X,*DRAG CONFIGURATION: *,2A10,A5,27X,*SELT =*,F6.1,* DB*/ 018040
   4 68X,*THETA=*,F6.1,* DEG*) 018060
   END 018080

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SUBROUTINE CDIST(IRD,RV)                                018100
DECK 7  CDIST                                           018120
*****                                                  018140
SUBROUTINE 'CDIST' COMPUTES THE SPL AND SINGLE EVENT NOISE DATA FOR 018160
22 DISTANCES FOR AIR-TO-GROUND (IPROP=1) AND GROUND-TO-GROUND 018180
(IPROP=2) CONDITIONS. 018200
018220
NOTE: ARRAYS SPLA( 6,24) ---> SA( 6) ARE EQUIVALENT TO SR( 6,33) IN 018240
THE MAIN DECK. THESE ARRAYS CONTAIN THE MEAN DATA (FOR EACH 018260
POWER SETTING) PRINTED ON PAGE 'G'. 018280
018300
NOTE: ARRAYS SPLX(22,24) ---> SELX(22) ARE THE SINGLE EVENT NOISE 018320
DATA FOR 22 DISTANCES PRINTED ON PAGES 'H', 'I', 'L' AND 'M' 018340
FOR IPRR=2 (IPRR=2 ONLY WHEN NP=0 AND IPR=1 ON THE CODE SHEET); 018360
THE PNLTX, PNLX ---> SELX DATA ARE STORED AT THE REFERENCE 018380
AIRSPEED. THE EPNLX, SELTX, AND SELX DATA STORED IN PRDA 018400
AND PRDG ARE ADJUSTED TO THE PROGRAM REFERENCE AIRSPEED (RV). 018420
018440
NOTE: EA(13,13) IS DEFINED ONLY FOR FREQUENCIES 50 (B=17) TO 800 HZ 018460
(B=29) AND DISTANCES 400 FEET TO 6300 FEET. 018480
EA=0 FOR SX(I)<400 FEET 018500
EA=EA(13,J) FOR SX(I)> 6300 FEET. 018520
018540
*****                                                  018560
DIMENSION EA(13,13),U2X(22) 018600
COMMON IBNL,IBNH,L,SPLA(5,2+),THETA(6), 018620
1 PNLX( 6),PNLTA( 6),ALA( 6),ALTA( 6),EPNLX( 6),SELA( 6),SELT( 6), 018640
2 CA( 6), NR( 6),ISPL(24),SP_X(22,24), 018660
3 PNLTX(22),PNLX(22),ALTX(22),ALX(22),EPNLX(22),SELT(22),SELX(22) 018680
4 ,PRDA(22,6,7),PRDG(22,6,7) 018700
COMMON /COMPC/IV(6),IMS(6),P(2,6),OPC(6),OPCC(12),PS(2,6),PSC(12), 018720
1 PSU,PSIF(6),PSCF(12),IREQC(3,12),VX(12),SX(22),ATNC(24),ATNR(24), 018740
2 DELN,IPTC,IPROP,MEAS(3),OPCR(12),PC(2,12) 018760
DATA EA/ 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 1.09, 2.01, 018780
1 4.53, 6.34, 10.04, 13.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 1.18, 018800
2 2.60, 4.57, 6.94, 9.93, 12.53, 15.00, 0.00, 0.00, 0.00, 0.00, .00, 018820
3 1.04, 2.34, 3.90, 5.05, 6.55, 11.92, 14.53, 17.00, 0.00, 0.00, 0.00, 018840
4 .36, 1.25, 2.35, 3.74, 5.48, 7.68, 10.44, 13.92, 16.53, 19.00, 0.00, 018860
5 .13, .60, 1.30, 2.25, 3.35, 4.74, 6.48, 8.50, 11.44, 14.92, 17.53, 018880
6 20.00, .19, .63, 1.18, 1.88, 2.75, 3.65, 5.24, 6.98, 9.13, 11.94, 018900
7 15.42, 18.03, 20.50, .19, .63, 1.18, 1.88, 2.75, 3.85, 5.24, 6.98, 018920
8 9.18, 11.94, 15.42, 18.03, 20.50, 0.00, .13, .60, 1.30, 2.25, 3.35, 018940
9 4.74, 6.48, 8.50, 11.44, 14.92, 17.53, 20.00, 0.00, 0.00, 0.00, 0.00, 018960
A .15, 1.02, 2.11, 3.48, 5.21, 7.39, 10.14, 13.64, 17.00, 0.00, 0.00, 018980
B 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 1.41, 3.20, 5.45, 8.28, 11.00, 019000
C 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, .12, 1.03, 2.17, 019020
D 3.62, 5.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 019040
E 0.00, .60, 1.06, 3.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 019060
F 0.00, 0.00, 0.00, 0.00, .39, 1.00/ 019080
019100
019120
019140
019160
019180

```

VREF=FLOAT(IV(L))	019200
ALGV IS FROM OMEGA 6 PROGRAM.	019220
ALGV=10.0*ALOG10(VX(L)/VREF)	019240
VFCT --- FACTOR USED TO ADJUST DATA TO THE PROGRAM REFERENCE	019260
AIRSPEED (RV):	019280
VFCT=10.0*ALOG10(RV/VREF)	019300
IF (IPROP-1) 10,10,40	019320
	019340
AIR-TO-GROUND DISTANCE DATA (IPROP=1).	019350
	019380
10 SNTH=SIN(THETA(L)/57.29563)*1000.0	019400
IRD IS THE INDEX OF THE STANDARD DISTANCE SET, SX(I),	019420
CORRESPONDING TO THE REFERENCE DISTANCE, H0.	019440
IRD=0	019460
20 DO 30 I=1,22	019480
D3=SX(I)*0.01	019500
IF (H0 .GE. (SX(I)-D3) .AND. H0 .LE. (SX(I)+D3)) IRD=I	019520
D1=20.0*ALOG10(SX(I)/H0)	019540
D2X(I)=0.5*D1-ALGV	019560
D2X(I)=6.3*D1	019580
D1=DELTA-D1	019600
DO 25 J=IBNL,IBNH	019620
D2=(SX(I)*ATN2(J)-H0*ATN2(J))/SNTH	019640
25 SPLX(I,J)=SPLA(L,J)-D2*D1	019660
30 CONTINUE	019680
IF (IRD .LT. 1) RETURN	019700
GO TO 90	019720
	019740
GROUND-TO-GROUND DISTANCE DATA (IPROP=2).	019760
THE SPLX DATA WERE DEFINED BY THE PREVIOUS 'IPROP=1' AIR-TO-GROUND	019780
PASS:	019800
	019820
40 DO 60 J=1,13	019840
DO 60 I=4,16	019860
60 SPLX(I,J)=SPLX(I,J)-EA(I-3,J)	019880
DO 70 I=17,22	019900
70 SPLX(I,J)=SPLX(I,J)-EA(I-13,J)	019920
80 CONTINUE	019940
DO 85 J=IBNL,IBNH	019960
DO 85 I=1,22	019980
85 SPLX(I,J)=SPLX(I,J)-OG	020000
90 ID=1	020020
	020040
LABEL 150 LOOP -- COMPUTE THE REQUESTED SINGLE EVENT DATA FOR	020060
EACH DISTANCE:	020080
FOR EPNLX --- ALL COMPUTATIONS ARE REQUIRED;	020100
FOR SELTX --- ALL COMPUTATIONS EXCEPT 'PNLX' ARE REQUIRED;	020120
FOR SELX --- ONLY 'ALX' COMPUTATIONS ARE REQUIRED.	020140
DO 150 I=1,22	020160
IF (MEAS(1)) 94,94,91	020180
CALL SUBROUTINE 'CPNL' TO COMPUTE PNLX(I)	020200
91 CALL CPNL(I,ID)	020220
IF (PNLX(I)-9990.0) 95,92,92	020240
92 IF (I .LE. 2) GO TO 95	020260
IF PNLX(I)>9990.0, EXTRAPOLATE PNLX(I) FROM PREVIOUS TWO	020280
PNLX(I) DATA POINTS.	

PNLX(I)=2.0*PNLX(I-1)-PNLX(I-2)	020300
GO TO 95	020320
3* PNLX(I)=9999.	020340
C CALL SUBROUTINE 'PTC' TO COMPUTE TONE CORRECTION (PTC) FOR THE I-TH	020360
C SPECTRA (OK DISTANCE).	020380
95 IF (MEAS(1)+MEAS(2)) 130,130,96	020400
98 CALL CPTC(PTC,I,IO)	020420
IF (PNLX(I)-9990.0) 100,120,120	020440
100 PNLTX(I)=PNLX(I)+PTC	020460
IF (PNLTA(L)-9990.0) 110,125,125	020480
110 EPNLX(I)=EPNLA(L)+PNLTX(I)-PNLTA(L) +D2X(I)	020500
GO TO 130	020520
120 PNLTX(I)=9999.0	020540
125 EPNLX(I)=9999.0	020560
C CALL SUBROUTINE 'CAL' TO COMPUTE ALX(I).	020580
130 CALL CAL(I,IO)	020600
SELX(I)=SELA(L)+ALX(I)-ALA(L) +D2X(I)	020620
IF (MEAS(1)+MEAS(2)) 140,140,135	020640
135 ALTX(I)=ALX(I)+PTC	020660
SELTX(I)=SELTA(L)+ALTX(I)-ALTA(L) +D2X(I)	020680
C ***** SEE COMMENT LINES BEFORE LABEL 200 BELOW; THEY EXPLAIN	020700
C ARRAYS 'PRDA' AND 'PRDJ' USED BELOW:	020720
140 IF (IPROP-1) 144,144,147	020740
C STOK AIR-TO-GROUND DATA (IPROP=1):	020760
144 PRDA(I,L,3)=SELX(I)-VFCT	020780
GO TO 150	020800
C STOK GROUND-TO-GROUND DATA (IPROP=2):	020820
147 PRDJ(I,L,3)=SELX(I)-VFCT	020840
150 CONTINUE	020860
C IPTC --- INDEX OF FREQUENCY BAND WHICH DETERMINED THE TONE CORRECTION	020880
C FOR THE REFERENCE DISTANCE SPECTRUM:	020900
IPTC=ISPL(IRD)	020920
C	020940
C FROM HERE TO LABEL 200---SMOOTHING ROUTINE FOR ALTX(I), PNLTX(I),	020960
C SELTX(I) AND EPNLX(I).	020980
C	021000
IF (MEAS(1)+MEAS(2)) 999,999,155	021020
155 C1=SELTX(IRD)-SELX(IRD)	021040
C2=ALTX(IRD)-ALX(IRD)	021060
DO 220 I=1,22	021080
C3= SELTX(I)-SELX(I)	021100
IF (I-14) 160,165,165	021120
160 D3=1.0	021140
GO TO 160	021160
165 IF (I-16) 170,175,175	021180
170 D3=0.2*FLOAT(18-I)	021200
GO TO 160	021220
175 D3=0.0	021240
C COMPUTE SMOOTHED SELTX AND ALTX:	021260
180 SELTX(I)=SELX(I)+C1*D3	021280
ALTX(I)=ALX(I)+C2*D3	021300
IF (PNLX(I)-9990.0) 185,190,190	021320
C COMPUTE SMOOTHED EPNLX AND PNLTX:	021340
185 PNLTX(I)=PNLX(I)+C2*D3	021360
C SMOOTHED EPNLX= UNSMOOTHED EPNLX + SMOOTHED SELTX - UNSMOOTHED SELTX:	021380

EPNLX(I)=EPNLX(I)+C1*D3-C3	021400
GO TO 200	021420
190 PNLTX(I)=9999.0	021440
EPNLX(I)=9999.0	021460
C APPLY AIRSPEED ADJUSTMENT FROM INPUT (IV(L)) TO PROGRAM REFERENCE(RV)	021480
C STORE DATA FOR PRINTOUT OF PROFILE DATASET BY SUBROUTINE 'PPFOAT'	021500
C AND/OR FOR DELTA*6 COMPUTATIONS BY SUBROUTINE 'DELTA6':	021520
230 IF (IPROP-1) 210,210,215	021540
C STORE AIR-TO-GROUND DATA (IPROP=1):	021560
210 PRJA(I,L,1)=EPNLX(I)-VFCT	021580
PRDA(I,L,2)=SELTX(I)-VFCT	021600
PRDA(I,L,4)=PNLTX(I)	021620
PRDA(I,L,5)=PNLX(I)	021640
PRDA(I,L,6)=ALTX(I)	021660
PRJA(I,L,7)=ALX(I)	021680
GO TO 220	021700
C STORE GROUND-TO-GROUND DATA (IPROP=2):	021720
215 PRDG(I,L,1)=EPNLX(I)-VFCT	021740
PRDG(I,L,2)=SELTX(I)-VFCT	021760
PRDG(I,L,4)=PNLTX(I)	021780
PRDG(I,L,5)=PNLX(I)	021800
PRDG(I,L,6)=ALTX(I)	021820
PRDG(I,L,7)=ALX(I)	021840
220 CONTINUE	021860
999 RETURN	021880
END	021900

```

SUBROUTINE CPNL(I,ID)                                021920
DECK 8  CPNL                                         021940
*****                                              021960
SUBROUTINE CPNL(I,ID) COMPUTES PERCEIVED NOISE LEVEL (PNL) USING THE 021980
METHOD DESCRIBED IN FAR PART 35 SECTION 836.2. FUNCTION FNOY (SEE 022000
DECK 9) IS USED TO COMPUTE THE NOY VALUES.          022020
                                                    022040
PERTINENT VARIABLES USED BY CPNL ARE:                022060
SPLX      - ARRAY CONTAINING SOUND PRESSURE LEVEL DATA IN DB      022080
SPLA      - ARRAY CONTAINING NORMALIZED SOUND PRESSURE LEVEL DATA 022100
            IN DB                                                    022120
PNLX      - PERCEIVED NOISE LEVEL IN PNDB                          022140
PNLA      - PERCEIVED NOISE LEVEL IN PNDB COMPUTED FROM SPLA       022160
I         - INDEX OF SPL SPECTRUM FOR WHICH PNL IS BEING COMPUTED 022180
ID        - IDENTIFIES THE SPL DATA USED TO COMPUTE THE PNLX      022200
            OR PNLA DATA. ID=0---SPLA, ID=1---SPLX.                022220
*****                                              022240
*****                                              022260
*****                                              022280
*****                                              022300
** PNL(I) IS ONLY COMPUTED FOR BANDS 17 TO 40.          022320
** IF IDL AND IDH ARE OUTSIDE THIS RANGE, CHANGES MUST BE ** 022340
** MADE IN THIS SUBROUTINE TO LIMIT COMPUTATIONS TO THIS RANGE. ** 022360
**                                              022380
*****                                              022400
*****                                              022420
COMMON I8NL,I8NH,L,      SPLA( 6,24),THETA( 6),PNLA( 6),DMYY(72) 022440
1,      SPLX(22,24),PNLTX(22),PNLX(22)                          022460
FJ=0.15                                                         022480
SUM=0                                                            022500
AMX=-10.0                                                         022520
DO 60 J=I8NL,I8NH                                              022540
JJ=J                                                            022560
IF (ID) 20,20,30                                              022580
20 SPLL=SPLA(I,J)                                              022600
GO TO 40                                                         022620
30 SPLL=SPLX(I,J)                                              022640
MAXIMUM SPL IN NOY ALGORITHM IS 150.0                          022660
40 IF (SPLL.GT. 150.00001) GO TO 70                             022680
USE FUNCTION FNOY TO COMPUTE NOY VALUE (FN) FOR SOUND PRESSURE LEVEL 022700
SPLL AND ADJUSTED BAND NUMBER JJ.                               022720
FN=FNOY(SPLL,JJ)                                              022740
MAXIMUM PERMITTED NOY VALUE IS 2048.0                          022760
IF (FN.GT. 2048.00001) GO TO 70                                022780
AMX=AMAX1(AMX,FN)                                              022800
SUM=SUM+FN                                                      022820
50 CONTINUE                                                    022840
IF (SUM.LE. 0.00001) GO TO 70                                  022860
SUM=(SUM-AMX)*FJ+AMX                                           022880
COMPUTE PERCEIVED NOISE LEVEL (PNL) FOR THE I-TH SPECTRUM.    022900
PNL= 40.0+33.3*ALOG10(SUM)                                     022920
GO TO 100                                                        022940
70 PNL= 9999.0                                                  022960
*****                                              022980
*****                                              023000

```

```
100 IF (ID) 110,110,120
110 PNLA(I)=PNL
    RETURN
120 PNLX(I)=PNL
    RETURN
END
```

```
023020
023040
023060
023080
023100
023120
```



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      FUNCTION FNOY(SPL,JJ)                                023140
DECK 9  FNOY                                              023160
*****                                                    023180
      FUNCTION FNOY(SPL,JJ) COMPUTES THE NOY VALUE FOR A GIVEN SOUND 023200
      PRESSURE LEVEL (SPL) AND 1/3 OCTAVE BAND CENTER FREQUENCY (JJ) USING 023220
      THE METHOD DESCRIBED IN ARP 865A. (THIS DIFFERS FROM THE METHOD 023240
      DESCRIBED IN FAR PART 36 SECTION 336.7 IN THAT IT COMPUTES THE NOY 023260
      VALUE DOWN TO 0.1 INSTEAD OF STOPPING AT 1.0) 023280
*****                                                    023300
      VARIABLES REQUIRED BY FUNCTION FNOY ARE: 023320
      SPL - SOUND PRESSURE LEVEL IN DB 023340
      JJ - ARRAY INDEX CORRESPONDING TO A BAND NUMBER 023360
      FL - ARRAY CONTAINING THE BAND SOUND PRESSURE LEVELS FROM TABLE 023380
            II OF ARP 865A. 023400
      FM - ARRAY CONTAINING THE RECIPROCAL OF THE SLOPES GIVEN IN 023420
            TABLE II OF ARP 865A. 023440
*****                                                    023460
      DIMENSION FL(24,5),FM(24,4) 023480
      DATA FL/49.,44.,39.,34.,30.,27.,24.,21.,18.,15.,12.,9.,5., 023500
      A4.,5.,6.,10.,17.,21.,25.,31.,36.,42.,39.,36.,33.,30.,27.,5*25., 023520
      B23.,21.,18.,15.,2*14.,15.,17.,23.,29.,34.,30.,27.,5*25., 023540
      C44.,42.,3*40.,38.,34.,32.,30.,2*29.,30.,31.,37.,41.,31.01,85.88, 023560
      D67.32,79.85,79.75,75.90,73.36,74.91,94.63,13*100.0,44.29,50.72, 023580
      E52.,51.,49.,47.,46.,45.,43.,42.,41.,5*40.,38.,34.,32.,30.,2*29., 023600
      F30.,31.,34.,37./ 023620
      DATA FM/0.079520,2*0.06816,0.05964,10*0.053013,0.054040,2*0.053013 023640
      G,2*0.047712,2*0.053013,0.069160,0.079520,0.059640,2*0.056098, 023660
      H0.052286,0.047534,2*0.043573,0.040221,0.037349,7*0.034859,0.040221 023680
      I,0.037349,4*0.034859,2*0.037349,0.043573,0.043478,0.040570, 023700
      J2*0.036631,0.035336,2*0.033333,0.032051,0.030675,6*0.030103, 023720
      K7*0.029900,2*0.042285,15*0.030103,9*0.029960/ 023740
      IF (SPL .LT. FL(JJ,1)) GO TO 20 023760
      IF (SPL .GT. 150.0) GO TO 30 023780
      IF (SPL .GE. FL(JJ,1) .AND. SPL .LT. FL(JJ,2)) GO TO 40 023800
      IF (SPL .GE. FL(JJ,2) .AND. SPL .LT. FL(JJ,3)) GO TO 50 023820
      IF (SPL .GE. FL(JJ,3) .AND. SPL .LT. FL(JJ,4)) GO TO 60 023840
      IF (SPL .GE. FL(JJ,4) .AND. SPL .LE. 150.00001) GO TO 70 023860
20 FNOY=0.0 023880
   RETURN 023900
30 FNOY=5001.0 023920
   RETURN 023940
40 FNOY=0.1*10.0**(FM(JJ,1)*(SPL-FL(JJ,1))) 023960
   RETURN 023980
50 FNOY=10.0**(FM(JJ,2)*(SPL-FL(JJ,3))) 024000
   RETURN 024020
60 FNOY=10.0**(FM(JJ,3)*(SPL-FL(JJ,3))) 024040
   RETURN 024060
70 FNOY=10.0**(FM(JJ,4)*(SPL-FL(JJ,5))) 024080
   RETURN 024100
   END 024120
      024140
      024160

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SUBROUTINE CPTC(PTC,I,ID)                                024130
DECK 10 CPTC                                             024200
*****                                                    024220
SUBROUTINE CPTC(PTC,I,ID) COMPUTES THE TONE CORRECTION FOR THE 024260
I-TH SPECTRUM AS DESCRIBED IN PART 36 SECTION B36.3.    024280
*****                                                    024300
WHERE.....                                              024320
PTC - TONE CORRECTION FOR THE I-TH SPECTRUM IN DB      024340
I - INDEX OF ARRAY FSPL--SPECIFIES SPECTRUM USED TO    024360
COMPUTE PTC.                                             024380
ID - PROGRAM FLAG USED TO IDENTIFY THE SPL DATA FROM WHICH 024400
PTC IS TO BE COMPUTED.
ID=0 -- COMPUTE PTC USING SPLA,                          024420
ID=1 -- COMPUTE PTC USING SPLX.                          024440
SPLA - ARRAY CONTAINING NORMALIZED SOUND PRESSURE LEVEL DATA 024480
IN DB                                                    024500
SPLX - ARRAY CONTAINING SOUND PRESSURE LEVEL DATA IN DB  024520
IPTC - ARRAY CONTAINING FREQUENCY BAND INDEX OF FSPL VALUE 024540
USED TO COMPUTE TONE CORRECTION. IPTC                    024560
IS ONLY REQUIRED FOR THE NORMALIZED DISTANCE.             024580
WITH MINOR CHANGES THIS ARRAY COULD BE DELETED.        024600
*****                                                    024620
THIS 'OMEGA 10' PROGRAM ASSUMES THAT ALL MEAN SPL(J) DATA POINTS ARE 024640
DEFINED. NO CHECK IS MADE IN THIS SUBROUTINE.           024660
*****                                                    024680
NOTE: F(24) TO S(24) IN BLANK COMMON BELOW CORRESPOND TO PART 024700
OF ARRAY PRJC(22,7,2) IN THE MAIN DECK.                 024720
*****                                                    024740
*****                                                    024760
*****                                                    024780
*****                                                    024800
*****                                                    024820
** IN THIS SUBROUTINE IBL=17 CORRESPONDS TO IL=1 AND IBH=40 ** 024840
** CORRESPONDS TO IH=24. IF THIS IS CHANGED IN THE PROGRAM, ** 024860
** THIS SUBROUTINE MUST BE CHANGED ACCORDINGLY. ** 024880
** PTC IS ONLY COMPUTED FOR BANDS 19 TO 40. ** 024900
** IF IBL AND IBH ARE OUTSIDE THIS RANGE, CHANGES MUST BE ** 024920
** MADE IN THIS SUBROUTINE TO LIMIT COMPUTATIONS TO THIS RANGE. ** 024940
*****                                                    024960
*****                                                    024980
*****                                                    025000
DIMENSION ICT(24),SPLP(24),SPL(24)                      025020
COMMON IL,IH,L,SPLA(6,24),DMYY(60),IPTC(24),SPLX(22,24),DM(2002), 025040
1F(24),SPLPP(24),SP(25),SA(24),S(24)                    025060
EQUIVALENCE (F(1),ICT(1)),(SPLF(1),SPLPP(1))            025080
C=0.0                                                     025100
PTC=0.0                                                    025120
IPTC(I)=0                                                  025140
ILL=3                                                      025160
AMX=-1000.0                                                025180
IF (ID) 370,370,395                                       025200
C LABELS 370 TO 420 --> DETERMINE THE MAXIMUM SPL VALUE AND THE ARRAY 025220
C INDEX OF THIS MAXIMUM VALUE:                            025240
370 DO 390 J=ILL,IH                                       025260

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SPL(J)=SPLA(I,J)	025280
IF (SPL(J)-AMX) 390,375,375	025300
375 IL1=J	025320
AMX=SPL(J)	025340
390 CONTINUE	025360
GO TO 430	025380
395 DO 420 J=ILL,IH	025400
SPL(J)=SPLX(I,J)	025420
IF (SPL(J)-AMX) 420,400,400	025440
420 IL1=J	025460
AMX=SPL(J)	025480
420 CONTINUE	025500
C LABELS 430 TO 470 --> DETERMINE NUMBER OF CONSECUTIVE BANDS WITH	025520
C SPL>20 DB ON EACH SIDE OF THE PEAK SPL	025540
430 DO 440 J=IL1,IH	025560
IH1=J	025580
IF (SPL(J) .LT. 20.0) GO TO 450	025600
440 CONTINUE	025620
GO TO 460	025640
450 IH1=IH1-1	025660
460 DO 470 J=ILL,IL1	025680
IL2=IL1-J+ILL	025700
IF (SPL(IL2) .LT. 20.0) GO TO 480	025720
470 CONTINUE	025740
GO TO 490	025760
480 IL2=IL2+1	025780
C	025800
C IL2 --> IH1 IS THE FREQUENCY INDEX OVER WHICH TONE CORRECTION IS	025820
C COMPUTED. ALL SPL(J)>20.0 DB OVER THIS RANGE.	025840
C IF (IH1-IL2-8) < 1, THERE ARE AT MOST NINE GOOD FSPL VALUES IN THE	025860
C SPECTRUM; THUS PTC=0. IN THIS PROGRAM 10 GOOD BANDS ARE REQUIRED.	025880
C	025900
490 IF (IH1-IL2-8) 220,220,>	025920
5 IF (IL2 .LT. 3) IL2=3	025940
C IL2 AND IH1 ARE THE INDICES OF THE FIRST AND LAST GOOD SPL VALUE IN	025960
C THE SPECTRUM.	025980
S(IL2)=0	026000
ICT(IL2)=0	026020
C FROM HERE TO LABEL 40 CORRESPONDS TO STEPS 1, 2 AND 3 IN SECTION	026040
C 336.3.	026060
IL3=IL2+1	026080
IL1= IL3 + 1	026100
ICT(IL3)=0	026120
S(IL3)=SPL(IL3)-SPL(IL2)	026140
C COMPUTE SPL CHANGES (SLOPES) AND SET ICT(J) FLAG.	026160
C ICT(J)=1 CORRESPONDS TO ENCLOSED SPL IN 'PART 36'.	026180
DO 40 J=IL1,IH1	026200
ICT(J)=0	026220
S(J)=SPL(J)-SPL(J-1)	026240
10 IF (ABS(S(J)-S(J-1))-5.0) 40,40,20	026260
20 IF (S(J) .GT. 0.0 .AND. S(J) .GT. S(J-1)) GO TO 30	026280
1F (S(J) .LE. 0.0 .AND. S(J-1) .GT. 0.0) ICT(J-1)=1	026300
GO TO 40	026320
30 ICT(J)=1	026340
40 CONTINUE	026360

C FROM HERE TO 2 LINES AFTER LABEL 20 CORRESPONDS TO STEPS 4 AND 5	026390
C IN SECTION B36.3.	026400
SPLP(IL2)=SPL(IL2)	026420
DO 80 J=IL3,IM1	026440
IF (ICT(J)) 50,50,60	026460
50 SPLP(J)=SPL(J)	026480
GO TO 80	026500
60 IF (J.EQ. IM1) GO TO 70	026520
C FOR FLAGGED SPL, COMPUTE AVERAGE OF SPL BEFORE AND AFTER:	026540
SPLP(J)=0.5*(SPL(J-1)+SPL(J+1))	026560
GO TO 80	026580
70 SPLP(J)=SPL(J-1)+S(J-1)	026600
C COMPUTE NEW SLOPE (S') -- STEP 5:	026620
80 SP(J)=SPLP(J)-SPLP(J-1)	026640
SP(IL2)=SP(IL3)	026660
SP(IM1+1)=SP(IM1)	026680
C FROM HERE TO LABEL 210 CORRESPONDS TO STEPS 6 TO 10 IN SECTION B36.3:	026700
C FIRST SPL'=INITIAL SPL:	026720
SPLPP(IL2)=SPL(IL2)	026740
DO 210 J=IL2,IM1	026760
IF (J-IM1) 90,100,100	026780
C COMPUTE AVERAGE SLOPE-- STEP 6:	026800
90 SA(J)=(SP(J)+SP(J+1)+SP(J+2))/3.0	026820
C ADD AVERAGE SLOPE TO PREVIOUS SPL' -- STEP 7:	026840
SPLPP(J+1)=SPLPP(J)+SA(J)	026860
C F(J) IS THE SOUND PRESSURE LEVEL DIFFERENCE (STEP 8); IF F(J) < 3,	026880
C TONE CORRECTION IS ZERO.	026900
100 F(J)=SPL(J)-SPLPP(J)	026920
IF (F(J)-3.0) 210,110,110	026940
110 IF (J.GE. 11 .AND. J.LE. 21) GO TO 140	026960
C DETERMINE 'C' FOR FREQUENCIES 50 TO 400 HZ AND 5300 TO 10000 HZ:	026980
IF (F(J)-20.0) 120,130,130	027000
120 C=F(J)/6.0	027020
GO TO 160	027040
130 C=3.3333333	027060
GO TO 160	027080
C DETERMINE 'C' FOR FREQUENCIES 500 TO 5000 HZ:	027100
140 IF (F(J)-20.0) 145,150,150	027120
145 C=F(J)/3.0	027140
GO TO 160	027160
150 C=0.0066667	027180
160 IF (C-PTC) 210,210,170	027200
170 PTC=C	027220
IPTC(I)=J	027240
210 CONTINUE	027260
RETURN	027280
220 CONTINUE	027300
RETURN	027320
END	027340

```

SUBROUTINE CAL(I,ID)                                027360
DECK 11 CAL                                          027380
*****                                              027400
THIS SUBROUTINE COMPUTES THE A-WEIGHTING OVERALL SOUND LEVEL. 027420
WHERE.....                                         027440
I - INDEX OF ARRAY FSPL--SPECIFIES SPECTRUM USED TO COMPUTE AL 027460
ID - IDENTIFIES THE SPL DATA USED TO COMPUTE THE ALA OR ALX DATA 027480
ID=0 -- USE SPLA DATA                               027500
ID=1 -- USE SPLX DATA                               027520
ALX - ARRAY CONTAINING THE A-WEIGHTING OVERALL SOUND LEVEL IN DBA 027540
ALA - ARRAY CONTAINING THE A-WEIGHTING OVERALL SOUND LEVEL IN DBA 027560
      COMPUTED FROM SPLA                               027580
AW - ARRAY CONTAINING THE A-WEIGHTING COEFFICIENTS DEFINED 027600
      ONLY FOR BANDS IBL=17 TO IBH=40                 027620
SPLX - ARRAY CONTAINING SOUND PRESSURE LEVEL DATA IN DB 027640
SPLA - ARRAY CONTAINING NORMALIZED SOUND PRESSURE LEVEL DATA IN DB 027660
*****                                              027680
DIMENSION AW(24)                                     027700
COMMON IL,IM,L, SP,AL( 6,24),THETA( 6),PNLA( 6),PNLTA( 5),AL 027720
1A( 6),DMYY(60), SPLX(22,24),PNLTX(22),PNLX(22),ALTX(22),ALX(22) 027740
DATA AW/-30.2,-26.2,-22.5,-19.1,-16.1,-13.4,-10.9,-8.5,-6.6,-4.8, 027760
A-3.2,-1.3,-0.8,0.0,0.6,1.0,1.2,1.3,1.2,1.0,0.5,-0.1,-1.1,-2.5/ 027780
AL=0.0                                                027800
IF (ID) 20,20,5                                       027820
5 DO 10 J=IL,IM                                       027840
IF (SPLX(I,J) .GT. 9990.0) GO TO 10                  027860
AL=AL+10.0**((SPLX(I,J)+AW(J))/10.0)                 027880
10 CONTINUE                                           027900
GO TO 40                                              027920
20 DO 25 J=IL,IM                                       027940
25 AL=AL+10.0**((SPLA(I,J)+AW(J))/10.0)              027960
40 IF (AL .LT. 0.000001) GO TO 45                   027980
AL= 10.0**LOG10(AL)                                  028000
GO TO 50                                              028020
45 AL =9999.0                                         028040
50 IF (ID) 60,60,70                                   028060
60 ALA(I)=AL                                          028080
RETURN                                                028100
70 ALX(I)=AL                                          028120
RETURN                                                028140
END                                                    028160

```

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SUBROUTINE OUTH(IRD,IPTC,SENX,LFLG,IPF)                                028240
DECK 12  OUTH                                                         028260
*****                                                                028280
SUBROUTINE 'OUTH' PRINTS THE SPL AND SINGLE EVENT NOISE DATA ON    028300
PAGES 'M', 'I', 'L' AND 'H'.                                         028320
                                                                028340
IRD - INDEX OF THE PROFILE DISTANCE WHICH IS WITHIN 1 % OF THE      028360
REFERENCE DISTANCE FOR THIS POWER SETTING.                         028400
IPTC - FREQUENCY BAND INDEX OF THE SPL VALUE WHICH DETERMINES THE  028420
TONE CORRECTION IN THE REFERENCE SPECTRUM.                        028440
IFLG - PROGRAM FLAG WHICH IS GREATER THAN ZERO WHEN THE POWER SETTING 028460
EXTRAPOLATION LIMIT WAS EXCEEDED.                                028480
NOTE: ARRAY SENX(22,7) IS EQUIVALENT TO ARRAYS                      028500
PNLTX(22) ----> SELX(22) IN THE MAIN DECK.                        028520
(ALSO SEE SUBROUTINE 'CDIST' FOR ADDITIONAL INFORMATION)          028540
                                                                028560
ARRAY SENX(22,7) IS A DUMMY VARIABLE FOR ARRAY PROC(22,7,IPROP)    028580
IN THE MAIN DECK.                                                 028600
                                                                028620
IPF=1 OR 2 --- PRINT BOTH 'SPL' AND 'SINGLE EVENT' DATA PAGES (NP=0 028640
AND IPR=1 ONLY).                                                 028660
IPF=3 OR 4 --- PRINT 'SINGLE EVENT' PAGE 'I' OR 'H' (IPR=1, NP>0). 028680
                                                                028700
*****                                                                028720
DIMENSION FMT(13),UM(7),ISEQD(7),ISEQF(7),FMT(27),SENX(22,7)      028740
COMMON IBNL,IBNH,L,DNY(199),NR(5),ISPL(24),                      028760
1 SPLX(22,24)                                                       028780
COMMON /OUTC/ORD(43),ISC(3),IORU(28),JASH,JOT,X,BLK,DATEN,PP(84,3) 028800
EQUIVALENCE (FMT(1),FMT(11)),(FMT(14),DM(1))                     028820
DATA F1/10H(10X,1H(/, F2/5HI7,3X/, F3/6H,1H)) /, F1/6H,I3,1X/ 028840
1, F4/3H,A4/,IBLK/1H /, F5/7H,I3,1H</                             028860
2, F4/6HI10,7X/,F5/3H,5X/,F6/4H,11X/,F7/8H,5X,1H))/,F8/5H,F9.1/ 028880
3, A9/3H,A9/,ISEQD/4,3,2,1,7,6,5/,ISEQF/3,4,6,7,9,10,12/         028900
C PRINT HEADING FOR PAGE 'H' OR 'L' --- SPL DATA.                 028920
IF (IPF-2) 10,10,55                                                028940
10 FMT(1)=F1                                                         028960
FMT(2)=F2                                                           028980
FMT(27)=F3                                                          029000
CALL HEAD(7)                                                         029020
WRITE(6,2100)                                                        029040
C PRINT COLUMN HEADING LINES:                                       029060
WRITE(6,2000) (J,J=17,40)                                           029080
WRITE(6,2100)                                                        029100
DO 50 I=1,22                                                         029120
IF (I.EQ. 6 .OR. I.EQ. 13) WRITE(6,2100)                           029140
K=I+6                                                                029160
DO 40 J=IBNL,IBNH                                                  029180
                                                                029200
ALL SPLX(I,J) DATA <0 ARE BLANKED OUT ON PAGES 'H' AND 'L'.      029220
IPTC CONTAINS THE FREQUENCY BAND INDEX OF THE SPL VALUE USED TO    029240
COMPUTE THE TONE CORRECTION FOR THE I-TH DISTANCE.                 029260
                                                                029280
IF (SPLX(I,J)) 35,15,15                                           029300
15 ISPL(J)=ICV(SPLX(I,J))                                           029320

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30 FMT(J+2)=FI	029340
GO TO 40	029360
35 FMT(J+2)=FA	029380
ISPL(J)=IBLK	029400
+0 CONTINUE	029420
C PRINT TONE CORRECTION FLAG WITH DATA FOR I-TH DISTANCE AND J-TH BAND.	029440
IF (I-IRJ) +5,+2,+5	029460
+2 J=IPTC	029480
IF (ISPL(J) .EQ. IBLK) GO TO 45	029500
IF (J .LT. I3NL .OR. J .GT. I3NH) GO TO 45	029520
FMT(J+2)=FC	029540
C PRINT 'SPL' DATA:	029560
+5 WRITE(6,FMT) IORD(K),ISPL	029580
50 CONTINUE	029600
WRITE(6,2100)	029620
WRITE(6,2150)	029640
WRITE(6,2200)	029660
WRITE(6,2300)	029680
C PRINT HEADING FOR PAGE 'I' OR 'M' --- SINGLE EVENT MEASURE DATA:	029700
55 CALL HEAD(8)	029720
WRITE(6,2100)	029740
WRITE(6,3000)	029760
WRITE(6,2100)	029780
FMT1(1)=F1	029800
FMT1(2)=F4	029820
FMT1(3)=F5	029840
FMT1(8)=F6	029860
FMT1(11)=F5	029880
FMT1(13)=F7	029900
C SET UP AND PRINT DATA FOR EACH DISTANCE:	029920
DO 100 I=1,22	029940
IF (I .EQ. 6 .OR. I .EQ. 18) WRITE(6,2100)	029960
K=I+6	029980
DO 80 J=1,7	030000
C JD -- INDEX OF DATA IN ARRAY 'SENX' (PRINT SEQUENCE IS: AL, ALT,	030020
C PNL, PNLT, SEL, SELT, AND EPNL):	030040
IF (IPF-2) 550,550,560	030060
550 JU=ISEQD(J)	030080
GO TO 570	030100
560 JD=8-J	030120
C JF -- VARIABLE FORMAT INDEX CORRESPONDING TO THE JD-TH VARIABLE:	030140
570 JF=ISEQF(J)	030160
IF (SENX(I,JJ)) 70,75,75	030180
70 DM(J)=BLK	030200
FMT1(JF)=A9	030220
GO TO 80	030240
75 DM(J)=SENX(1,JJ)	030260
FMT1(JF)=F9	030280
80 CONTINUE	030300
C PRINT DATA LINE:	030320
WRITE(6,FMT1) IORD(K),DM	030340
100 CONTINUE	030360
WRITE(6,2100)	030380
WRITE(6,2150)	030400
WRITE(6,2200)	030420

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WRITE(6,2250)                                030440
IF (LFLG .GT. 0) WRITE(6,2400)                030460
RETURN                                         030480
*****030500
*****030520
2030 FORMAT( 10X, 9H( SLANT, 39X, 21HFREQUENCY BAND NUMBER, 38X,1H)/ 030540
1 10X,10H( DISTANCE, 24I4,2H )/ 10X,9H( (FEET), 96X,1H)) 030560
2100 FORMAT( 10X, 1H(, 106X,1H)) 030580
2150 FORMAT( 10X, 1H(, 106(1H-),1H)) 030600
2200 FORMAT(12X, 50H* EXTRAPOLATED FROM MEAN VALUES FOR LEVEL FLIGHTS. 030620
1) 030640
2250 FORMAT(12X, 46H** BASED ON SMOOTHED TONE CORRECTION FUNCTION.) 030660
2300 FORMAT(12X,46H< BAND WHICH DETERMINES THE TONE CORRECTION (C). ) 030680
2400 FORMAT(12X,*NOTE: POWER SETTING EXTRAPOLATION LIMITED BY AMRL/98E, 030700
1 W-PAFB.*) 030720
3000 FORMAT( 10X, 16H( SLANT DISTANCE, 8X,2HAL,6X,5HALT**, 9X,3HPNL, 030740
1 5X,6HPNLT**,16X, 3HSEL, 5X, 6HSELT**, 8X, 10HEPNL** )/ 030760
2 10X,1H(, 5X, 6H(FEET), 5X, 2(4X,5H(DBA)), 5X,2(3X,6H(PNDB)),11X, 030780
3 2(5X,4H(DB)), 8X, 12H(EPNDB) ) 030800
*****030820
*****030840
END 030860

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SUBROUTINE OUTJ(IP,SENX,LFLG)                                030890
DECK 13 OUTJ (PRINTS PAGES J, K, N AND O)                  030900
*****                                                        030920
SUBROUTINE 'OUTJ' PRINTS TAB PLOTS OF SINGLE EVENT NOISE DATA 030940
ON PAGES J, K, N AND O.                                     030950
                                                                030960
NOTE: ARRAY SENX(22,7) IS EQUIVALENT TO ARRAYS PNLTX(22) ---> 031000
      SELX(22) IN SUBROUTINE 'CDIST' AND IN THE MAIN DECK      031020
      (IP=1 AND 2).                                           031040
                                                                031060
      SENX(22,7) IS A DUMMY VARIABLE EQUIVALENT TO PROC(22,7,IPROP) 031080
      IN THE 'MAIN' DECK (IP=3 AND 4). THE SEQUENCE OF DATA HERE IS 031100
      EPNLX, SELTX, SELX, PNLTX, PNLX, ALTX AND ALX.          031120
                                                                031140
      PLOT ARRAY, PP(84,3), IS DEFINED IN SUBROUTINE 'IPA'.    031160
                                                                031180
IP=1 --- PLOT PNLTX, PNLX, ALTX, AND ALX DATA AT REFERENCE FILE 031200
        POWER SETTING AND AIRSPEED (FOR NP=0 AND IPR=1 ONLY). 031220
IP=2 --- PLOT EPNLX, SELTX, AND SELX DATA AT REFERENCE FILE POWER 031240
        SETTING AND AIRSPEED (FOR NP=0 AND IPR=1 ONLY).       031260
IP=3 --- PLOT EPNLX, SELTX, AND SELX DATA AT REQUESTED POWER 031280
        SETTING AND AIRSPEED (IPR=1 ONLY).                    031300
IP=4 --- PLOT PNLTX, PNLX, ALTX, AND ALX DATA AT THE REQUESTED 031320
        POWER SETTING AND AIRSPEED (IPR=1 ONLY).              031340
IFLG - PROGRAM FLAG WHICH IS GREATER THAN ZERO WHEN THE POWER SETTING 031360
        EXTRAPOLATION LIMIT HAS EXCEEDED.                     031380
*****                                                        031400
DIMENSION PG(4),TITLE(2,2),SYM(7),VAR(7),PB(83),PD(83),IX(4), 031420
1 SAVE(4),PM(43),SENX(22,7),PAG(12)                        031440
COMMON IBNL,IBNH,L,DHY(199),NR(6),ISRC(24),                031460
1 SPLX(22,24)                                                031480
COMMON /COMPC/ LV(6),IMS(6),P(2,6),OPC(6),OPCC(12),PS(2,6),PSC(12), 031500
1 PSU,PSIF(6),PSCF(12),IRETC(3,12),VX(12),SX(22),ATNC(24),ATNR(24), 031520
2 DELN,IPTC,IPROP,MEAS(3),OPCR(12),PC(2,12)                 031540
COMMON /HEADC/ AC,DATE,ACC,IPAGE,IVX,ITEMP,IRHUM,IVER,PV,CRI, 031560
1 ET(2),OTC                                                  031580
COMMON /OUTC/ORD(43),ISC(9),IURD(28),DASH,DOT,X,BLK,JATEN,PP(84,3) 031600
EQUIVALENCE (PP(2,1),PB(1)),(PP(2,2),PD(1)),(PP(2,3),PM(1)) 031620
DATA PG/1HJ,1HK,1HN,1HO/                                    031640
DATA TITLE/10H AIR TO G, 64ROUND, 10HGROUND TO, 6HGROUND/    031660
DATA SYM/1HP,1H*,1H+,1HA,1HE,1HT,1HS/, VAR/7H = PNLTX,5H = PNL, 031680
1 6H = ALT, 5H = AL, 7H = EPNL, 7H = SELTX,7H = SEL /        031700
2,PAG/1H1,1H2,1H3,1H4,1H5,1H6,1H7,1H8,1H9,2H10,2H11,2H12/ 031720
C JS --- SYMBOL ARRAY ADJUSTMENT FACTOR FOR IP=3 PLOT:      031740
JS=0                                                         031760
IPP=2*IPROP                                                  031780
IF (IP.EQ.1 .OR. IP.EQ.4) IPP=IPP-1                        031800
C PRINT 'IU' BLOCK IN UPPER RIGHT CORNER OF EACH PAGE:     031820
WRITE(6,2000) IVER,ACC,OTC,OPCC(L),PV,JATE,PAG(IPP),PAG(IPAGE) 031840
GO TO (10,20,25,28),IP                                     031860
10 J1=1                                                      031880
J2=4                                                         031900
GO TO 30                                                     031920

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20 J1=5	031300
J2=7	032000
GO TO 30	032020
25 J1=1	032040
J2=3	032060
JS=4	032080
GO TO 30	032100
25 J1=4	032120
J2=7	032140
JS=-3	032160
30 AMX=-1000.0	032180
C DETERMINE MAXIMUM VALUE FROM THE FIRST 10 DISTANCES.	032200
DO 40 I=1,10	032220
DO 40 J=J1,J2	032240
IF (SENX(I,J) .GT. 9990.0) GO TO 40	032260
AMX=AMAX1(AMX,SENX(I,J))	032280
40 CONTINUE	032300
MX=((ICV(AMX)+8)/10)*10	032320
C COMPUTE ABSCISSA SCALE (ISC):	032340
DO 50 I=1,9	032360
J=10-I	032380
50 ISC(J)=MX-10*I+10	032400
MX=MX+1	032420
MN=ISC(1)-1	032440
IDST=0	032460
LINE=0	032480
C SET UP AND PRINT PLOT LINE FOR EACH DISTANCE:	032500
DO 400 I=1,22	032520
C M IS THE 'IORD' ORDINATE ARRAY INDEX:	032540
M=I+6	032560
K=0	032580
LINE=LINE+1	032600
IDST=IDST+1	032620
C IDST IS USED TO SET UP THE GRID PATTERN WHICH REPEATS EVERY 10	032640
C DISTANCES	032660
C LG=1 ---> PRINTS 5 DOTS PER INCH ON TAB PLOT.	032680
C LG=2 ---> PRINTS 1 DOT PER INCH ON TAB PLOT.	032700
C LG=3 ---> PRINTS 10 DASHES PER INCH ON THE TAB PLOT.	032720
GO TO (60,70,85,85,75,85,85,75,85,80),IDST	032740
60 IF (I-1) 65,85,75	032760
55 LG=3	032780
GO TO 90	032800
70 IF (I-22) 85,85,85	032820
75 LG=2	032840
GO TO 90	032860
80 IDST=0	032880
85 LG=1	032900
C SET UP PLOT ARRAY (PP):	032920
90 DO 150 J=J1,J2	032940
II=ICV(SENX(I,J))-MN+2	032960
IF (II .LT. 2 .OR. II .GT. 84) GO TO 150	032980
IF (PP(II,LG) .EQ. BLK .OR. PP(II,LG) .EQ. DOT) GO TO 110	033000
IF (PP(II,LG) .EQ. DASH) GO TO 110	033020
PP(II,LG)=X	033040
GO TO 150	033060

110 K=K+1	033080
IX(K)=II	033100
SAVE(K)=PP(II,LG)	033120
PP(II,LG)=SYM(J+JS)	033140
150 CONTINUE	033160
C FIRST 8 LINES CONTAIN 'ID' BLOCK IN UPPER LEFT CORNER:	033180
IF (LINE-9) 220,200,155	033200
C LINES 36 TO 40 CONTAIN THE SYMBOL LEGEND IN THE LOWER RIGHT CORNER:	033220
155 IF (LINE-35) 200,270,260	033240
200 WRITE(6,2600) ORD(LINE),IORD(M),(PP(J,LG),J=2,64)	033260
210 LINE=LINE+1	033280
WRITE(6,3000) ORD(LINE)	033300
GO TO 320	033320
C LABEL 220 TO 245 -- PRINT ID BLOCK IN UPPER LEFT CORNER PLUS THE PLOT	033340
C LINES TO THE RIGHT OF THE ID BLOCK.	033360
220 GO TO (230,235,240,245),IDST	033380
230 WRITE(6,2600) ORD(LINE),IORD(M),(PP(J,LG),J=2,64)	033400
WRITE(6,3000) AC,PC(1,L),PC(2,L)	033420
GO TO 300	033440
235 WRITE(6,2640) IORD(M),PSC(L),PSU,(PB(J),J=4,83)	033460
WRITE(6,3030) IVX	033480
GO TO 300	033500
240 WRITE(6,2620) IORD(M),ITEMP,IR4UH,(PB(J),J=36,83)	033520
WRITE(6,3040) DELN	033540
GO TO 300	033560
245 WRITE(6,2630) IORD(M),(PB(J),J=36,83)	033580
WRITE(6,3050) IVER,ACL,OTC,OPCC(L),DATEN,PV	033600
GO TO 300	033620
C LABEL 260 TO 290 -- PRINT LEGEND IN LOWER RIGHT CORNER PLUS PLOT	033640
C LINES TO THE LEFT OF THE LEGEND.	033660
260 II=(LINE-35)/2	033680
GO TO (280,275,200,290),II	033700
270 WRITE(6,2600) ORD(LINE),IORD(M),PD	033720
JJ=J1+JS	033740
WRITE(6,3010) TITLE(1,IPROP),TITLE(2,IPROP)	033760
GO TO 300	033780
275 JJ=JJ+1	033800
280 WRITE(6,2610) IORD(M),(PB(J),J=1,63),SYM(JJ),VAR(JJ),(PB(J),J=80,8	033820
13)	033840
JJ=JJ+1	033860
IF (JJ-J2-JS) 265,265,210	033880
285 WRITE(6,3020) SYM(JJ),VAR(JJ)	033900
GO TO 300	033920
290 WRITE(6,2600) ORD(LINE),IORD(M),PM	033940
GO TO 320	033960
300 LINE=LINE+1	033980
320 IF (K) 400,400,330	034000
C RECONSTRUCT PLOT ARRAY (PP):	034020
330 DO 350 J=1,K	034040
II=IX(J)	034060
350 PP(II,LG)=SAVE(J)	034080
400 CONTINUE	034100
C PRINT ABSCISSA SCALE AND TITLE:	034120
WRITE(6,2200) ISC	034140
IF (LFLG .GT. 0) WRITE(6,2400)	034160

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      RETURN
2000 FORMAT(1H1/120X9HOMEGA 10.,I1//120X,10HA/C CODE: ,A3/ 120X,10HOPS 034180
      1 CODE: ,A1,A2/ 120X,13HPRJFILE VER: ,A1/ 034220
      2 120X,6HDATE: ,A10/ 120X,6HPAGE ,A1,A2//) 034240
2200 FORMAT(14X, 9I10/ 54X,17HNOISE LEVEL IN DB ) 034260
2400 FORMAT(/15X,*NOTE: POWER SETTING EXTRAPOLATION LIMITED BY AMRL/BBE034280
      1, W-PAFB.*) 034300
2600 FORMAT(13X,A1,I5,2H (,63A1,1H)) 034320
2610 FORMAT(14X,I5,2H (, 63A1, 4X,A1,A7,4X,4A1,1H)) 034340
2620 FORMAT(14X,I5, 12H ( . TEMP =,I3, 17H F REL HUMID =,I3,2H %,034360
      1 48A1,1H)) 034380
2630 FORMAT(14X,I5, 4H ( . ,33X,48A1,1H)) 034400
2640 FORMAT(14X,I5,4H ( .,2X,A5,1X,A6,28X,39A1,1H)) 034420
3000 FORMAT(13X,A1,6X,1H(,63X,1H)) 034440
3010 FORMAT(20X,1H(,63X,A10,A6,4X,1H)) 034460
3020 FORMAT(20X,1H(,67X,A1,A7,6X,1H)) 034480
3030 FORMAT(20X, 15H( AIRSPEED =,I4, 6H KNOTS, 59X,1H)) 034500
3040 FORMAT(20X, 15H( DELTA N =,F5.1,3H DB,61X,1H)) 034520
3050 FORMAT(20X,15H( IDENT: 10.,I1,1H-,A3,1H-,A1,A2,1H-, A6, 1H-,A1 034540
      1,51X,1H)) 034560
3060 FORMAT(20X,1H(,4X,A10,3X,2A10,45X,1H)) 034580
      END 034600

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SUBROUTINE PPFDAT(PKDC,LFLG,COMD,IJ)                                034620
DECK 14 PPFDAT                                                    034640
*****                                                            034660
SUBROUTINE 'PPFDAT' WRITES THE EPNLX, SELX AND SELTX PROFILE DATASETS 034700
INCLUDING COMDECK AND COMMENT CARDS ON FILE 'TAPE3'.              034720
NOTE: ARRAY PKDC(22,7,2) CONTAINS THE EPNLX, SELTX, SELX, PNLTx, 034740
      PNLTx, ALTX, AND ALX DATA (PNLTx --> ALX DATA NOT PUNCHED) 034760
      FOR 22 DISTANCES FOR AIR-TO-GROUND (PRDC(22,7,1)) AND FOR    034780
      GROUND-TO-GROUND (PRDC(22,7,2)).                               034800
LFLG - PROGRAM FLAG WHICH IS GREATER THAN ZERO WHEN THE POWER     034820
      SETTING EXTRAPOLATION LIMIT WAS EXCEEDED.                   034840
COMD - LAST FIVE CHARACTERS OF EACH REFERENCE FILE COMDECK NAME FOR 034860
      THE L-TH POWER SETTING.                                     034880
IJ    - SEE COMMENTS IN THE SOURCE LISTING BELOW.                 034900
*****                                                            034920
      DIMENSION DKEY(3),CKEY(3),PRDC(22,7,2),REF(4),COMD(6)        034940
      COMMON IBLN,IBNH,L                                           034960
      COMMON /COMPC/IV(6),IMS(6),P(2,6),OPC(6),OPCC(12),PS(2,6),PSC(12), 034980
      1 PSU,PSIF(6),PSCF(12),IREQC(3,12),VX(12),SX(22),ATNC(24),ATNR(24), 035000
      2 DELN,IFTC,IPROP,MEAS(3),OPCR(12),PC(2,12)                 035020
      COMMON /HEADC/ AC,DATE,ACC,IPAGE,IVX,ITEMP,IRHUM,IVER,PV,CRI, 035040
      1 ET(2),OTC                                                  035060
      DATA DKEY/4HEPNL,4HELT,44SEL /,CKEY/1HE,1HS,1HL/,RN/14N/ 035080
      1,BLK/1H /                                                  035100
      IMSR --- REFERENCE DISTANCE IN FEET WHICH IS ASSUMED TO BE 1000 FEET 035120
      FORMERLY PRINTED ON THE FIRST 'COMMENT' CARD.              035140
      'IJ' CONTAINS THE INDEX OF THE THIRD REFERENCE DATASET (FOR 2-ND 035160
      SLOPE LINE) REQUIRED WHEN THE REQUESTED (PSC) AND REFERENCE 035180
      POWER SETTINGS ARE ON OPPOSITE SIDES OF THE APPROACH POWER. 035200
      IREQC(3,12) CONTAINS INDICES OF REFERENCE DATA USED TO COMPUTE 035220
      THE PROFILE DATASET -- REFERENCE POINT PLUS SLOPE POINTS    035240
      DEFINED IN SUBROUTINE 'DELTA5'. HERE TO LABEL 18 --> SET UP ARRAY 035260
      'REF' FOR PRINTING THE REFERENCE AND SLOPE 'COMDECK' NAMES (PART 035280
      IN 'REF') REQUIRED TO COMPUTE THE PROFILE DATA FOR THE L-TH POWER 035300
      SETTING (PRINTED ON THE SECOND 'COMMENT' CARD BELOW):      035320
      ID=IREQC(3,L)                                                035340
      IC=IREQC(1,L)                                                035360
      J=IREQC(2,L)                                                 035380
      IF (ID) 5,10,15                                             035400
      5 ID=IABS(ID)                                                035420
      GO TO 15                                                     035440
      10 II=1                                                       035460
      REF(1)=COMD(IC)                                              035480
      GO TO 18                                                     035500
      15 II=3                                                       035520
      REF(1)=COMD(IJ)                                              035540
      REF(2)=COMD(IC)                                              035560
      REF(3)=COMD(J)                                               035580
      IF (IJ) 14,18,17                                           035600

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17 II=4	J35720
REF(4)=COMD(IJ)	J35740
10 DO 100 J=1,3	035760
IF (MEAS(J)) 100,100,20	035780
C PRINT 'COMDECK' LINE:	035800
20 WRITE(3,2100) CKEY(J),ACC, OPCC(L),OTC,PV,CRI	035820
ID=2	035840
IC=1	035860
C PRINT FIRST DATA LINE:	J35880
WRITE(3,2000) JKEY(J),ACC,OPCC(L),OTC,ID,(PRDC(I,J,1),I=1,6),AC,IC	035900
C PRINT THREE OR FOUR 'COMMENT' LINES:	035920
WRITE(3,2110) ACC,OPCC(L),OTC,PV,CRI,IVER,DATE,AC, IVX,ITEMP	035940
1,IRHUM	035960
WRITE(3,2120) ACC,OPCC(L),OTC,PV,CRI,ET,(RN,ACC,REF(1),I=1,II)	035980
WRITE(3,2130) ACC,OPCC(L),OTC,PV,CRI,PC(1,L),PC(2,L),PSC(L),PSU	036000
C PRINT FOURTH 'COMMENT' WHEN LFLG>0 --- EXTRAPOLATION LIMIT EXCEEDED:	036020
IF (LFLG .GT. 0) WRITE(3,2140) ACC,OPCC(L),OTC,PV,CRI	036040
IC=2	036060
C PRINT REMAINING FIVE DATA LINES:	J36080
WRITE(3,2010) (PRDC(I,J,1),I=7,14),AC,IC	036100
IC=3	036120
WRITE(3,2010) (PRDC(I,J,1),I=15,22),AC,IC	036140
ID=1	036160
IC=4	036180
C WRITE THE THREE GROUND-TO-GROUND DATA CARDS:	036200
WRITE(3,2000) BLK,ACC,OPCC(L),OTC,ID,(PRDC(I,J,2),I=1,6),AC,IC	036220
IC=5	036240
WRITE(3,2010) (PRDC(I,J,2),I=7,14),AC,IC	036260
WRITE(3,2010) (PRDC(I,J,2),I=15,22),AC	036280
100 CONTINUE	J36300
RETURN	036320
2000 FORMAT(A6,2X,A3,A2,A1,7X,I1,6F8.1,A7,2X,I1)	036340
2010 FORMAT(6X,8F8.1,A7,2X,I1)	036360
2100 FORMAT(9H*COMDECK ,A1,A3,A2,3A1)	036380
2110 FORMAT(6HCOMMENT ,A3,A2,3A1, 9H OMEGA10.,I1,1X,A10,A7,10X,	036400
113,6H KTS ,I3,4H F ,I3,4H PCT)	036420
2120 FORMAT(6HCOMMENT ,A3,A2,3A1,1X,A10,A5,1X,4(1X,A1,A3,A5))	036440
2130 FORMAT(6HCOMMENT ,A3,A2,3A1,1X,2A10,3(1X,A5,1X,A6,1X))	036460
2140 FORMAT(6HCOMMENT ,A3,A2,3A1,* POWER SETTING EXTRAPOLATION LIMITED	036480
18Y AMRL/BBE, W-PAFB.*)	036500
END	036520

SUBROUTINE TITPG(IPR)	036540
DECK 15 PRINT TITLE PAGE	036550
*****	036580
THIS SUBROUTINE IS CALLED FROM THE 'MAIN' ROUTINE TO PRINT THE TITLE	036600
(COVER) PAGE WHEN PRINT PARAMETER 'IPR' > 0.	036620
*****	036640
DIMENSION PG(6)	036660
COMMON /HEADC/ AC,DATE,ACC,IPAGE,IVX,ITEMP,IRHUM,IVER,PV,CRI,	036680
1 ET(2),OTC	036700
DATA PG/1MM,5HI,J,K,1HL,5HM,N,O,5H I,K ,5H M,O /	036720
DATA FLY/8HFLYOVER /	036740
WRITE(6,3000)	036760
PRINT TOP BORDER LINES:	036780
WRITE(6,3010)	036800
DO 700 I=1,3	036820
700 WRITE(6,3030) AC,AC,AC,AC,AC	036840
DO 720 I=1,11	036860
720 WRITE(6,3020)	036880
WRITE(6,3035)	036900
WRITE(6,3020)	036920
PRINT AIRCRAFT NAME:	036940
WRITE(6,3040) AC	036960
WRITE(6,3020)	036980
WRITE(6,3045)	037000
WRITE(6,3020)	037020
WRITE(6,3045)	037040
WRITE(6,3020)	037060
WRITE(6,3020)	037080
WRITE(6,3020)	037100
PRINT ADDITIONAL TEST ID INFORMATION:	037120
WRITE(6,3050) FLY	037140
740 WRITE(6,3055) ACC	037160
WRITE(6,3070) PV	037180
WRITE(6,3060) IVER	037200
FROM HERE TO LABEL 755 -- PRINT TABLE OF CONTENTS:	037220
WRITE(6,3100)	037240
WRITE(6,3120)	037260
WRITE(6,3130)	037280
IF (IPR-1) 745,745,750	037300
745 WRITE(6,3145) PG(5)	037320
WRITE(6,3150)	037340
WRITE(6,3145) PG(6)	037360
GO TO 755	037380
750 WRITE(6,3140) PG(1)	037400
WRITE(6,3145) PG(2)	037420
WRITE(6,3150)	037440
WRITE(6,3140) PG(3)	037460
WRITE(6,3145) PG(4)	037480
755 DO 760 I=1,8	037500
760 WRITE(6,3020)	037520
755 WRITE(6,3155) DATE	037540
WRITE(6,3020)	037560
WRITE(6,3020)	037580
WRITE(6,3160)	037600
	037620

DO 770 I=1,4	037640
770 WRITE(6,3020)	037660
PRINT BOTTOM BORDER LINES:	037680
DO 780 I=1,3	037700
780 WRITE(6,3030) AC,AC,AL,AC,AC	037720
WRITE(6,3010)	037740
	037760
3000 FORMAT(1H1)	037780
3010 FORMAT(1X,33(4HUSAF))	037800
3020 FORMAT(1X,4HUSAF,124X,44USAF)	037820
3030 FORMAT(1X,4HUSAF,6X,4(A10,10H AIRCRAFT,7X),A10,4HUSAF)	037840
3035 FORMAT(1X,4HUSAF,47X,31HNOISE PRODUCED ON THE GROUND BY,46X,	037860
1 4HUSAF)	037880
3040 FORMAT(1X,4HUSAF,53X,A10,34 AIRCRAFT ,52X,4HUSAF)	037900
3045 FORMAT(1X,4HUSAF,50X,24HDURING FLIGHT OPERATIONS,50X,4HUSAF)	037920
3050 FORMAT(1X,4HUSAF,52X, A8,13H MEASUREMENTS,51X,4HUSAF)	037940
3055 FORMAT(1X,4HUSAF,52X,144AIRCRAFT CODE:,4X,A3,51X,4HUSAF)	037960
3060 FORMAT(1X,4HUSAF,49X,26HCOMPUTER PROGRAM OMEGA 10.,I1,48X,4HUSAF)	037980
3070 FORMAT(1X,4HUSAF,52X,16HPROFILE VERSION:,4X,A1,51X,4HUSAF)	038000
3100 FORMAT(1X,4HUSAF,97X,4HPAGE,23X,4HUSAF)	038020
3120 FORMAT(1X,4HUSAF,23X,	038040
1 24HNORMALIZED SPL SPECTRUM ,51(1H.), 1HG,25X,4HUSAF)	038060
3130 FORMAT(1X,4HUSAF,23X, 58HNOISE LEVELS AS A FUNCTION OF SLANT DIST	038080
1ANCE FROM AIRCRAFT ,43X,4HUSAF/ 1X,4HUSAF,29X,25HAIR-TO-GROUND P	038100
2ROFAGATION ,70X,4HUSAF)	038120
3140 FORMAT(1X,4HUSAF,35X, 29HSOUND PRESSURE LEVEL SPECTRA , 34(1H.),	038140
1 A1,25X,4HUSAF)	038160
3145 FORMAT(1X,4HUSAF,35X, 22HSINGLE EVENT MEASURES ,39(1H.	038180
2), A5,23X,4HUSAF)	038200
3150 FORMAT(1X,4HUSAF,25X, 264GROUND-TO-GROUND PROFAGATION,57X,4HUSAF)	038220
3155 FORMAT(1X,4HUSAF,50X,A10,55X,4HUSAF)	038240
3160 FORMAT(1X,4HUSAF,25X,73HAEROSPACEMEDICALRESO	038260
1EARCHELABORATORY, 26X,4HUSAF/ 1X,4HUSAF,25X,	038280
2 73HRIGHT-PATTERSONAIRFORCEBASE	038300
3, OHIO, 26X,4HUSAF)	038320
	038340
RETURN	036360
END	036380


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SUBROUTINE SETUP06(IREQ,N,NP,ACC,ITP,IAP,IHP)                                038400
JECK 16 SETUP06                                                                038420
*****                                                                    038440
*****                                                                    038460
C THIS SUBROUTINE APPLIES THE 'DELTA6' RULES TO DETERMINE THE                038480
C REFERENCE DATA REQUIRED TO COMPUTE THE PROFILE DATA AT THE REQUESTED      038500
C OUTPUT POWER SETTING AND AIRSPEED. THE ARRAY INDICIES OF THE              038520
C REQUIRED REFERENCE FILE DATA ARE STORED IN ARRAY IREQC(3,J) WHERE          038540
C IREQC(1,J) AND IREQC(2,J) ARE INDICIES OF MEASURE AND POWER SETTING       038560
C DATA USED TO COMPUTE SLOPES AND IREQC(3,J) IS THE INDEX OF THE BASE      038600
C POINT IN THE LINEAR EQUATION, ALL FOR THE JTH OUTPUT POWER SETTING       038620
C (OR OPCC).                                                                  038640
C IF ALL IREQC(1,J) FOR I=1,3 ARE ZERO, THE JTH OPCC DATA ARE NOT          038660
C COMPUTED. IF IREQC(3,J)<0, MEASURE (SEL, SELT OR EPNL) DATA MUST BE      038680
C CHECKED (AT 1000 FEET ONLY) TO DETERMINE IF MEASURE DATA AT THE         038700
C HIGHEST RANKING POWER SETTINGS ARE GREATER THAN THE MEASURE DATA         038720
C FOR APPROACH POWER; IF GREATER NO CORRECTION WILL BE MADE AND THE        038740
C ABSOLUTE VALUE OF IREQC(3,J) CONTAINS THE REFERENCE FILE INDEX OF THE    038760
C REQUIRED MEASURE DATA.                                                      038780
C IF IREQC(3,J)=0 AND IREQC(1,J)>0, NO CORRECTION WILL BE MADE AND         038800
C IREQC(1,J) CONTAINS THE REFERENCE FILE INDEX OF THE REQUIRED MEASURE      038820
C DATA.                                                                      038840
C                                                                            038860
C N --- NUMBER OF INPUT OPC'S.                                               038880
C NP --- NUMBER OF OUTPUT OPCC'S.                                           038900
C IV --- REFERENCE AIRSPEED FOR JTH OPC.                                    038920
C IVX --- OUTPUT AIRSPEED FOR JTH OPCC (INTEGER VALUE).                    038940
C VX --- ARRAY CONTAINING OUTPUT AIRSPEED IN KNOTS.                        038960
C JPP --- ARRAY OF OPERATION POWER CODE DATA FOR ALL DEFINED OPC'S.       038980
C IOPC --- NUMBER OF OPERATION POWER CODES IN ARRAY OPP.                  039000
C OPC --- ARRAY OF INPUT OPERATION POWER CODES FROM REFERENCE FILE.        039020
C OPCC --- ARRAY OF OUTPUT OPERATION POWER CODES REQUESTED FOR THIS        039040
C AIRCRAFT RUN.                                                              039060
C OPCR --- ARRAY OF OPERATION POWER CODES (ONE FOR EACH OPCC) WHICH        039080
C IDENTIFY THE REFERENCE DATA FROM WHICH THE CORRESPONDING                039100
C OPCC DATA ARE COMPUTED AND THE OPERATION POWER DESCRIPTION              039120
C DEFINED.                                                                    039140
C PS --- INPUT POWER SETTINGS FOR EACH OPC (ARRAY).                        039160
C PSIF --- INPUT POWER SETTING FOR EACH OPC (ARRAY--FLOATING POINT).      039180
C PSC --- OUTPUT POWER SETTING FOR EACH OPCC (ARRAY).                     039200
C PSCF --- OUTPUT POWER SETTING FOR EACH OPCC (ARRAY--FLOATING POINT).    039220
C RANK --- ARRAY GIVING THE RANK OF 5 POWER SETTINGS; USED TO RANK         039240
C POWER SETTINGS LESS THAN APPROACH POWER.                                039260
C IREQ --- FLAG ARRAY; IREQ=1 WHEN REFERENCE DATA ARE REQUIRED FOR         039280
C JTH OPC.                                                                    039300
C IREQC --- SEE ABOVE OR SUBROUTINE 'DELTA6'.                              039320
C ITP --- INDEX OF REFERENCE TAKEOFF OPC.                                    039340
C IAP --- INDEX OF REFERENCE APPROACH OPC.                                   039360
C IHP --- INDEX OF HIGHEST RANKING OPC WITH POWER SETTING LESS THAN      039380
C POWER SETTING AT APPROACH.                                                039400
C                                                                            039420
C ITAMC --- FLAG EVALUATED AS FOLLOWS:                                     039440
C ITAMC=1 --- ITP, IAP AND IHP=0 OR AT MOST ONE OF THE THREE =1.          039460
C ITAMC=2 --- ITP AND IAP=1.                                                039480

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      ITAHC=3 --- IAP AND IAP=1.                                039500
      ITAHC=4 --- ITP, IAP AND IHP=1.                          039520
                                                                039540
C*****039560
C*****039580
      DIMENSION JPP(20),RANK(4),IREQ(6)                        039600
      COMMON /COMPC/IV(6),IMS(5),P(2,6),OPC(6),OPCC(12),PJ(2,6),PSC(12), 039620
1 PSU,PSIF(6),PSCF(12),IREQC(3,12),VX(12),SX(22),ATNC(24),ATNR(24),039640
2 JELN,IPTC,IPROP,MEAS(3),OPCR(12),PC(2,12)                   039660
      DATA RANK/2H13,2H06,2H04,2H07/,MOPC/20/                039680
1, OPP/2H ,2H01,2H02,2H03,2H04,2H05,2H05,2H07,2H08,2H09,2H10,2H11,039700
2 2H12,2H13,2H14,2H15,2H16,2H17,2H18,2H19/                   039720
C INITIALIZE SUBROUTINE PARAMETERS:                             039740
      ITP=0                                                      039760
      IAP=0                                                      039780
      IHP=0                                                      039800
      IRK=100                                                    039820
      ITAHC=1                                                    039840
      DO 10 J=1,12                                               039860
      IREQC(1,J)=0                                               039880
      IREQC(2,J)=0                                               039900
10 IREQC(3,J)=0                                                 039920
      IF (NP .LT. 1) GO TO 500                                   039940
C CONVERT POWER SETTING DATA FROM 'A' FORMAT TO FLOATING POINT FORMAT 039960
C (FOR INPUT AND OUTPUT POWER SETTINGS).                       039980
      DO 15 I=1,N                                                040000
      IREQ(I)=0                                                  040020
15 DECODE(5,3000,PS(1,I)) PSIF(I)                             040040
      DO 20 I=1,NP                                               040060
20 DECODE(5,3000,PSC(I)) PSCF(I)                               040080
C HERE TO LABEL 70: EVALUATE ITP, IAP AND IHP:                040100
      DO 30 J=1,N                                                040120
C JPP(4)---TAKEOFF POWER:                                       040140
      IF (OPC(J) .EQ. OPP(4)) GO TO 40                          040160
30 CONTINUE                                                     040180
      DO 35 J=1,N                                                040200
C OPP(12)---MAX RATED THRUST; JPP(15)---INTERMEDIATE POWER (MIL): 040220
      IF (OPC(J) .EQ. UPP(12) .OR. OPC(J) .EQ. OPP(15)) GO TO 40 040240
35 CONTINUE                                                     040260
      GO TO 45                                                  040280
C ITP= INDEX OF INPUT TAKEOFF POWER OPC OR OPC=11 OR 14:      040300
40 ITP=J                                                         040320
45 DO 50 J=1,N                                                  040340
C APPROACH POWER---JPP(6):                                     040360
      IF (OPC(J) .EQ. OPP(6)) GO TO 55                          040380
50 CONTINUE                                                     040400
      GO TO 90                                                  040420
C IAP= INDEX OF INPUT APPROACH POWER:                           040440
55 IAP=J                                                         040460
      DO 70 J=1,N                                                040480
      IF (PSIF(J) .GE. PSIF(IAP)) GO TO 70                     040500
      DO 60 IK=1,5                                               040520
      IF (OPC(J) .EQ. RANK(IK)) GO TO 65                        040540
60 CONTINUE                                                     040560
      GO TO 70                                                  040580

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55 IF (IK .GT. IRK) GO TO 70	0406J0
IRK=IK	040620
C IMP= INDEX OF HIGHEST RANKING OPC WITH POWER SETTING < POWER	040640
C SETTING AT APPROACH:	040660
IMP=J	040680
70 CONTINUE	040700
C ASSUME IAP>0 HERE:	040720
C SET FLAG ITAMC:	040740
IF (ITP .GT. 0) ITAMC=2	040760
IF (IMP .GT. 0) ITAMC=3	040780
IF (ITP .GT. 0 .AND. IMP .GT. 0) ITAMC=4	040800
C LABEL 400 LOOP: ITERATE FOR EACH OUTPUT OPCC(I):	040820
90 DO 400 I=1,NP	040840
DO 95 J=1,N	040860
IF (OPCR(I) .EQ. OPC(J)) GO TO 130	040880
95 CONTINUE	040900
C ERROR--OUTPUT OPCC CANNOT BE COMPUTED BECAUSE OPCR IS NOT IN THE	040920
C REFERENCE FILE.	040940
GO TO 365	040960
115 IREQC(3,I)=-J	040980
118 IREQ(IAP)=1	041000
IREQ(ITP)=1	041020
IREQC(1,I)=IAP	041040
IREQC(2,I)=ITP	041060
GO TO 400	041080
C FLAG INPUT AS REQUIRED DATA:	041100
130 IREQ(J)=1	041120
C DEFINE OUTPUT OPERATION POWER DESCRIPTION FROM OPCR(I)=OPC(J):	041140
PC(1,I)=P(1,J)	041160
PC(2,I)=P(2,J)	041180
C ASSUME PSIF=PSCF AND THUS NO DELTA*6 ADJUSTMENT (GO TO 360):	041200
IF (ABS((PSIF(J)-PSCF(I))/PSIF(J)) .LT. 0.001) GO TO 360	041220
GO 135 II=2,MOPC	041240
C LABEL 375 BELOW APPLIES TO ERROR FOR OPC=01,02,08,09,10,17,18, OR 19:	041260
C ERROR-- OMIT OPCC(I) BECAUSE REQUESTED PSCF(I) NOT EQUAL PSIF(J):	041280
IF (OPCR(I) .EQ. OPP(II)) GO TO (375,375,160,325,180,325,325,	041300
1 375,375,375,160,230,325,160,260,300,375,375,375),II-1	041320
135 CONTINUE	041340
C OPCR(I)=OPC(J)=03 OR 11 OR 14 --- TAKEOFF:	041360
160 IF (IAP .GT. 0) GO TO 170	041380
C ERROR-- NO APPROACH DATA AVAILABLE FOR INTERPOLATION OF OPC=03:	041400
GO TO 370	041420
170 IREQ(IAP)=1	041440
175 IREQC(1,I)=IAP	041460
IREQC(2,I)=ITP	041480
IREQC(3,I)=J	041500
GO TO 400	041520
C OPCR(I)=OPC(J)=05 --- APPROACH POWER:	041540
180 GO TO (370,165,190,200),ITAMC	041560
C LABEL 370:	041580
C ERROR-- NO TAKEOFF DATA AVAILABLE FOR INTERPOLATION OF OPC=05:	041600
185 IREQ(ITF)=1	041620
GO TO 175	041640
190 IREQ(IMP)=1	041660
IREQC(1,I)=IMP	041680

IREQC(2,I)=IAP	041700
IREQC(3,I)=-J	041720
GO TO 400	041740
230 IF (PSCF(I) .GE. PSIF(IAP)) GO TO 185	041760
GO TO 190	041780
C OPCR(I)=OPC(J)=12:	041800
C NORMAL RATED THRUST--PSCF(J) MUST BE BETWEEN APPROACH AND TAKEOFF	041820
C POWER FOR REFERENCE FILE DATA:	041840
230 IF (IAP .GT. 0 .AND. ITP .GT. 0) GO TO 240	041860
C ERROR --- INSUFFICIENT DATA AVAILABLE FOR INTERPOLATION ETC.:	041880
GO TO 370	041900
240 IF (PSCF(I) .GE. PSIF(IAP)) GO TO 250	041920
C WARNING MESSAGE PRINTED BECAUSE OPCR=12 REFERENCE POWER SETTING IS	041940
C LESS THAN APPROACH POWER SETTING:	041960
WRITE(6,2300) OPCR(I),ACC	041980
250 IREQC(3,I)=J	042000
GO TO 118	042020
C OPCR(I)=OPC(J)=15 --- STOL TAKEOFF:	042040
C I1=17 --- STOL APPROACH:	042060
260 I1=17	042080
265 DO 270 JJ=1,N	042100
IF (OPC(JJ) .EQ. OPP(I1)) GO TO 280	042120
270 CONTINUE	042140
C ERROR --- EITHER STOL TAKEOFF OR APPROACH DATA MISSING, THUS CAN'T	042160
C INTERPOLATE ETC.:	042180
GO TO 370	042200
280 IREQ(JJ)=1	042220
IREQC(3,I)=J	042240
IF (I1=10) 285,285,290	042260
285 IREQC(1,I)=J	042280
IREQC(2,I)=JJ	042300
GO TO 400	042320
290 IREQC(1,I)=JJ	042340
IREQC(2,I)=J	042360
GO TO 400	042380
C OPCR(I)=OPC(J)=16 --- STOL APPROACH:	042400
C I1=16 --- STOL TAKEOFF:	042420
300 I1=16	042440
GO TO 265	042460
C OPCR(I)=OPC(J)=04, 06, 07, OR 13:	042480
C LABEL 370:	042500
C ERROR --- INSUFFICIENT DATA AVAILABLE FOR INTERPOLATION ETC.:	042520
320 GO TO (370,330,340,350),ITA4C	042540
330 IREQC(3,I)=J	042560
GO TO 110	042580
340 IREQ(IAP)=1	042600
GO TO 190	042620
350 IF (PSCF(J) .GE. PSIF(IAP)) GO TO 355	042640
C	042660
GO TO 340	042680
355 IF (PSCF(I) .GE. PSIF(IAP)) GO TO 330	042700
GO TO 110	042720
C CHECK FOR OPCR= 17, 18 OR 19 AND VX=IV:	042740
360 IF (OPCR(I) .NE. OPP(18) .AND. OPCR(I) .NE. OPP(19) .AND.	042760
1 OPCR(I) .NE. OPP(20)) GO TO 365	042780

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      IF (ICV(VX(I)) .EQ. IV(J)) GO TO 365                                042800
C   ERROR --- OMIT OPCC BECAUSE REQUESTED AIRSPEED NOT EQUAL TO REFERENCE 042820
C   AIRSPEED AS REQUIRED FOR OPCC=17, 18 AND 19!                          042840
      GO TO 360                                                            042860
355 IREQC(1,I)=J                                                         042880
      GO TO 400                                                            042900
C   ***** ERROR STATEMENTS *****                                    042920
C   ERROR --- INSUFFICIENT DATA AVAILABLE FOR INTERPOLATION OR          042940
C   EXTRAPOLATION; DATA FOR OPCC(I) OMITTED FROM JOB!                  042960
370 WRITE(6,2000) OPCC(I)                                                042980
      GO TO 395                                                            043000
C   REQUESTED OUTPUT POWER SETTING NOT EQUAL TO THE REFERENCE POWER     043020
C   SETTING AS REQUIRED FOR THIS OPCC:                                    043040
375 WRITE(6,2100) OPCC(I)                                                043060
      GO TO 395                                                            043080
C   REQUESTED OUTPUT AIRSPEED NOT EQUAL TO THE REFERENCE AIRSPEED AS    043100
C   REQUIRED FOR THIS OPCC:                                              043120
380 WRITE(6,2200) OPCC(I)                                                043140
      GO TO 395                                                            043160
C   REQUESTED REFERENCE 'OPCR' IS NOT IN THE REFERENCE FILE:           043180
385 WRITE(6,2400) OPCC(I),OPCR(I)                                       043200
C   'UFF(1)' IS A BLANK 10 CHARACTER FIELD:                             043220
      PC(1,I)=JPP(1)                                                      043240
      PC(2,I)=JPP(1)                                                      043260
395 WRITE(6,2500) ACC                                                    043280
400 CONTINUE                                                             043300
      RETURN                                                              043320
C   WHEN NP=0, DEFINE THE FOLLOWING VARIABLES AND COMPUTE PROFILE DATA 043340
C   AND PRINTOUT FOR REFERENCE FILE DATA WITH REFERENCE FILE AIRSPEED 043360
C   AND POWER SETTING;                                                  043380
500 NP=N                                                                  043400
      PSU=PS(2,1)                                                         043420
      DO 510 I=1,NP                                                       043440
      PC(1,I)=P(1,I)                                                      043460
      PC(2,I)=P(2,I)                                                      043480
      PSC(I)=PS(1,I)                                                      043500
      OPCC(I)=OPC(I)                                                      043520
      OPCR(I)=OPC(I)                                                      043540
      IREQ(I)=1                                                           043560
      IREQC(1,I)=I                                                       043580
510 VX(I)=IV(I)                                                         043600
      RETURN                                                              043620
2000 FORMAT(/2X,10(1H*), * ERROR--OMIT OPCC= *,A2/ 2X,*INSUFFICIENT RE 043640
1ERENCE DATA AVAILABLE FOR INTERPOLATION OR EXTRAPOLATION.*)          043660
2100 FORMAT(/2X,10(1H*), * ERROR--OMIT OPCC= *,A2,*, REFERENCE POWER S 043680
1ETTING*/ 2X,*NOT EQUAL TO REQUESTED OUTPUT POWER SETTING AS REQUIRED 043700
2ED FOR THIS OPCC.*)                                                    043720
2200 FORMAT(/2X,10(1H*), * ERROR--OMIT OPCC= *,A2,*, REFERENCE AIRSPEE 043740
10*/ 2X,*NOT EQUAL TO REQUESTED OUTPUT AIRSPEED AS REQUIRED FOR THI 043760
2S OPCC.*)                                                              043780
2300 FORMAT(/2X,10(1H*), * WARNING--- REQUESTED POWER SETTING FOR OPC 043800
1=*,A2/ 2X,*SHOULD BE GREATER THAN REFERENCE POWER SETTING FOR APPR 043820
2OACH. ACC= *,A3)                                                       043840
2400 FORMAT(/2X,10(1H*), * ERROR--OMIT OPCC= *,A2,*, REFERENCE OPCR= * 043860

```

1,A2/ 2X,*IS NOT IN THE REFERENCE FILE.*)
2500 FORMAT(2X,*AIRCRAFT CODE (ACC)= *,A3)
3000 FORMAT(F5.0)
END

043900
043920
043940
043960

```

SUBROUTINE DELTA6 (PROI,PRDC,K,PSIF,PSCF,IREQC,LFLG,VFCT,LIM,PSC 043980
1,EXTMX,ITP,IAP,IHP,IREF) 044000
DECK 17 DELTA6 044020
***** 044040
***** 044060
THIS SUBROUTINE APPLIES THE DELTA6 ALGORITHM AND THE AIRSPEED 044080
ADJUSTMENT TO THE SINGLE EVENT MEASURE DATA IN ARRAY PROI. 044100
IT IS CALLED ONE TIME FOR EACH MEASURE BEING COMPUTED. 044120
044140
K --- INDEX OF OUTPUT OPCC. 044160
VFCT --- AIRSPEED ADJUSTMENT FACTOR FOR KTH OPCC. 044180
OPC --- ARRAY OF INPUT OPERATION POWER CODES FROM REFERENCE FILE. 044200
OPCC --- ARRAY OF OUTPUT OPERATION POWER CODES REQUESTED FOR THIS 044220
AIRCRAFT RUN. 044240
PROI --- INPUT MEASURE DATA FOR EACH DISTANCE AND OPC. 044260
PRDC --- OUTPUT MEASURE DATA FOR EACH DISTANCE (COMPUTED HERE). 044280
PSC --- OUTPUT POWER SETTINGS FOR EACH OPCC (ARRAY). 044300
PSCF --- OUTPUT POWER SETTINGS FOR EACH OPCC (ARRAY--FLOATING POINT). 044320
PSIF --- INPUT POWER SETTINGS FOR EACH OPC (ARRAY--FLOATING POINT). 044340
EXTMX --- MAXIMUM PERMITTED EXTRAPOLATION AT THE REFERENCE DISTANCE. 044360
LIM --- EXTRAPOLATION LIMIT FLAG; WHEN LIM=1, LIMIT IS CHECKED. 044380
ITP --- INDEX OF REFERENCE TAKEOFF OPC. 044400
IAP --- INDEX OF REFERENCE APPROACH OPC. 044420
IHP --- INDEX OF HIGHEST RANKING OPC WITH POWER SETTING LESS THAN 044440
POWER SETTING AT APPROACH. 044460
IREF --- FLAG USED TO INDICATE ADDITIONAL SLOPE REFERENCE INDICES 044480
BECAUSE THE REFERENCE AND REQUESTED POWER SETTINGS ARE 044500
ON DIFFERENT SIDES OF APPROACH POWER (FOR IREF>0, 044520
TWO SLOPE LINES WERE USED; APPLIES TO RANKED OPC'S ONLY). 044540
IREF=0 --- ONLY ONE SLOPE LINE REQUIRED. 044560
IREF=1 --- SECOND SLOPE LINE USING REFERENCES 'IHP' TO 'IAP'. 044580
IREF=2 --- SECOND SLOPE LINE USING REFERENCES 'IAP' TO 'ITP'. 044600
IREQC --- FLAG ARRAY DEFINED FOR THE KTH OPCC: 044620
(1) IREQC(3,K)>0: 044640
IREQC(1,K) AND IREQC(2,K) CONTAIN THE INDEX OF INPUT 044660
MEASURE DATA REQUIRED TO COMPUTE SLOPE. 044680
IREQC(3,K) IS THE INDEX OF THE INPUT MEASURE DATA TO WHICH 044700
DELTA6 ALGORITHM IS APPLIED (DETERMINED FROM OPCC(K)). 044720
(2) IREQC(3,K)=0: 044740
NO DELTA6 ALGORITHM IS APPLIED AND IREQC(1,K) CONTAINS 044760
THE INDEX OF THE INPUT MEASURE DATA SET EQUAL TO THE OUTPUT 044780
MEASURE DATA (WITH AIRSPEED ADJUSTMENT). 044800
(3) IREQC(3,K)=0 AND IREQC(1,K)=0: 044820
NO OUTPUT DATA ARE COMPUTED FOR THE KTH OPCC, LFLG(K)=-1. 044840
(4) IREQC(3,K)<0: 044860
CHECK MEASURE DATA OF HIGHEST RANKING POWER SETTING (INDEX 044880
IREQC(1,K)) AND APPROACH POWER SETTING (INDEX IREQC(2,K)). 044900
IF APPROACH DATA ARE GREATER OR EQUAL, USE ABSOLUTE VALUE 044920
OF IREQC(3,K) AS IN (1) ABOVE. 044940
IF APPROACH IS LESS, SET OUTPUT MEASURE DATA EQUAL TO 044960
INPUT MEASURE DATA WITH INDEX EQUAL TO ABSOLUTE VALUE 044980
OF IREQC(3,K) (WITH AIRSPEED ADJUSTMENT). 045000
045020
045040
045060

```

```

C LFLG= 1 --- EXTRAPOLATION GREATER THAN 'EXTMX' DB FOR KTH OPCC. 045080
C LFLG=-1 --- NO MEASURE DATA FOR KTH OPCC. 045100
C LFLG= 0 --- DATA SHOULD BE GOOD. 045120
C 045140
C ***** 045160
C ***** 045180
C DIMENSION PRDI(22,6),PRDC(22),PSIF(6),PSCF(12),IREQC(3,12),PSC(12) 045200
C STATEMENT FUNCTION USED FOR DELTA**6 INTERPOLATION: 045220
F(Y2,Y1,Y3,X2,X1,XB,XC)=Y3+(Y2-Y1)*(XC-XB)/(X2-X1) 045240
LAB=0 045250
K1=IREQC(1,K) 045280
K2=IREQC(2,K) 045300
K3=IREQC(3,K) 045320
IF (IREF-1) 5,250,260 045340
5 IF (KB) 110,60,10 045360
10 IF (LIM .EQ. 1) GO TO 150 045380
25 DO 40 I=1,22 045400
C APPLY DELTA**6 ALGORITHM AND CORRECT FOR AIRSPEED: 045420
PRDC(I)= F(PRDI(I,K2),PRDI(I,K1),PRDI(1,K3),PSIF(K2),PSIF(K1), 045440
1PSIF(K3),PSCF(K))-VFCT 045460
+0 CONTINUE 045480
GO TO 200 045500
60 IF (K1) 100,100,70 045520
C APPLY AIRSPEED ADJUSTMENT WITH NO DELTA**6 ADJUSTMENT: 045540
70 DO 80 I=1,22 045560
80 PRDC(I)= PRDI(I,K1)-VFCT 045580
GO TO 200 045600
C LFLG=-1 --- NO DATA FOR KTH OPCC. 045620
100 LFLG=-1 045640
GO TO 200 045660
C CHECK SINGLE EVENT MEASURE DATA AT REFERENCE DISTANCE (ASSUMED 045680
TO BE 1000 FEET -- I=8): 045700
110 I=8 045720
KK=IABS(KB) 045740
IF (K1 .EQ. IAP) GO TO 130 045760
C ASSUME K1=IHP AND PSIF(KK) < PSIF(IAP): 045780
IF (PSCF(K) .GT. PSIF(IAP) .AND. ITP .GT. 0) GO TO 200 045800
C IS MEASURE DATA AT HIGHEST RANKING POWER SETTING GREATER THAN 045820
MEASURE DATA AT APPROACH (HIGHEST RANKING POWER SETTING IS LESS THAN 045840
POWER SETTING AT APPROACH): 045860
IF (PRDI(I,K1) .GT. PRDI(I,<2)) GO TO 120 045880
KB=KK 045900
GO TO 10 045920
120 K1=KK 045940
GO TO 70 045960
C K1=IAP, K2=ITP, PSIF(KK) > PSIF(IAP): 045980
130 IF (PSCF(K) .LT. PSIF(K1)) GO TO 250 046000
C PSCF(K) AND PSIF(KK) > PSIF(IAP): 046020
KB=KK 046040
GO TO 10 046060
C CHECK FOR EXTRAPOLATION GREATER THAN 'EXTMX' (5 DB) DB AND RECOMPUTE 046080
THE PSCF POWER SETTING WHEN THE LIMIT IS EXCEEDED, ALSO SET LFLG=1; 046100
C CHECK 1000 FT. (I=8) AIR-TO-GROUND DATA ONLY; 046120
C CHECK ONLY 'SELX' DATA WHEN ALL ARE COMPUTED: 046140
150 I=8 046160

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PRDCA=PRDI(I,K3)	046150
152 EXTCK = F(PROI(I,K2),PROI(I,K1),PRDCA,PSIF(K2),PSIF(K1),	046200
1PSIF(KB),PSCF(K))	046220
IF (LAB=1) 155,330,430	046240
155 IF (KB.EQ. K1.OR. KB.EQ. K2) GO TO 150	046250
EXT=PROI(I,KB)*EXTMX	046280
IF (EXTCK.GT. EXT) GO TO 170	046300
EXT=PROI(I,KB)-EXTMX	046320
GO TO 165	046340
160 EXT=PROI(I,K2)*EXTMX	046350
IF (EXTCK.GT. EXT) GO TO 170	046380
EXT=PROI(I,K1)-EXTMX	046400
165 IF (EXTCK.LT. EXT) GO TO 170	046420
GO TO 25	046440
C SET EXTRAPOLATION LIMIT FLAG (LFLG) AND COMPUTE NEW PSCF(K)	046460
C CORRESPONDING TO THE EXTRAPOLATION LIMIT; 'EXT' IS THE LIMITING	046480
C SELX ETC. VALUE:	046500
170 PRDCA=PROI(I,KB)	046520
172 PSCF(K)=PSIF(K3)*(EXT-PRDCA)*(PSIF(K2)-PSIF(K1))/(PROI(I,K2)-	046540
1PROI(I,K1))	046560
LFLG= 1	046580
C REFORMAT NEW PSCF(K) AND STORE IN PSC(K) FOR PRINTING LATER IN THE	046600
C PROGRAM:	046620
IF (PSCF(K).GT. 999.) GO TO 175	046640
IF (PSCF(K).LT. 10.0) GO TO 160	046660
ENCODE(5,3000,PSC(K)) PSCF(K)	046680
IF (LAB=1) 25,340,435	046700
175 I=ICV(PSCF(K))	046720
ENCODE(5,3100,PSC(K)) I	046740
IF (LAB=1) 25,340,435	046760
180 ENCODE(5,3200,PSC(K)) PSCF(K)	046780
IF (LAB=1) 25,340,435	046800
200 CONTINUE	046820
RETURN	046840
C	046860
C *****	046880
C THE REMAINDER OF THIS SUBROUTINE SETS UP AND COMPUTES THE PROFILE	046900
C DATA FOR POWER SETTINGS WHERE THE REFERENCE (OPCR) POWER SETTING	046920
C (PSIF(KB) OR PSIF(KK)) AND THE REQUESTED POWER SETTING (PSCF(K))	046940
C ARE ON OPPOSITE SIDES OF THE APPROACH POWER SETTING (PSIF(IAP)):	046960
C *****	046980
C	047000
C K1=IAP, K2=ITP, PSIF(KK)>PSIF(IAP), PSCF(K)<PSIF(IAP):	047020
250 LAB=1	047040
GO TO 270	047060
C K1=IMP, K2=IAP, PSIF(KK)<PSIF(IAP) AND PSCF(K)>PSIF(IAP):	047080
250 LAB=2	047100
270 I=8	047120
IF (LIM.EQ. 1) GO TO (290,280),LAB	047140
IF (PROI(I,IMP).GT. PROI(I,IAP)) GO TO (360,470),LAB	047160
IF (LAB=1) 340,340,440	047180
290 IF (PROI(I,IMP).GT. PROI(I,IAP)) GO TO 420	047200
C COMPUTE MEASURE VALUE AT APPROACH POWER:	047220
290 PRDCA=F(PROI(I,K2),PROI(I,K1),PROI(I,KK),PSIF(K2),PSIF(K1),	047240
1 PSIF(KK),PSIF(IAP))	047260

IF (LAB-1) 305,305,415	047280
C CHECK EXTRAPOLATION LIMIT AT APPROACH POWER:	047300
305 EXT=PRDI(I,KK)-EXTMX	047320
IF (PRDCA .LE. EXT) GO TO 315	047340
C GO TO 360--> ZERO SLOPE, THUS PRDI(I)=PRDCA AT PSIF(IAP):	047360
IF (PRDI(I,IMP) .GT. PRDI(I,IAP)) GO TO 360	047380
K1=IMP	047400
K2=IAP	047420
K3=IAP	047440
C CHECK FINAL EXTRAPOLATION LIMIT AT PSCF(K)--LABEL 152:	047460
GO TO 152	047480
C EXTRAPOLATION LIMIT EXCEEDED AT PSIF(IAP), COMPUTE NEW PSCF(K):	047500
315 IREQC(3,K)=KK	047520
320 KB=KK	047540
C NOTE: NEW PSCF(K) WILL BE > PSIF(IAP):	047560
LAB=0	047580
GO TO 170	047600
C CHECK EXTRAPOLATION LIMIT AT *PSCF(K)*:	047620
330 IF (EXTCK .LT. EXT) GO TO 172	047640
C SET INDICES TO COMPUTE PRDCA AT PSIF(IAP) FOR EACH DISTANCE, THEN	047660
C PRDC(I) AT PSCF(K):	047680
340 K1=IMP	047700
K2=IAP	047720
K3=ITP	047740
K3=IAP	047750
IREF=1	047780
GO TO 455	047800
C MEASURE VALUE AT IMP> AT IAP, SET UP TO COMPUTE MEASURE VALUE	047820
C AT PSIF(IAP):	047840
360 DM=PSIF(IAP)	047860
KB=KK	047880
IREF=1	047900
GO TO 475	047920
C CHECK EXTRAPOLATION LIMIT AT APPROACH POWER:	047940
415 EXT=PRDI(I,KB)+EXTMX	047960
C LABEL 320--> DETERMINE NEW PSCF(K) LE PSIF(IAP):	047980
IF (PRDCA .GE. EXT) GO TO 320	048000
GO TO 425	048020
420 PRDCA=PRDI(I,KB)	048040
EXT=PRDCA+EXTMX	048060
C SET INDICES TO CHECK FINAL EXTRAPOLATION LIMIT AT PSCF(K):	048080
425 K1=IAP	048100
K2=ITP	048120
K3=IAP	048140
GO TO 152	048160
C CHECK EXTRAPOLATION LIMIT AT *PSCF(K)*:	048180
430 IF (EXTCK .GT. EXT) GO TO 172	048200
435 IF (PRDI(I,IMP) .GT. PRDI(I,IAP)) GO TO 470	048220
GO TO 450	048240
C SET INDICES TO COMPUTE PRDCA AT PSIF(IAP) FOR EACH DISTANCE, THEN	048260
C COMPUTE PRDC(I) AT PSCF(K):	048280
440 K1=IAP	048300
K2=ITP	048320
K3=IAP	048340
450 K3=IMP	048360

IREF=2	048300
C COMPUTE MEASURE VALUE (PRDCA) AT APPROACH, THEN MEASURE VALUE	048400
C (PRDC(I)) AT PSCF(K):	048420
455 DO 460 I=1,22	048440
PRDCA=F(PROI(I,KB),PROI(I,K3),FROI(I,KK),PSIF(KB),PSIF(K3),PSIF(KK)	048460
1),PSIF(IAP))	048480
PRDC(I)=F(PROI(I,K2),PROI(I,K1),PRUCA,PSIF(K2),	048500
1 PSIF(K1),PSIF(IAP),PSCF(K))-VFCT	048520
460 CONTINUE	048540
RETURN	048560
C MEASURE VALUE AT 'IHP' > AT 'IAP', SET UP TO COMPUTE MEASURE VALUE	048580
C AT PSCF(K) WITH REFERENCE AT 'IAP':	048600
470 DM=PSCF(K)	048620
KB=IAP	048640
IREF=2	048660
C COMPUTE MEASURE VALUE AT 'PSIF(IAP)' OR 'PSCF(K)' FOR CASES WITH	048680
C MEASURE VALUE AT 'IHP' > AT 'IAP':	048700
475 DO 485 I=1,22	048720
PRDC(I)=F(PROI(I,ITP),PROI(I,IAP),PROI(I,KK),PSIF(ITP),PSIF(IAP),	048740
1 PSIF(KB),DM)-VFCT	048760
485 CONTINUE	048780
RETURN	048800
3000 FORMAT(F5.1)	048820
3200 FORMAT(F5.2)	048840
3100 FORMAT(I5)	048860
END	048880

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SUBROUTINE SUMRY(IPU,COMD,EXTMX,N,NP,SOURCE,LFLG,IREF,ITP,IAP,IMP) 048900
C DECK 18 SUMRY J48920
C ***** 048940
C 048960
C THIS SUBROUTINE IS CALLED FROM THE MAIN ROUTINE ONCE PER AIRCRAFT 048980
C TO PRINT A SUMMARY OF THE INPUT AND OUTPUT DATA FOR EACH AIRCRAFT. J49000
C IT IS CALLED AT THE END OF EACH AIRCRAFT ANALYSIS. 049020
C 049040
C ALL PRINT LINES ARE LESS THAN OR EQUAL TO 84 CHARACTERS AND THUS 049060
C COULD BE PART OF THE NOISEMAP 'CHRONICLE'. 049080
C ***** 049100
C ***** 049120
C DIMENSION YN(2),COMD(6),SOURCE(2,6),LFLG(12),IREF(12) 049140
C COMMON /COMPC/IV(6),IMS(5),P(2,6),OPC(6),OPCC(12),PS(2,6),PSC(12),J49160
C 1 PSU,PSIF(6),PSCF(12),IREQC(3,12),VX(12),SX(22),ATNC(24),ATNR(24),049180
C 2 JELN,IPTC,IPROP,MEAS(3),OPCR(12),PC(2,12) 049200
C COMMON /HEADC/ AC,DATE,ACC,IPAGE,IVX,ITEMP,IRHUM,IVER,PV,GRI, 049220
C 1 ET(2),OTC 049240
C DATA YN/3HNO ,3HYES/,BLK/1H /,FL/1H</,FG/1H>/ 049260
C PRINT RUN 'ID' INFORMATION: 049280
C WRITE(6,2000) AC 049300
C WRITE(6,2010) IVER,ACC,PV,GRI,DATE,DELN 049320
C PRINT INPUT HEADING LINES AND SUMMARY DATA FOR EACH REFERENCE FILE J49340
C OPERATION POWER CODE (OPC): 049360
C WRITE(6,2020) 049380
C DO 50 L=1,N 049400
C 50 WRITE(6,2030) ACC,COMD(L),OPC(L),PS(1,L),PS(2,L),IV(L),P(1,L), 049420
C 1P(2,L),SOURCE(2,L) 049440
C PRINT OUTPUT HEADING LINES AND DATA WHICH APPLY TO ALL OPCC'S: 049460
C WRITE(6,2060) 049480
C WRITE(6,2070) YN(IPU+1) 049500
C WRITE(6,2080) EXTMX,ET 049520
C WRITE(6,2090) ITEMP,IRHUM 049540
C WRITE(6,2110) 049560
C ICK1=0 049580
C ICK2=0 049600
C PRINT SUMMARY OF OUTPUT DATA FOR EACH REQUESTED POWER SETTING: J49620
C DO 200 I=1,NP 049640
C CHECK EXTRAPOLATION FLAG: 049660
C IF (LFLG(I)) 120,140,130 049680
C NO OUTPUT DATA COMPUTED FOR ITH OPCC: 049700
C 120 WRITE(6,2120) ACC,OPCC(I),OTC,PV,GRI,OPCC(I),FG,PSC(I),PSU,VX(I) 049720
C 1,PC(1,I),PC(2,I) 049740
C ICK1=1 049760
C GO TO 200 049780
C EXTRAPOLATION LIMIT EXCEEDED FOR THE ITH OPCC: 049800
C 130 ICK2=1 049820
C FLG=FL 049840
C GO TO 150 049860
C 140 FLG=BLK 049880
C IREQC CONTAINS INDICES OF REFERENCE FILE DATA USED AS THE REFERENCE 049900
C POINT AND SLOPE POINTS IN DELTA6 COMPUTATIONS (SEE SUB. 'DELTA6'): 049920
C 150 IF (IREQC(3,I)) 170,160,180 049940
C I1 IS THE REFERENCE POINT -- NO SLOPE IS REQUIRED: 049960
C 160 I1=IREQC(1,I) 049980

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      WRITE(6,2120) ACC,OPCC(I),UTC,PV,CRI,OPCC(I),FLG,PSC(I),PSU,VX(I), 050000
      1 PC(1,I),PC(2,I),YN(1),ACC,COMD(I1) 050020
      GO TO 200 050040
C   I1 IS THE REFERENCE POINT; NEGATIVE VALUE MEANS THE MEASURE DATA 050060
C   FOR THE HIGHEST RANKING POWER SETTING LESS THAN APPROACH POWER WAS 050080
C   CHECKED: 050100
      170 I1=IABS(IREQC(3,I)) 050120
      GO TO 185 050140
C   I1 IS THE REFERENCE POINT. I2 AND I3 ARE SLOPE POINTS: 050160
      180 I1=IREQC(3,I) 050180
      185 I2=IREQC(1,I) 050200
      I3=IREQC(2,I) 050220
      WRITE(6,2120) ACC,OPCC(I),UTC,PV,CRI,OPCC(I),FLG,PSC(I),PSU,VX(I), 050240
      1 PC(1,I),PC(2,I),YN(1),ACC,COMD(I1),YN(1),ACC,COMD(I2),YN(1),ACC, 050260
      2COMD(I3) 050280
C   PRINT ADDITIONAL LINE WHEN SECOND SLOPE IS REQUIRED (PS AND 050300
C   PSC DATA ON OPPOSITE SIDES OF APPROACH). IREF, ITP, IAP, AND 050320
C   IHP ARE DEFINED IN SUBROUTINE 'DELTA6': 050340
      IF (IREF(I)-1) 200,190,194 050360
      190 I1=IHP 050380
      I2=IAP 050400
      GO TO 196 050420
      194 I1=IAP 050440
      I2=ITP 050460
      196 WRITE(6,2125) YN(1),ACC,COMD(I1),YN(1),ACC,COMD(I2) 050480
      200 CONTINUE 050500
C   PRINT GENERAL INFORMATION LINES: 050520
      WRITE(6,2130) 050540
C   PRINT FOOTNOTES AS REQUIRED: 050560
      IF (ICK1.GT. 0) WRITE(6,2140) 050580
      IF (ICK2.GT. 0) WRITE(6,2150) 050600
      RETURN 050620
2000 FORMAT(1H1, *SUMMARY OF I/O FOR AIRCRAFT: *,A10) 050640
2010 FORMAT(/ 1X,*PROGRAM: OMEGA 10.*,I1/ 050660
      1 1X,*AIRCRAFT CODE: *,A3/ 1X,*PROFILE VERSION CODE: *,A1/ 050680
      2 1X,*COMDECK REVISION IDENTIFIER: *,A1/ 1X,*DATE: *,A10/ 050700
      3 1X,*DELTA N (OR DELN)=*,F6.2,* DB*) 050720
2020 FORMAT(/ 1X,35(1H*),* INPUT DATA *,35(1H*) 050740
      1/2X,*COMDECK*, 9X,*POWER*,4X,*AIRSPEED POWER DESCRIPTION*,5X, 050760
      2*DATE OF*/4X, *NAME OPC SETTING*,5X,*KNOTS*, 24X,*NORM. RUN*) 050780
2030 FORMAT(1X,*N*,A3,A5,2X,A2,1X,A5,1X,A5,I6,3X,2A10,2X,A10) 050800
2060 FORMAT(/ 1X,34(1H*),* OUTPUT DATA *,35(1H*)) 050820
2070 FORMAT(1X, *IS PROFILE DATA WRITTEN ON FILE 'TAPE3'?--*,A3) 050840
2080 FORMAT(1X, *MAXIMUM PERMITTED PROFILE DATA EXTRAPOLATION IS:*,F6.2) 050860
      1,* JB*/ 1X, *ENGINE TYPE =OR ALL PROFILE DATA: *,A10,A5) 050880
2090 FORMAT( 1X,*METEOROLOGY: TEMP*,6X,**,I6,* F*/ 050900
      1 15X,*REL HUMID =*,I6,* %*) 050920
2110 FORMAT( *PROFILE*,8X,*POWER* 3X,*AIRSPEED*, 1X,*POWER DESCRIPTION 050940
      1N*, 9X,*NORMALIZED COMDECKS*/ 3X,*ID*,4X,*OPC*,3X,*SETTING*,4X, 050960
      2 *KNOTS*,23X,*REFERENCE SLOPE REF. POINTS*) 050980
2120 FORMAT(1X,A3,A2,3A1,1X,A2,A1,A5,1X,A6,F6.1,2X,2A10,3(1X,A1,A3,A5)) 051000
2125 FORMAT( 63X,2(1X,A1,A3,A5)) 051020
2130 FORMAT(/ 1X,30(1H*),* GENERAL INFORMATION *,31(1H*)/ 051040
      1 1X,*OPC --- OPERATION POWER CODE.*/ 051060
      2 1X,*THE ENGINE TYPE GIVEN ABOVE IS TAKEN FROM THE LAST REFERENCE 051080

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3FILE DATASET;*/ 1X,*IT IS ASSUMED TO BE THE SAME FOR ALL DATASETS.051100
4*/1X,*PROFILE CHECK NAME = SYMBOL E, S OR L + PROFILE ID LISTED 051120
5ABOVE*/) 051140
21+0 FORMAT(1X, *> NO PROFILE DATA COMPUTED FOR THIS OPC; SEE PROGRAM E051150
1ERROR MESSAGES.*) 051180
2150 FORMAT(1X, *< POWER SETTING EXTRAPOLATION LIMITED BY AMRL/DBE, W-P051200
1AFB.*) 051220
END 051240

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I N D E X

***** SUPER INDEX *****									

I N J E X

***** SUPER INDEX *****

DASH	-	IPA	OMEGA10	OUTJ	PPFDAT	SUMRY	YITPG
DATE	-	HEAD	OMEGA10	OUTG			
DATEN	-	OMEGA10	OUTG	OUTJ			
JD	-	ICV					
DELN	-	CDIST	HEAD	OMEGA10	OUTJ	SUMRY	
UDELTA6	-	OMEGA10					
DG	-	CDIST					
DH1	-	HEAD					
DH2	-	HEAD					
DI1	-	HEAD					
DKEY	-	PPFDAT					
DH	-	DELTA6	OUTH				
DOPC	-	OMEGA10					
DOT	-	IPA	OMEGA10	OUTJ			
DR	-	ICV					
DRAG	-	OMEGA10	OUTG				
DS1	-	OMEGA10					
DS2	-	OMEGA10					
EA	-	CDIST					
EOF	-	OMEGA10					
EPNLA	-	CDIST					
EPNLX	-	CDIST					
ET	-	OMEGA10	OUTG	PPFDAT	SUMRY		
EXT	-	DELTA6					
EXTCK	-	DELTA6					
EXTMX	-	DELTA6					
F	-	ALPH	OMEGA10	SUMRY	DELTA6		
F1	-	OUTH	CPTC				
F2	-	OUTH					
F3	-	OUTH					
F4	-	OUTH					
F5	-	OUTH					
F6	-	OUTH					
F7	-	OUTH					
F9	-	OUTH					
FA	-	OUTH					
FC	-	OUTH					
FG	-	SUMRY					
F1	-	OUTH					
FJ	-	CPNL					

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IMP	-	DELTA6	OMEGA10	SETUPD6	SUMRY	
II	-	OUTG	OUTJ	PP=DAI	SETUPD6	
IJ	-	PPFOAT				
IK	-	SETUPD6				
IL	-	ALPH	CAL			
IL1	-	CPTC				
IL2	-	CPTC				
IL3	-	CPTC				
ILL	-	CPTC				
IMS	-	CUIST	OMEGA10	OUTG		
INPUT	-	OMEGA10				
IORJ	-	OMEGA10	OUTG	OUTH	OUTJ	
IP	-	HEAU	OUTJ			
IPA	-	OMEGA10				
IPAGE	-	HEAD	OMEGA10	OUTG	OUTJ	
IPF	-	OMEGA10	OUTH			
IPP	-	HEAD	OUTJ			
IPR	-	OMEGA10	TIIPG			
IPROP	-	CDIST	HEAD	OMEGA10	OUTJ	
IPR1	-	OMEGA10				
IPTC	-	CUIST	CPTC	OMEGA10	OUTH	
IPU	-	OMEGA10	SUMRY			
IRD	-	CDIST	OMEGA10	OUTH		
IREF	-	DELTA6	OMEGA10	SUMRY		
IREQ	-	OMEGA10	SETUPD6			
IREQC	-	DELTA6	OMEGA10	PPFOAT	SETUPD6	SUMRY
IRNUM	-	HEAD	OMEGA10	OUTJ	PPFOAT	SUMRY
IRK	-	SETUPD6				
ISC	-	OUTG	OUTJ			
ISEQD	-	OUTH				
ISEQF	-	OUTH				
ISIGN	-	ICV				
ISPL	-	COIST	OUTH			
ISKJ	-	OUTG				
ITANC	-	SETUPD6				
ITEMP	-	HEAD	OMEGA10	OUTJ	PPFOAT	SUMRY
ITP	-	DELTA6	OMEGA10	SETUPD6	SUMRY	
IV	-	CDIST	OMEGA10	OUTG	SETUPD6	SUMRY
IVER	-	HEAD	OMEGA10	OUTJ	PPFOAT	SUMRY
IVX	-	HEAD	OMEGA10	OUTJ	PPFOAT	TIIPG

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IX	-	OUTJ	ATKN	CAL	CDIST	CPNL	CPTC	OMEGA10	OUTG
J	-	ALPH	OUTJ	PPFOAT	SETUPD6				
J1	-	OUTJ							
J2	-	OUTJ							
JU	-	OUTH							
JUH	-	OMEGA10							
JF	-	OUTH							
JJ	-	CPNL	FNOY	OUTJ	SETUPD6				
JS	-	OUTJ							
K	-	ATKN	DELTA6	IPA	OUTH	OUTJ			
K1	-	ATKN	DELTA6						
K2	-	DELTA6							
K3	-	DELTA6							
K8	-	DELTA6							
KK	-	DELTA6							
L	-	CDIST	HEAD	OMEGA10	OUTG	OUTJ	PPFOAT		SUMRY
LAB	-	DELTA6							
LFLG	-	DELTA6	OMEGA10	OUTH	OUTJ	PPFOAT			SUMRY
LG	-	OUTG	OUTJ						
LI	-	ATKN	OMEGA10						
LIM	-	DELTA6							
LINE	-	OUTJ							
LL	-	ATKN							
LU	-	ATKN							
M	-	OUTJ							
MAX0	-	OUTG							
MEAS	-	CDIST	OMEGA10	PPFOAT					
YH	-	OMEGA10							
YN	-	OUTG	OUTJ						
YUPC	-	SETUPD6							
YK	-	OUTG	OUTJ						
N	-	ATKN	OMEGA10	SETUPD6	SUMRY				
NP	-	OMEGA10	SETUPD6	SUMRY					
NPH	-	OMEGA10							
NR	-	OMEGA10	OUTG	SETUPD6	SUMRY				
JPC	-	OMEGA10	OUTG	SETUPD6	SUMRY				
OPCC	-	HEAD	OMEGA10	OUTJ	PPFOAT	SETUPD6			SUMRY
OPCO	-	OMEGA10							
OPCR	-	SETUPD6							

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VREF	-	COIST	
VX	-	OMEGA10	
W	-	OMEGA10	SUMRY
X	-	ALPH	ATKN
X1	-	DELTA6	OMEGA10
X2	-	DELTA6	OUTJ
XB	-	DELTA6	
XC	-	DELTA6	
XI	-	ATKN	
XX	-	ATKN	
Y	-	ALPH	ATKN
Y1	-	DELTA6	
Y2	-	DELTA6	
Y3	-	DELTA6	
YN	-	SUMRY	
YY	-	ATKN	
ZERO	-	OMEGA10	

I N D E X

END OF COMPUTATION,

1 DECEMBER 1967 VERSION.

(PROGRAM INDEX COPYRIGHT 1966, HARRY M. MURPHY, JR.)

APPENDIX J
OMEGA 11 PROGRAM LISTING

The listing for the OMEGA 11 program is provided in the following pages. Included at the end of the program listing is a Super Index which lists all variable names defined in this program as well as all routines in which they are used.

```

      PROGRAM OMEGA11(INPUT,OUTPUT,TAPE5=INPUT,TAPE6=OUTPUT,TAPE7,TAPE2) 000100
C  DECK MAIN 'OMEGA11' 000120
C ***** 000140
C ***** 000160
C** 000180
C** PROGRAM FILES: 000200
C** INPUT OR TAPE5 --- CODE SHEET INPUT FILE; 000220
C** OUTPUT OR TAPE6 --- OUTPUT FILE FOR 'OMEGA 11' TAB OUTPUT; 000240
C** TAPE2 --- PROFILE DATASET OUTPUT FILE (COULD BE COPIED TO 000260
C** THE PUNCH FILE). 000280
C** TAPE7 --- NORMALIZED DATASET INPUT FILE; 000300
C** 000320
C ***** 000340
C ***** 000360
C** 000380
C** THIS OMEGA 11 PROGRAM WAS WRITTEN BY THE UNIVERSITY OF DAYTON 000400
C** RESEARCH INSTITUTE UNDER CONTRACT F33619-75-C-5040 WITH THE 000420
C** 6570-TH AEROSPACE MEDICAL RESEARCH LABORATORY (AMRL/DBE) AT 000440
C** WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433. 000460
C** 000480
C ***** 000500
C** OMEGA 11 PROGRAM VERSION 1 (12 APR 1977) 000520
C ***** 000540
C ***** 000560
C** 000580
C** THE FOLLOWING SUBROUTINES ARE USED BY THIS PROGRAM: 000600
C** 000620
C** DK01---TESTN DK06---ICV DK11---CAL DK16---SUMRY 000640
C** DK02---ALPH DK07---CDIST DK12---PPFOAT DK17---EDIT 000660
C** DK03---ATKN DK08---CPNL DK13---TITPG DK18---ERR 000680
C** DK04---HEADS DK09---FNOY DK14---PLT DK19---FINTP 000700
C** DK05---RSPLN DK10---CPTC DK15---RANK DK20---ITER 000720
C** 000740
C ***** 000760
C** 000780
C** 000800
C** THIS OMEGA 11 PROGRAM WAS WRITTEN TO ANALYZE GROUND RUN-UP NOISE 000820
C** MEASUREMENTS FROM NORMALIZED SOUND PRESSURE LEVEL (SPL) DATA 000840
C** FOR 1/3 OCTAVE FREQUENCY BANDS 17 TO 40 AND ANGLES 0 TO 180 000860
C** DEGREES. THE PROGRAM INPUTS THE NORMALIZED DATA FROM THE 000880
C** THE REFERENCE FILE (TAPE7) CREATED FROM THE NOISEFILE 2 000900
C** DATABASE. THESE REFERENCE DATA WERE NORMALIZED TO 59 %, 000920
C** 70 %, 29.92 IN HG, AND 250.0 FEET FROM THE SOURCE BY THE 000940
C** OMEGA 8 PROGRAM. 000960
C** 000980
C** 001000
C** THE PROGRAM PRINTS THE FOLLOWING DATA WHEN CODE SHEET PARAMETER 001020
C** IPK=1: 001040
C** 001060
C** 1) TITLE OR COVER PAGE; 001080
C** 2) TEST SUMMARY PAGE; 001100
C** 3) NORMALIZED 'SPL' DATA --- PAGE C; 001120
C** 4) PERCEIVED NOISE LEVEL (PNL) PROFILE DATA --- PAGE D; 001140
C** 5) TONE-CORRECTED, PERCEIVED NOISE LEVEL (PNLT) PROFILE 001160
C** DATA --- PAGE E; 001180

```



```

00** 6) A-WEIGHTED OVERALL SOUND LEVEL (AL) PROFILE DATA - PAGE F; **001200
00** 7) TONE-CORRECTED, A-WEIGHTED OVERALL SOUND LEVEL (ALT) **001220
00** PROFILE DATA --- PAGE G; **001240
00** 6) TAB PLOT OF NOISE LEVEL (PNLT, AL AND ALT) AS A FUNCTION **001260
00** OF ANGLE AROUND SOURCE FOR NORMALIZED DISTANCE --- PAGE J; **001280
00** **001300
00** **001320
00** THE PROFILE DATA ARE COMPUTED AND PRINTED AS REQUESTED BY THE **001340
00** 'MEAS' CODE SHEET PARAMETER. **001360
00** **001380
00** THE PROFILE DATA CONTAIN NOISE LEVELS FOR 22 DISTANCES **001400
00** (200 TO 25000 FEET). THE 'PNLT', 'AL' AND 'ALT' **001420
00** PROFILE DATASETS ARE WRITTEN ON FILE 'TAPE2' (SEE 'IEDIT' **001440
00** PARAMETER). **001460
00** **001480
00** FOR IPR=0 OR BLANK, ONLY THE TEST SUMMARY PAGE IS PRINTED. **001500
00** **001520
00** **001540
00*****001560
00*****001580
00 001600
00 THE FOLLOWING ARE SOME OF THE VARIABLES USED BY THE PROGRAM (SEE 001620
00 DOCUMENTATION FOR A MORE COMPLETE LIST): 001640
00 001660
00 OPC(6) --- ARRAY CONTAINING THE REFERENCE OPERATION POWER CODES. 001680
00 OPCC(6) -- ARRAY CONTAINING THE OUTPUT OPERATION POWER CODES. 001700
00 M=3 --- 1/3 OCTAVE BAND DATA ---ALL DATA MUST BE 1/3 OCTAVE. 001720
00 MM=1 --- FREQUENCY ARRAY INDEX INCREMENT FOR M=3. 001740
00 IL=1 --- FREQUENCY INDEX CORRESPONDING TO BAND 17. 001760
00 IH=24 -- FREQUENCY INDEX CORRESPONDING TO BAND 40. 001780
00 IL IS IBNL AND IH IS IBNH IN SOME OF THE SUBROUTINES. 001800
00 NC --- NUMBER OF ANGLES --- ALWAYS 19 FOR NORMALIZED DATA. 001820
00 N --- NUMBER OF REFERENCE OPC'S FOR THIS AIRCRAFT. 001840
00 NP --- NUMBER OF OUTPUT OPCC'S TO BE COMPUTED FOR THIS ACC. 001860
00 DIST --- STANDARD REFERENCE DISTANCE IN FEET; MUST BE WITHIN 001880
00 1% OF ONE OF THE STANDARD PROFILE DISTANCES. 001900
00 NN=6 ---MAXIMUM NUMBER OF REFERENCE OPERATION POWER CODES PER ACC. 001920
00 NPM=6 --MAXIMUM NUMBER OF OUTPUT OPCC'S PER AIRCRAFT SET. 001940
00 IPR=1 --- PRINT NORMALIZED SPL AND PROFILE DATA ON FILE 'TAPE6'. 001960
00 IPR=0 --- OMIT ALL 'TAPE6' OUTPUT EXCEPT ERROR STATEMENTS. 001980
00 IEDIT<0 --- OMIT ALL PROFILE DATA FROM FILE 'TAPE2'. 002000
00 IEDIT=0 --- CALL SUB. 'EDIT' TO SELECT 10 ANGLES FOR REQUESTED 002020
00 PROFILES MEASURES. 002040
00 IEDIT>0 --- WRITE ALL ANGLES ON FILE 'TAPE2' FOR REQUESTED PROFILE 002060
00 MEASURES. 002080
00 MEAS(1)>0 --- COMPUTE 'PNLT' AND 'PNLT' PROFILE DATA. 002100
00 MEAS(2)>0 --- COMPUTE 'AL' PROFILE DATA. 002120
00 MEAS(3)>0 --- COMPUTE 'ALT' PROFILE DATA. 002140
00 MEAS=0 OR BLANK --- CORRESPONDING PROFILE DATA ARE OMITTED. 002160
00 FMXER --- MAXIMUM ANGLE SELECTION ERROR PERMITTED WITHOUT AN ERROR 002180
00 MESSAGE BEING PRINTED. 002200
00 IERR --- FLAG SET BY SUBROUTINE 'KSPLN'; IF IERR>0, OMIT COMPUTATIONS 002220
00 FOR THIS 'ACC'. 002240
00 SX(22) --- STANDARD DISTANCE DATA USED TO COMPUTE PROFILE DATA. 002260
00 SPLX(19,24) --- ARRAY USED BY SUBROUTINE 'CDIST' FOR TEMPORARY 002280

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C          STORAGE OF SPL DATA FOR EACH PROFILE DISTANCE. 002300
C PNLX(19,22,2) --- ARRAY CONTAINING 'PNL' PROFILE DATA FOR 19 ANGLES 002320
C          AND 22 PROFILE DISTANCES FOR 2 POWER SETTINGS. 002340
C PNLTX(19,22,2) -- ARRAY CONTAINING 'PNLT' PROFILE DATA FOR 19 ANGLES 002360
C          AND 22 PROFILE DISTANCES FOR 2 POWER SETTINGS. 002380
C ALX(19,22,2) ---- ARRAY CONTAINING 'AL' PROFILE DATA FOR 19 ANGLES 002400
C          AND 22 PROFILE DISTANCES FOR 2 POWER SETTINGS. 002420
C ALT(19,22,2) --- ARRAY CONTAINING 'ALT' PROFILE DATA FOR 19 ANGLES 002440
C          AND 22 PROFILE DISTANCES FOR 2 POWER SETTINGS. 002460
C SENXD(19,22,4) --- ARRAY CONTAINING INTERPOLATED PROFILE DATA FOR 002480
C          PNL, PNLT, AL, AND ALT FOR 19 ANGLES AND 22 002500
C          DISTANCES. 002520
C IPRCK(6) --- PROGRAM FLAG SET EQUAL TO ONE WHEN THE CORRESPONDING 002540
C          REFERENCE DATASET IS REQUIRED TO INTERPOLATE DATA. 002560
C DMY(202) --- DUMMY ARRAY USED BY SUBROUTINE 'PLT'. 002580
C          002600
C THE FOLLOWING PARAMETERS ARE READ FROM THE NORMALIZED 'COMDECKS' 002620
C (REFERENCE DATASET) BY SUBROUTINE 'RSPN': 002640
C          002660
C RUN(6) --- 2 CHARACTER RUN NUMBER FOR EACH 'OPC'. 002680
C TEST(6) --- 10 CHARACTER TEST NUMBER FOR EACH 'OPC'. 002700
C FSPL(19,24,6) --- NORMALIZED SPL DATA FOR EACH 'OPC'. 002720
C PS(6,6) --- POWER SETTING DATA FOR EACH 'OPC'. 002740
C OPD(2,6) --- POWER DESCRIPTION DATA FOR EACH 'OPC' (20 CHARACTERS). 002760
C TT(6,6) --- TEST TITLE INFORMATION FOR EACH 'OPC'; 2 LINES OF 002780
C          25 CHARACTERS; FIRST LINE IS THE AIRCRAFT NAME. 002800
C          002820
C          DIMENSION SENX(19,22,12),IREQ(2,6),NR(17,3),TYPE(3),FREQ(24) 002840
C          COMMON M,MM,IL,IH,NC,L,N,LD,DIST,MEAS(3),FSPL(19,24,6),SPLX(19,24) 002860
C          1,PNLX(19,22,2),PNLT(19,22,2),ALX(19,22,2),ALT(19,22,2), 002880
C          2 SENXD(19,22,4),IR(19),IPRCK(6),DMY(202) 002900
C          COMMON /ATTNC/ ATNC(24),ATNB(24),SX(22) 002920
C          COMMON /HEADC/ TEST(6),TT(6,6),DATE,RUN(6),IPAGE,IVER,ACC,OPC(6), 002940
C          1 IT,P1,IHM,ITa,P8,IH3,FIMPRS,PV,CRI,PS(6,6),OPD(2,6),OPSC(6),DELN 002960
C          2, PSC(6),PSU,NP,PSIF(6),FSCF(6),NRC(6),ICC,OPCDM,OPD1,OPD2 002980
C          3,COMD(6),RUNC(6),IC,DATN(6),IFC(6),IFCC,IFI(6),IFII 003000
C          EQUIVALENCE (PNLX(1,1,1),SENX(1,1,1)),(SPLX(1,1),NR(1,1)) 003020
C          DATA BLK/1H /,ASK/1H*/ 003040
C PREFERRED BAND CENTER FREQUENCY DATA IN 'HZ' (USED FOR PRINTOUT ONLY) 003060
C          DATA FREQ / 8H 50 ,8H 63 ,8H 80 ,8H 100 ,8H 125 003080
C          3,8H 160 ,8H 200 ,8H 250 ,8H 315 ,8H 400 ,8H 500 003100
C          4,8H 630 ,8H 800 ,8H 1000 ,8H 1250 ,8H 1600 ,8H 2000 003120
C          5,8H 2500 ,8H 3150 ,8H 4000 ,8H 5000 ,8H 6300 ,8H 8000 003140
C          6,8H10000 /,IVER/1/,DELN/0.0/,ACC/1H /,NN/6/,NPM/6/,IRD/2/ 003160
C          7,TYPE/5HPNLT/,5HAL: ,5HAL: /,DFMXER/5.0/ 003180
C          8,RUNC/2H01,2H02,2H03,2H04,2H05,2H06/,ASK3/3H***/ 003200
C          IL=1 003220
C          IH=24 003240
C          M=3 003260
C          MM=1 003280
C          NC=19 003300
C          DIST=250.0 003320
C COMPUTE STANDARD DISTANCE DATA USED TO COMPUTE PROFILE DATA. 003340
C          DO 5 I=1,22 003360
C          FN=FLOAT(I+22)*0.1 003380

```

5 SX(I)=10.0**FN	003400
C READ DATE IN FORM: 12 APR 77	003420
C READ 'JOB CONTROL CARD'	003440
READ(5,1060) DATE,IPR,IEDIT,MEAS,FMXER	003460
IF (FMXER .LT. 0.01) FMXER=0FMXER	003480
IF (MEAS(1)+MEAS(2)+MEAS(3)) 6,6,10	003500
C IF ALL MEAS(I)=0, COMPUTE ALL 3 MEASURES.	003520
6 DO 7 I=1,3	003540
7 MEAS(I)=1	003560
C INITIALIZE CODE SHEET PARAMETERS:	003580
10 DO 15 I=1,NPM	003600
OPCC(I)=BLK	003620
IFC(I)=0	003640
15 PSC(I)=BLK	003660
DELNO=DELN	003680
DACC=ACC	003700
C CALL SUBROUTINE 'TESTN' TO READ CODE SHEET PARAMETERS FOR AIRCRAFT	003720
C TO BE ANALYZED:	003740
CALL TESTN(NPM)	003760
C IF ACC=ASK, JOB WILL BE TERMINATED.	003780
IF (ACC .EQ. ASK) GO TO 999	003800
C IF ACC=***, NO NEW NORMALIZED REFERENCE DATA ARE READ UNLESS	003820
C 'IFCC' > 'IFII'; DATA FROM THE PREVIOUS SET WILL BE USED BELOW.	003840
C IFCC --- NUMBER OF SPECIAL CASE (NO INTERPOLATION PERMITTED) POWER	003860
C SETTINGS.	003880
IF (ACC .NE. ASK3) GO TO 25	003900
ACC=DACC	003920
IF (IFCC .LE. IFII) GO TO 35	003940
C INITIALIZE REFERENCE FILE PARAMETERS:	003960
25 DELNO=0.0	003980
DO 30 I=1,NN	004000
PS(1,I)=BLK	004020
PS(2,I)=BLK	004040
OPC(1)=BLK	004060
TEST(I)=BLK	004080
IFI(I)=0	004100
30 RUN(1)=BLK	004120
C CALL SUBROUTINE 'RSPLN' TO READ THE NORMALIZED DATASETS:	004140
CALL RSPLN(NN,IERR)	004160
IF (IERR) 35,35,10	004180
35 IF (NP .GT. 0) GO TO 45	004200
C FOR NP=0, COMPUTE THE PROFILE DATA FOR ALL REFERENCE FILE POWER	004220
C CONDITIONS; INITIALIZE THE REQUIRED 'ID' ARRAYS HERE:	004240
NP=N	004260
PSU=PS(2,1)	004280
IFCC=IFII	004300
DO 40 I=1,N	004320
PSC(I)=PS(1,I)	004340
NRC(I)=I	004360
IREQ(1,I)=I	004380
IREQ(2,I)=0	004400
IFC(I)=IFI(I)	004420
40 OPCC(I)=OPC(I)	004440
GO TO 50	004460
C CALL SUBROUTINE 'RANK' TO DETERMINE THE INDICIES OF THE REFERENCE	004480

C DATA REQUIRED TO INTERPOLATE EACH OUTPUT POWER SETTING; STORE THE	004500
C INDICES IN ARRAY 'IREQ':	004520
45 CALL RANK(IREQ,IERR)	004540
IF (IERR) >0,50,10	004560
50 IPAGE=0	004580
C CALL SUBROUTINE 'TITPG' TO PRINT COVER PAGE:	004600
IF (IPR .GT. 0) CALL TITPG	004620
C CALL SUBROUTINE 'SUMRY' TO PRINT THE SUMMARY PAGE:	004640
CALL SUMRY(IREQ,IEDIT,FMXER)	004660
C 'D1' IS A CONSTANT USED IN SUBROUTINE 'CDIST' TO COMPUTE 'SPL' DATA	004680
C AT STANDARD PROFILE DISTANCES:	004700
D1=10.0*ALOG10(FIMPR8)+20.0*ALOG10(DIST)	004720
C DEFINE FLAG 'IPRCK' AS FOLLOWS:	004740
C IPRCK(L)=0 --- L-TH REFERENCE DATASET NOT USED IN COMPUTATIONS.	004760
C IPRCK(L)=1 --- L-TH REFERENCE DATASET IS USED IN COMPUTATIONS.	004780
DO 55 L=1,N	004800
IPRCK(L)=0	004820
DO 55 IC=1,NP	004840
IF (IREQ(1,IC) .EQ. L) IPRCK(L)=1	004860
IF (IREQ(2,IC) .EQ. L) IPRCK(L)=1	004880
55 CONTINUE	004900
C DELND IS ALWAYS 0.0 FOR THE FIRST SET OF DATA FOR EACH 'ACC':	004920
U=DELND-DELND	004940
IF (ABS(D) .LT. .001) GO TO 70	004960
C ADD 'DELND' TO THE REFERENCE SPL DATA:	004980
DO 65 L=1,N	005000
IF (IPRCK(L)) 65,65,58	005020
58 DO 60 I=1,NC	005040
DO 60 J=IL,IM	005060
60 FSPL(I,J,L)=FSPL(I,J,L)+D	005080
65 CONTINUE	005100
70 IF (IPR) 160,160,80	005120
C SET UP AND PRINT THE NORMALIZED REFERENCE DATA PAGES:	005140
80 ID=ICV(DIST)	005160
DO 150 L=1,N	005180
IF (IPRCK(L)) 150,150,85	005200
85 IPAGE=IPAGE+1	005220
C PRINT NORMALIZED DATA PAGE HEADINGS:	005240
CALL HEADS(1)	005260
C PRINT NORMALIZED 'SPL' DATA:	005280
DO 100 J=IL,IM,MM	005300
DO 90 I=1,NC	005320
C CONVERT ARRAY 'FSPL(I,J,L)' DATA TO INTEGER VALUE.	005340
IR(I)=ICV(FSPL(I,J,L))	005360
90 CONTINUE	005380
WRITE(6,2200) FREQ(J),IR	005400
100 CONTINUE	005420
DO 120 I=1,NC	005440
D=0.0	005460
DO 110 J=IL,IM,MM	005480
D=D+10.0*(FSPL(I,J,L)/10.0)	005500
110 CONTINUE	005520
C 'D' IS THE OVERALL SOUND PRESSURE LEVEL:	005540
D =10.0*ALOG10(D)	005560
IR(I)=ICV(D)	005580

120 CONTINUE	005600
WRITE(6,2150)	005620
C PRINT OVERALL 'SPL':	005640
WRITE(6,2100) IR	005660
WRITE(6,2005)	005680
150 CONTINUE	005700
150 IPAGE=0	005720
C LABEL 500 LOOP --- COMPUTE THE PROFILE DATA FOR EACH OF THE 'NP'	005740
C POWER SETTINGS (PSC):	005760
DO 500 IC=1,NP	005780
IPAGE=IPAGE+1	005800
ICC=NRC(IC)	005820
IC1=IC-1	005840
C LABEL 300 LOOP --- COMPUTE THE PROFILE DATA FOR THE REFERENCE	005860
C POWER CONDITIONS REQUIRED TO INTERPOLATE THE	005880
C PSC(IC) PROFILE DATA; THESE DATA MAY HAVE BEEN	005900
C COMPUTED FOR A PREVIOUS 'PSC':	005920
DO 300 II=1,2	005940
L=IREQ(II,IC)	005960
IF (L) 300,300,200	005980
200 IF (IC .EQ. 1) GO TO 250	006000
IF (L .EQ. IREQ(II,IC1)) GO TO 300	006020
C CALL SUBROUTINE 'CDIST' TO CONTROL THE COMPUTATION AND PRINTOUT OF	006040
C THE PROFILE DATASET COMPUTATIONS:	006060
C IRL IS THE INDEX OF THE STANDARD DISTANCE SET, SX(II), CORRESPONDING	006080
C TO THE REFERENCE DISTANCE, DIST.	006100
250 CALL CDIST(IRD,D1,II)	006120
300 CONTINUE	006140
C AFTER LABEL 300 THE PROFILE DATA REQUIRED TO INTERPOLATE THE DATA	006160
C FOR PSC(IC) IS STORED IN ARRAY SENX(19,22,12):	006180
L1=IREQ(1,IC)	006200
L2=IREQ(2,IC)	006220
IF (L1 .GT. 0 .AND. L2 .GT. 0) GO TO 320	006240
J1=2	006260
IF (L1) 310,310,370	006280
310 IF (L2) 500,500,380	006300
C 'IC' IS THE INDEX OF ARRAY 'PSCF' OF RANK 'IC'.	006320
C 'L1' AND 'L2' ARE INDICES OF ARRAY 'PSIF' FOR DATA TO BE	006340
C INTERPOLATED.	006360
320 J=0	006380
JJ1=1	006400
IF (IPR .GT. 0 .AND. MEAS(1) .GT. 0) GO TO 315	006420
J=9	006440
JJ1=3	006460
C LABEL 350 LOOP --- INTERPOLATE PROFILE DATA FOR 'PSC(IC)':	006480
315 DO 350 JJ=JJ1,7,2	006500
J2=(JJ-1)/2	006520
C J2=0 FOR 'PNL' DATA	006540
IF (J2) 330,330,335	006560
C SET UP DISTANCE INDICES FOR ALL 22 DISTANCES:	006580
330 K1=1	006600
K2=22	006620
GO TO 345	006640
335 IF (MEAS(J2)) 340,340,330	006660
C COMPUTE THE PROFILE DATA FOR THE REFERENCE DISTANCE ONLY:	006680

```

340 K1=IRD                                006700
      K2=IRD                                006720
345 J=J+1                                  006740
      J1=JJ+1                              006760
C   INTERPOLATE PROFILE DATA FOR EACH DISTANCE AND ANGLE: 006780
      DO 350 K=K1,K2                      006800
      DO 350 I=1,19                       006820
350 SENX(I,K,J)=((SENX(I,K,J1)-SENX(I,K,JJ))/(PSIF(L2)-PSIF(L1))) 006840
      1*(PSCF(ICC)-PSIF(L1))*SENX(I,K,JJ) 006860
C   ARRAY 'SENX(I,K,J)' FOR J=9,12 CONTAINS THE PNLX(19,22) TO 006880
C   ALTX(19,22) DATA AS REQUESTED.      006900
      L=0                                  006920
      JI=1                                 006940
      J1=10                               006960
      J2=12                               006980
      GO TO 400                            007000
C   LABEL 370--NO INTERPOLATION--PNLT, AL AND ALT STORED IN SENX(I,K,J) 007020
C   FOR J=3,5 AND 7.                     007040
370 J1=3                                  007060
      J2=7                                007080
      L=L1                                 007100
      GO TO 400                            007120
C   LABEL 380--NO INTERPOLATION--PNLT, AL AND ALT STORED IN SENX(I,K,J) 007140
C   FOR J=4,6 AND 8.                     007160
380 J1=4                                  007180
      J2=8                                007200
      L=L2                                 007220
400 IF (IEDIT) 440,430,440               007240
C   CALL SUBROUTINE 'EDIT' TO SELECT THE 10 ANGLES WHICH BEST DEFINE THE 007260
C   PROFILE DATA AT THE REFERENCE DISTANCE: 007280
430 CALL EDIT(IRD,J1,J2,JI,ACC,PSC(ICC),PSU,FMXR) 007300
C   IF 'NR(I,J)'>9 FOR I= ANGLES 10 TO 170 AND J= MEASURE INDEX, 007320
C   THEN THE I-TH ANGLE IS INCLUDED IN THE PROFILE DATASET FOR THE J-TH 007340
C   MEASURE.                              007360
C   CALL SUBROUTINE 'PPFDT' TO WRITE THE 'PNLT', 'AL' AND/OR 'ALT' 007380
C   PROFILE DATASETS ON FILE 'TAPE2' AND PRINT THE TAB LISTING ON THE 00. 70
C   OUTPUT FILE (TAPE6):                  007420
440 CALL PPFDT(J1,J2,JI,L1,L2,IPR,IEDIT) 007440
C   CALL SUBROUTINE 'PLT' TO PRINT A TAB PLOT OF ANGLE VERSUS NOISE LEVEL 007460
C   FOR 'PNLT', 'AL' AND 'ALT' PROFILE DATA FOR THE REFERENCE DISTANCE: 007480
      IF (IPR) 500,500,450                007500
450 CALL PLT(IRD,J1,J2,JI)               007520
      WRITE(6,2500)                       007540
C   LABEL 490 LOOP --- LIST, BELOW THE TAB PLOT, ALL ANGLES FOR WHICH 007560
C   PROFILE DATA WERE WRITTEN ON FILE 'TAPE2': 007580
      DO 490 J=1,3                         007600
      IF (IEDIT) 460,470,480              007620
460 WRITE(6,2510) TYPE(J)                007640
      GO TO 490                            007660
470 IF (MEAS(J)) 460,460,475             007680
475 WRITE(6,2520) TYPE(J),(NR(I,J),I=1,8) 007700
      GO TO 490                            007720
480 IF (MEAS(J)) 460,460,485             007740
485 WRITE(6,2530) TYPE(J)                007760
490 CONTINUE                             007780

```

500 CONTINUE	007800
GO TO 10	007820
999 WRITE(6,2400)	007840
STOP	007860
C*****	
C*****	007880
1060 FORMAT(A10,5I2,F5.0)	007900
2005 FORMAT(12X,1H(,110(14-),1H))	007920
2100 FORMAT(12X,* (OVERALL*,3X,19I5,*)*)	007940
2150 FORMAT(12X,* (*,110X,*)*)	007960
2200 FORMAT(12X,* (*, 3X,A8, 2X,19I5,*)*)	007980
2400 FORMAT(*1 END OF OMEGA11 JOB*)	008000
2500 FORMAT(/5X,*PROFILE DATA WRITTEN ON FILE 'TAPE2' AS FOLLOWS:*)	008020
2510 FORMAT(5X,A5,2X,*NO DATA WRITTEN*)	008040
2520 FORMAT(5X,A5,2X,*DATA FOR ANGLES: 0*,8I4,* 180*)	008060
2530 FORMAT(5X,A5,2X,*DATA FOR ALL 19 ANGLES*)	008080
C*****	008100
C*****	008120
END	008140
	008160

TH=15.0	009290
IFCC=0	009300
C READ FIRST CODE SHEET CARD.	009320
READ(5,1000) ACC,IT8,P8,IM8,PV,CRI,DELN	009340
C AN END OF FILE ON UNIT 5 WILL TERMINATE THE JOB.	009360
IF (EOF(5)) 1,2	009380
C IF ACC=ASK, JOB WILL BE TERMINATED BY THE MAIN DECK.	009400
1 ACC=ASK	009420
RETURN	009440
C SET DEFAULT VALUES FOR 'PV', 'CRI', 'IT8', 'P8' AND 'IM8'.	009460
2 IF (PV .EQ. BLK) PV=W	009480
IF (CRI .EQ. BLK) CRI=ZERO	009500
IF (IT8 .LT. 1) IT8=59	009520
IF (IM8 .LT. 1) IM8=70	009540
IF (P8 .LT. 0.1) P8=29.92	009560
IF (ABS(DELN) .LT. .001) DELN=0.0	009580
TH8=(FLOAT(IT8)-32.0)*EX	009600
C READ SECOND CODE SHEET CARD FOR AIRCRAFT 'ACC'	009620
READ(5,1030) NP,PSU,(PSC(I),IFC(I),OPCC(I),I=1,NP)	009640
IF (NP .GT. NPM) GO TO 60	009660
IF (NP) 20,20,2	009680
5 DO 10 I=1,NP	009700
IF (OPCC(I) .EQ. BLK) OPCC(I)=OPCCD(I)	009720
IF (IFC(I) .GT. 0) IFCC=IFCC+1	009740
C IFCC COUNTS THE NUMBER OF A/B, WET, ETC. SPECIAL CASES.	009760
10 CONTINUE	009780
C 'FIMPR8' IS THE IMPEDANCE RATIO FOR NORMALIZED AND PROFILE CONDITIONS	009800
20 FIMPR8=SQRT((273.0+TH)/(273.0+TH8))*P8/P1	009820
IF (IT8 .EQ. 59 .AND. IM8 .EQ. 70) GO TO 30	009840
C COMPUTE ATMOSPHERIC ABSORPTION COEFFICIENTS FOR PROFILE DATASET	009860
C CONDITIONS IF WEATHER IS NOT STANDARD DAY.	009880
CALL ALPH(FLOAT(IM8),FLOAT(IT8),ATN8,IL,IM)	009900
GO TO 35	009920
C ARRAY ATN(I) CONTAINS THE ATMOSPHERIC ABSORPTION DATA FOR STANDARD	009940
C DAY CONDITIONS.	009960
30 DO 32 I=1,24	009980
32 ATN8(I)=ATN(I)	010000
35 DO 40 I=1,24	010020
40 ATN8(I)=ATN(I)	010040
RETURN	010060
60 WRITE(6,2100) NP,NPM	010080
75 ACC=ASK	010100
1000 FORMAT(A3,2X,15,F5.0,I5,1X,A1,1X,A1,1X,F5.0)	010120
1030 FORMAT(I1,A6,3X,7(A5,1X,11,1X,A2))	010140
2100 FORMAT(*1 TERMINATE JOB BECAUSE NP>NPM; NP=*,I2,* NPM=*,I2)	010160
RETURN	010180
END	010200

```

SUBROUTINE ALPHA(REL,TEMP,ABC,IL,IM)
*****
JECK 2  SUBROUTINE 'ALPH'
THIS SUBROUTINE CALLED FROM SUBROUTINE 'TESTN' COMPUTES THE
ATMOSPHERIC ABSORPTION COEFFICIENTS.

IN THIS SUBROUTINE, THE PROCEDURE USED TO CALCULATE THE COEFFICIENTS
OF ATMOSPHERIC ABSORPTION IS THE SAME AS DESCRIBED IN SAE ARP 865A.

SUBROUTINE ALPHA(REL,TEMP,ABC,IL,IM)
WHERE.....
REL - RELATIVE HUMIDITY IN PERCENT
TEMP - TEMPERATURE IN DEGREES FAHRENHEIT
ABC - ARRAY CONTAINING THE COMPUTED COEFFICIENTS OF ATMOSPHERIC
      ABSORPTION IN DB PER 1000 FEET
IL - FIRST BAND FOR WHICH ABC IS COMPUTED
IM - LAST BAND FOR WHICH ABC IS COMPUTED
*****
      DIMENSION X(29),Y(29),          ABC(24), FREQ3(24)
      COMMON M,MM
      F(TEMP,REL)=0.01064764002*REL*10.0**(.02208074*TEMP
1-0.00009589*TEMP**2+0.000003*TEMP**3)
      DATA FREQ3/50.0,53.0,60.0,100.0,125.0,160.0,200.0,250.0,315.0,
A400.0,500.0,630.0,800.0,1000.0,1250.0,1600.0,2000.0,2500.0,3150.0,
B4000.0,4470.0,5612.0,7096.0,8943.0/
      DATA X/0.0,0.25,0.50,0.6,0.7,0.8,0.9,1.0,1.1,1.2,1.3,1.5,1.7,2.0,
A2.3,2.5,2.8,3.0,3.3,3.6,4.15,4.45,4.8,5.25,5.7,6.05,6.5,7.3,10.0/
      DATA Y/0.0,0.315,0.700,0.84,0.93,0.975,0.996,1.0,0.97,0.9,0.84,
A0.75,0.67,0.57,0.495,0.45,0.4,0.37,0.33,0.3,0.26,0.245,0.23,0.22,
B0.21,0.205,0.2,0.2,0.2/
      HA=F(TEMP,REL)
      FT1=0.003786/85337*10.0**(.004583333333*TEMP)
      FT2=2.49315913602E-8*10.0**(.0000633*TEMP)
      DO 100 J=IL,IM,MM
      FREQ=FREQ3(J)
      HMX=(FREQ/1010.0)**0.5
      HN=HA/HMX
      IF (HN-6.50) 30,20,20
20  ALN=0.2
      GO TO 60
30  IF (HN) 40,40,50
40  ALN=0.0
      GO TO 60
50  ALN=ATKN(X,Y,29,2,HN)
60  ABC(J)=FREQ*FT1*ALN+FT2*(FREQ**2.05)
100 CONTINUE
      RETURN
*****
NOTE:
THE FOLLOWING F(TEMP,REL) IS THE SAME AS ABOVE:
F(TEMP,REL)=10.0**(.ALOG10(REL)-1.9727+6.44*0.02208074*TEMP-

```

AD-A127 419

COMPUTER PROGRAMS FOR PRODUCING SINGLE-EVENT AIRCRAFT
NOISE DATA FOR SPEC. (U) DAYTON UNIV OH RESEARCH INST
H T MOHLMAN APR 83 UDR-TR-82-30 AFAMRL-TR-83-020

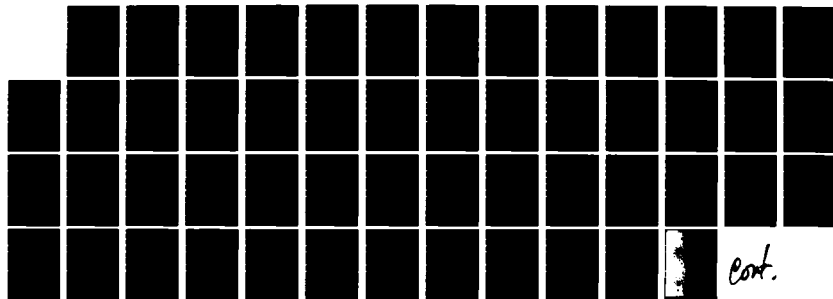
4/5

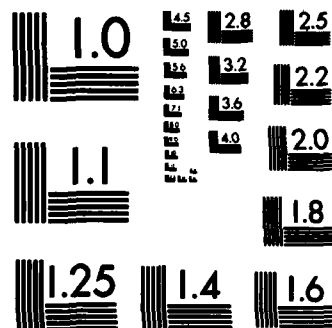
UNCLASSIFIED

F33615-78-C-0500

F/G 9/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

C	1-0.00009589*TEMP**2+0.0000003*TEMP**3)	011320
C	ALMX=FT1*FREQ IS THE SAME AS THE FOLLOWING:	011340
C	ALMX=10.0** (ALOG10(FREQ)-2.4215+0.281*TEMP/60.0)	011360
C	FT2*(FREQ**2.05) IS THE SAME AS THE FOLLOWING:	011380
C	10.0** (2.05*ALOG10(FREQ/1000.0)+0.000633*TEMP-1.45325)	011400
C	THE FOLLOWING TWO CARDS ARE REPLACED BY LABEL 60 IN THE PROGRAM:	011420
C	60 ALM=ALMX*ALN	011440
C	ABC(J)=ALM+10.0** (2.05*ALOG10(FREQ/1000.0)+0.000633*TEMP-1.45325)	011460
C		011480
	END	011500

```

      FUNCTION ATKN(X,Y,N,K,XI)                                011520
      .....                                                    011540
      .....                                                    011560
      DECK 3  FUNCTION 'ATKN'                                  011580
      THIS FUNCTION IS CALLED ONLY FROM SUBROUTINE 'ALPH'.      011600
                                                                011620
      ATKN      AITKEN INTERPOLATING FUNCTION                  011640
                                                                011660
      USAGE...                                                011680
                                                                011700
      Z=ATKN(X,Y,N,K,XI)                                       011720
                                                                011740
                                                                011760
      WHERE...                                                  011780
                                                                011800
      X - TABLE OF INDEPENDENT VARIABLE VALUES,              011820
            (MUST BE INCREASING FOR THIS REVISED ATKN ROUTINE) 011840
      Y - TABLE OF DEPENDENT VARIABLE VALUES.                011860
      N - NO. OF POINTS IN TABLES X AND Y.                    011880
      K - DEGREE OF INTERPOLATION DESIRED.                      011900
      XI- X-VALUE FOR WHICH INTERPOLATION IS DESIRED.           011920
                                                                011940
      THE INTERPOLATED VALUE IS RETURNED AS THE FUNCTION VALUE. 011960
      .....                                                    011980
      .....                                                    012000
      .....                                                    012020
      DIMENSION  X(N), Y(N),XX(13),YY(13)                      012040
      DATA      KMAX/ 12/                                       012060
                                                                012080
      IF ( K .GT. KMAX .OR. K .LE. 0 )      GO TO 300           012100
                                                                012120
      K1=K+1                                                      012140
      10 IF (XI-X(1)) 20,20,30                                     012160
      20 LL=0                                                       012180
      GO TO 200                                                      012200
      30 IF (X(N)-XI) 40,40,50                                     012220
      40 LL=N-K1                                                    012240
      GO TO 200                                                      012260
      50 LL=1                                                       012280
      LU=N                                                           012300
      60 IF (LU-LL-1) 180,180,70                                    012320
      70 LI=(LL+LU)/2                                                012340
      IF (X(LI)-XI) 80,80,90                                       012360
      80 LL=LI                                                       012380
      GO TO 60                                                       012400
      90 LU=LI                                                       012420
      GO TO 60                                                       012440
      180 LL=LL-(K1+1)/2                                             012460
                                                                012480
      IF (LL) 20,200,190                                           012500
      190 IF (LL+K1-N) 200,200,40                                   012520
      200 DO 210 I=1,K1                                             012540
      I1=LL+I                                                        012560
      XX(I)=X(I1)-XI                                                012580
      210 YY(I)=Y(I1)                                               012600

```

```

DO 220 I=1,K
DO 220 J=I,K
220 YY(J+1)=(1./(XX(J+1)-XX(I)))*(YY(I)*XX(J+1)-YY(J+1)*XX(I))
   ATKN=YY(K1)
   RETURN
300 PRINT 1000, K
1000 FORMAT (3H0K=,I12,33H IS INCORRECT FOR FUNCTION ATKN)
CALL SYSTEM(200,0)
END

```

```

012620
012640
012660
012680
012700
012720
012740
012760
012780
012800

```

```

SUBROUTINE HEADS(IPH)                                012820
C*****                                              012840
C*****                                              012860
C*****                                              012880
C DECK 4 HEADS---PRINTS PAGE HEADINGS                012900
C THIS SUBROUTINE CALLED FROM ROUTINES 'OMEGA11',      'COIST' AND 012920
C 'PLT' PRINTS THE BLOCK HEADINGS AT THE TOP OF ALL OUTPUT PAGES. 012940
C*****                                              012960
C THE PAGE HEADING BLOCKS ARE EITHER 112 CHARACTERS WIDE (FORMAT LABELS 012980
C 2000 ETC.) OR 126 CHARACTERS WIDE (PROFILE DATA; LABELS 3000 ETC.). 013000
C*****                                              013020
C 'IPH' IS THE PAGE HEADING CODE.                    013040
C*****                                              013060
C*****                                              013080
C*****                                              013100
      DIMENSION S1C(6),PAGE( 6),PAG(15),
1      S17(4),S18(2),S19(5)                        013120
      COMMON M,IDM(3),NC,L,N,ID                     013140
      COMMON /HEADC/ TEST(6),TT(6,6),DATE,RUN(6),IPAGE,IVER,ACC,OPC(6), 013160
1      IT,P1,IMH,IT8,P8,IM8,FIMPR3,PV,CRI,PS(6,6),OPD(2,6),OPCC(6),DELN 013200
2      PSC(6),PSU,NP,PSIF(6),PSCF(6),NRC(6),ICC,OPCDM,OPU1,OPD2        013220
3      COMD(6),RUNC(6),IC,DATN(6),IFC(6),IFCC,IFI(6),IFII              013240
      DATA S17/8HPERCEIVE,8MD NOISE ,8HLEVEL (P, 013260
2      4HND8)/, S18/8HTONE-COR,84RECTED, /, S19/ 8HA-WEIGHT,8HED OVERA 013280
3      3, 8HLL SOUND, 8H LEVEL (, 4HDBA)/, , 013300
4      S1C/8HNOISE LE,8HVEL AS A,8H FUNCTIO,8HN OF ANG,84LE AROUN, 013320
5      8HU SOURCE/,BLK/1H /,PAGE/1HC,1HD,1HE,1HF,1HG,1HJ/ 013340
      DATA PAG/2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2410,2411, 013360
12H12,2H13,2H14,2H15/ 013380
      IP=IPH 013400
      IF (IP-1) 1,1,5 013420
1      WRITE(6,2000) 013440
      GO TO 20 013460
5      WRITE(6,3000) 013480
      GO TO (20,50,60,70,80,55),IP 013500
C PRINT NORMALIZED DATA: 013520
20 WRITE(6,2010) 013540
      GO TO 150 013560
C PRINT 'PNL' PROFILE DATA PAGE: 013580
50 WRITE(6,3010) S17,BLK,BLK,BLK 013600
      GO TO 100 013620
C PRINT 'PNLT', 'AL' AND 'ALT' PLOT PAGE: 013640
55 WRITE(6,3010) S1C,BLK 013660
      WRITE(6,3100) IVER 013680
      WRITE(6,3210) ID,TEST(1) 013700
      GO TO 102 013720
C PRINT 'PNLT' PROFILE DATA PAGE: 013740
60 WRITE(6,3010) S18,S17,BLK 013760
      GO TO 100 013780
C PRINT 'AL' PROFILE DATA PAGE: 013800
70 WRITE(6,3010) S19,BLK,BLK 013820
      GO TO 100 013840
C PRINT 'ALT' PROFILE DATA PAGE: 013860
80 WRITE(6,3010) S18,S19 013880
      GO TO 100 013900

```



```

C LABELS 100 TO 115 ---> PRINT THE REMAINDER OF THE HEADING BLOCK FOR 013920
C THE PROFILE DATA: 013940
100 WRITE(6,3100) IVER 013960
    WRITE(6,3200) TEST(1) 013980
102 WRITE(6,3300) HUNC(1C),ACC 014000
    WRITE(6,3400) (TT(I,1),I=1,3),OPD1,OPD2,IT8,OPCDM 014020
    1, (TT(I,1),I=4,5),PSC(ICC),PSU,P8,PV 014040
    IF (L) 105,105,110 014060
105 WRITE(6,3500) BLK,BLK,IM6,DATE 014080
    WRITE(6,3520) BLK,BLK, PAGE(IP),PAG(IPAGE) 014100
    GO TO 115 014120
110 WRITE(6,3500) PS(3,L),PS(4,L),IM6,DATE 014140
    WRITE(6,3520) PS(5,L),PS(6,L),PAGE(IP),PAG(IPAGE) 014160
115 WRITE(6,3015) 014180
    IF (IP .EQ. 6) GO TO 999 014200
    WRITE(6,3030) (I,I=10,180,10) 014220
    WRITE(6,3005) 014240
    GO TO 999 014260
C LABELS 160 TO 500 ---> PRINT THE REMAINDER OF THE HEADING BLOCK FOR 014280
C 112 CHARACTER HEADINGS: 014300
150 WRITE(6,2100) IVER 014320
    WRITE(6,2200) ID,TEST(1) 014340
    WRITE(6,2300) BLK,ACC 014360
C PRINT REFERENCE (NORMALIZED) WEATHER DATA: 014380
    WRITE(6,2400) (TT(I,1),I=1,3),OPD(1,L),OPD(2,L),IT, OPC(L), 014400
    1 (TT(I,1),I=4,5),PS(1,L),PS(2,L),P1,PV 014420
    WRITE(6,2505) PS(3,L),PS(4,L),IMH,DATE 014440
    WRITE(6,2510) PS(5,L),PS(6,L),DELN,PAGE(IP),PAG(IPAGE) 014460
    WRITE(6,2015) 014480
    WRITE(6,2030) (I,I=10,180,10) 014500
    GO TO 900 014520
900 WRITE(6,2005) 014540
999 RETURN 014560
2000 FORMAT(1H1,11X,1H(,110(1H-),1H)) 014580
2005 FORMAT(12X,1H(,110X,1H)) 014600
2010 FORMAT(12X,*( TABLE: NORMALIZED SOUND PRESSURE LEVEL (DB)*,41X, 014620
    1 *)IDENTIFICATION*,7X,*)*) 014640
2015 FORMAT( 12X,1H(,110(1H-),1H)) 014660
2030 FORMAT(12X,*( BAND CENTER*, 41X,*ANGLE (DEGREES)* ,42X,*)*/ 014680
    112X,*( FREQ (HZ) *,5X,1H0,1815,* )*) 014700
2100 FORMAT(12X,*(*,10X,*1/3 OCTAVE BAND*,62X,*) OMEGA 11.*,11,11X,*)*) 014720
2200 FORMAT(12X,*(*,10X,*DISTANCE =*,15,* FEET *,55X,*) TEST *,A10, 014740
    1 6X,*)*) 014760
2300 FORMAT(12X,*(*,87(1H-),*) RJN *,A2,14X,*)*/ 12X,*( NOISE SOUR 014780
    1CE/SUBJECT*,7X, *( OPERATION*,10X,*) METEOROLOGY*,14X, 014800
    2 *) AIRCRAFT CODE *,A3,3X,*)*) 014820
2400 FORMAT(12X,*(*, 3X,2A9, A7, 1X,*(*, 3X,2A10,5X,* )*,3X,*TEMP*,6X, 014840
    1**,15,* F*, 6X,*) OPERATION CODE *,A2,3X,* )*/ 12X,*(*, 3X,2A9,A7 014860
    2, 1X,*(*, 3X,2A6,13X,* )*, 3X,*BAR PRESS =*, F5.2,* IN HG*, 2X, 014880
    3*) PROFILE VERSION *,A1,* )*) 014900
2505 FORMAT(12X,*(*, 29X, *(*, 3X,2A6,13X,* )*, 3X,*REL HUMID 014920
    1 =*,15,* X*, 6X,*) *,A10,11X,*)*) 014940
2510 FORMAT(12X,1H(,29X,1H(,3X,2A6,13X, 12H ) DELTA N =, F6.1, 3H DB, 014960
    1 8X,0H) PAGE ,A1,A2,12X,1H)) 014980
3000 FORMAT(1H1, 4X,1H(,124(1H-),1H)) 015000

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```

3005 FORMAT( 5X,1M(,124X,1M))                                015020
3010 FORMAT( 5X,*( TABLE: *, 748,35X,*)IDENTIFICATION:*,7X,*) 015040
3015 FORMAT( 5X,1M(,124(14-),1M))                              015060
3030 FORMAT( 5X,*( DISTANCE*, 51X,*ANGLE (DEGREES)*, 49X,*)*/ 015080
1 5X,*( (FEET)*, 5X,*0*, 1816,* )*) 015100
3100 FORMAT( 5X,*( *, 101X,*) OMEGA 11.*,11,11X,*)*) 015120
3200 FORMAT( 5X,*( *,10X, *AS A FUNCTION OF ANGLE AND DISTANCE FROM SOUR 015140
1CE*,44X,*) TEST *,A10, 5X,*)*) 015160
3210 FORMAT( 5X,1M(,10X,10MDISTANCE =,15,5H FEET,71X,*) TEST *,A10, 015180
1 6X,*)*) 015200
3300 FORMAT(5X,*( *,101(1H-),*) RUN *,A2,14X,*)*/ 5X,*( NOISE SOUR 015220
1CE/SUBJECT:*,11X, *( OPERATION:*,22X,*) METEOROLOGY:*,20X, 015240
2 *) AIRCRAFT CODE *,A3,3X,*)*) 015260
3400 FORMAT( 5X,*( *, 5X,2A9,A7, 3X,*( *,5X,2A10, 8X,*)* 5X,*TEMP*,6X, 015280
1* *,15,* F*,10X,*) OPERATION CODE *,A2,3X,* )*/ 5X,*( *, 5X,2A9,A7 015300
2, 3X,*( *, 5X,2A6,16X, *)*, 5X,*BAR PRESS =*, F5.2,* IN HG* ,6X, 015320
3*) PROFILE VERSION *,A1,* )*) 015340
3500 FORMAT( 5X,*( *, 33X, *( *, 5X,2A6,16X, *)*, 5X,*REL HUMID 015360
1 =*,15,* X*,10X,*) *,A10,11X,*)*) 015380
3520 FORMAT(5X, *( *,33X,*( *, 5X,2A6,16X, *)*,33X, 015400
1 *) PAGE *,A1,A2,12X,*)*) 015420
END 015440

```

```

SUBROUTINE RSPLN(NN,IERR)                                015460
*****                                                    015480
*****                                                    015500
C JECK 5 RSPLN---READ SPL INPUT                            015520
C THIS SUBROUTINE IS CALLED FROM THE 'OMEGA11' ROUTINE TO INPUT THE 015540
C NORMALIZED DATASETS FROM FILE 'TAPE7' FOR N OPERATION POWER CODES. 015560
C                                                                015580
C EACH NORMALIZED DATASET CONTAINS THE FOLLOWING CARD TYPES: 015600
C (1) ONE 'COMDECK' NAME CARD (OPTIONAL--DEPENDS ON THE TYPE OF 015620
C UPDATE RUN USED TO CREATE THE REFERENCE FILE). 015640
C (2) THREE COMMENT CARDS WHICH IDENTIFY THE NORMALIZED DATA. 015660
C (3) THIRTY-EIGHT SPL DATA CARDS -- 2 PER ANGLE FOR 19 ANGLES. 015680
C                                                                015700
C THE NORMALIZED DATASET CARD FORMAT IS DESCRIBED IN THE WRITE-UP 015720
C ENTITLED "CARD FORMAT FOR GROUND RUN-UP NOISE NORMALIZED DATASETS". 015740
C                                                                015760
C THESE DATASETS WERE WRITTEN BY THE OMEGA 8 PROGRAM. 015780
C                                                                015800
C-----015820
C CARD FORMAT FOR THE SPL DATA: 015840
C THE DATASET NUMBER IS IN COLUMNS 1 TO 12 OF EACH CARD. THE CARD 015860
C SEQUENCE NUMBER IS IN COLUMNS 13 TO 15. COLUMNS 16 TO 20 015880
C CONTAIN THE ANGLE AT WHICH THE DATA WERE COLLECTED. 015900
C THE SPL POINTS (XXX.X) ARE STORED AS FOUR DIGIT INTEGERS IN 015920
C COLUMNS 21 TO 40 ON A MAXIMUM OF 2 CARDS PER SPECTRUM. 015940
C                                                                015960
C-----015980
C ARRAY OPCSP CONTAINS SPECIAL CASE OPC'S FOR AFTERBURNER, WET OR WITH 016000
C JETS WHICH MAY NOT BE INTERPOLATED. 016020
C NOPCSP=0, DIMENSION OF ARRAY 'OPCSP'. 016040
C DIMENSION OPCSP(8) 016060
C COMMON M,MM,IL,IH,NC,L,N,IO,DIST,MEAS(3),FSPL(19,24,6) 016080
C COMMON /HEADC/ TEST(6),TT(6,6),DATE,RUN(6),IPAGE,IVER,ACC,OPC(6), 016100
C 1 IT,P1,IHM,IT8,P8,IH8,FIMPR5,PV,CRI,PS(6,6),OPD(2,6),OPCC(6),DELN 016120
C 2, PSC(6),PSU,NP,PSIF(6),PSCF(6),NRC(6),ICC,OPCJM,OPU1,OPD2 016140
C 3, COMD(6),RUNG(6),IC,DATN(6),IFC(6),IFCC,IFI(6),IFII 016160
C DATA OPCSP/2H01,2H02,2H03,2H10,2H35,2H38,2H42,2H49/ 016180
C DATA NOPCSP/8/,ASK/1H*/ ,ICJM/1/ 016200
C 'ICOM' IS DEFINED AS FOLLOWS AFTER THE FIRST DATASET IS READ FROM 016220
C FILE 'TAPE7' (INITIALLY 'ICOM'=1): 016240
C ICOM=1 --- 'COMDECK' CARD IS PART OF THE NORMALIZED DATASET. 016260
C ICOM=0 --- 'COMDECK' CARD IS NOT PART OF THE NORMALIZED DATASET. 016280
C IERR=0 016300
C IFII=0 016320
C N=0 016340
C REWIND 7 016360
C IF (ICOM) 15,15,5 016380
C READ 'COMDECK' OR FIRST 'COMMENT' CARD (CD CHECKS CARD TYPE): 016400
C 5 READ(7,1010) CD,DACC,DOPC,DJATN,DTEST,DRUN 016420
C IF (EOF(7)) 120,10 016440
C FOR 'CD=ASK', THE 'COMDECK' NAME CARDS ARE IN THE REFERENCE FILE: 016460
C 10 IF (CD .EQ. ASK) GO TO 15 016480
C                                                                016500
C                                                                016520
C                                                                016540

```

ICOM=0	016560
GO TO 20	016580
C READ FIRST 'COMMENT' CARD:	016600
15 READ(7,1010) CJ,DACC,UOPC,DDATN,OTEST,DRUN	016620
IF (EOF(7)) 120,20	016640
20 IF (DACC .EQ. ACC) GO TO 50	016660
C READ THROUGH THIS NORMALIZED DATA DECK (40 CARDS).	016680
DO 25 I=1,40	016700
25 READ(7,1010) CD	016720
IF (ICOM) 15,1,30	016740
C READ 'COMDECK' CARD:	016760
30 READ(7,1010) CD	016780
GO TO 15	016800
C DATA FOR AIRCRAFT 'ACC' WAS FOUND IN THE REFERENCE FILE:	016820
35 IF (N) 50,50,40	016840
+0 DO +5 L=1,N	016860
C FOR 'DOPC=OPC(L)', THIS IS AT LEAST THE SECOND DATASET WITH THIS	016880
C OPC(L):	016900
IF (DOPC .EQ. OPC(L)) GO TO 60	016920
+5 CONTINUE	016940
50 N=N+1	016960
L=N	016980
DO 52 I=1,NOPCSP	017000
C CHECK FOR SPECIAL CASE DATA:	017020
IF (DOPC .EQ. OPCSP(I)) GO TO 54	017040
52 CONTINUE	017060
IF (N .GT. NN) GO TO 150	017080
GO TO 64	017100
54 IF (IFCC .GT. 0 .OR. NP .LE. 0) GO TO 60	017120
N=N-1	017140
L=N	017160
C READ THROUGH THIS NORMALIZED DATA DECK (40 CARDS).	017180
DO 58 I=1,40	017200
58 READ(7,1010) CD	017220
GO TO 75	017240
60 IF (N .GT. NN) GO TO 150	017260
C SET AND INCREMENT SPECIAL CASE FLAGS:	017280
IFI(L)=1	017300
IFII=IFII+1	017320
C SET THE TEST PARAMETER FOR THE L-TH POWER CONDITION (L-TH OPC):	017340
64 OPC(L)=DOPC	017360
68 TEST(L)=OTEST	017380
RUN(L)=DRUN	017400
DATN(L)=DDATN	017420
C READ SECOND 'COMMENT' CARD:	017440
READ(7,1020) COND(L),(TT(I,L),I=1,6)	017460
C READ THIRD 'COMMENT' CARD:	017480
READ(7,1030) OPD(1,L),OPD(2,L),(PS(I,L),I=1,6)	017500
C READ 'SPL' DATA FOR 'NC' ANGLES--NC=19 HERE:	017520
DO 70 I=1,NC	017540
C COMPUTE COLUMN ID: ICHD.	017560
ICHD=(I-1)*10	017580
READ(7,1000) ICH,(FSPL(I,J,_),J=IL,IM,MM)	017600
C CHECK COLUMN ID:	017620
IF (ICH .NE. ICHD) IERR=1	017640

70 CONTINUE	017660
IF (IERR) 75,75,250	017680
75 IF (ICOM) 85,85,80	017700
C READ 'COMDECK' CARD:	017720
80 READ(7,1010) CD	017740
IF (EOF(7)) 100,85	017760
85 READ(7,1010) CD,DACC,UOPC,OJATN,DTEST,DRUN	017780
C FOR DACC NOT EQUAL TO ACC, ASSUME THAT ALL DATA FOR 'ACC' HAVE	017800
C BEEN READ:	017820
IF (EOF(7)) 100,90	017840
90 IF (DACC .EQ. ACC) GO TO 35	017860
100 IF (IFCC .GT. 0 .AND. IFIL .LE. 0) GO TO 200	017880
RETURN	017900
C ***** ERROR MESSAGES *****	017920
120 WRITE(6,3100) ACC	017940
IERR=2	017960
RETURN	017980
150 WRITE(6,3000) NN,ACC,NN	018000
IERR=3	018020
RETURN	018040
200 WRITE(6,3200) ACC	018060
IERR=4	018080
RETURN	018100
250 WRITE(6,2000) ACC	018120
300 RETURN	018140
1000 FORMAT(15X,I5,15F4.1/20X,15F4.1)	018160
1010 FORMAT(A1,7X,A3,A2,13X,A10,29X,A10,1X,A2)	018180
1020 FORMAT(11X,A4,1X,2A9,A7,1X,2A9,A7)	018200
1030 FORMAT(17X,2A10,3(2X,A5,1X,A6))	018220
2000 FORMAT(*1 ERROR IN NORMALIZED SPL INPUT. DATA FOR ACC= *,A3,	018240
1 * WILL BE DELETED.*)	018260
3000 FORMAT(*1 THE NORMALIZED REFERENCE FILE CONTAINS DATASETS FOR MORO	018280
1E THAN *,I2,* DIFFERENT OPERATION POWER CODES FOR AIRCRAFT CODE= *	018300
2,A3/* THE MAXIMUM NUMBER PERMITTED BY THE PROGRAM ARRAY DIMENSION	018320
3NS IS *,I2/* NO DATA WILL BE PROCESSED FOR THIS AIRCRAFT.*)	018340
3100 FORMAT(*1 NO NORMALIZED DATASETS WERE FOUND FOR AIRCRAFT CODE= *,	018360
1A3)	018380
3200 FORMAT(*1 NO DATA FOR AFTERBURNER, WET OR WITH JETS (IFC>0) FOUND	018400
1 IN THE NORMALIZED REFERENCE FILE.*/ * ALL COMPUTATIONS FOR ACC	018420
2= *,A3,* WILL BE DELETED FROM THIS JOB.*)	018440
END	018460

FUNCTION ICV(R)	018480
*****	018500
*****	018520
*****	018540
DECK 6 FUNCTION 'ICV'	018560
THIS FUNCTION IS CALLED FROM NUMEROUS ROUTINES THROUGHOUT THE	018580
PROGRAM. FUNCTION 'ICV' CONVERTS VARIABLE 'R' TO AN INTEGER.	018600
'R' IS ROUNDED UP IF THE FRACTIONAL PART IS 0.5 OR GREATER.	018620
*****	018640
*****	018660
*****	018680
ICV=R	018700
DD=R-FLOAT(ICV)	018720
IF (ABS(DD) .GE. 0.499999) ICV=ICV+ISIGN(1,ICV)	018740
RETURN	018760
END	018780

```

SUBROUTINE CDIST(IRD,C1,I1)                                018800
.....                                                    018820
.....                                                    018840
.....                                                    018860
JECK 7  CDIST--COMPUTE SINGLE EVENT NOISE DATA FOR 22 DISTANCES 018880
THIS SUBROUTINE IS CALLED FROM THE 'OMEGA11' ROUTINE TO COMPUTE THE 018900
PNL, PNL1, AL AND ALT PROFILE DATASETS.                    018920
THE 'PNL' PROFILE DATASET, FOR EXAMPLE, CONTAINS 'PNL' DATA FOR 018940
ANGLES 0 TO 180 DEGREES FOR 22 DISTANCES FROM 200 TO 25000 FEET. 018960
.....                                                    018980
-----                                                    019000
NOTE: EA(13,13) IS DEFINED ONLY FOR FREQUENCIES 50 (B=17) TO 800 HZ 019040
      (B=29) AND DISTANCES 400 FEET TO 6300 FEET.          019060
      EA=0 FOR SX(I)<400 FEET                                019080
      EA=EA(13,J) FOR SX(I)> 6300 FEET.                     019100
.....                                                    019120
*****                                                    019140
.....                                                    019160
      DIMENSION EA(13,13),SENX(19,22,12)                  019180
      COMMON M,MM,IBNL,IBNH,NC, L,N,K,DIST,MEAS(7),FSPL(19,24,6),SPLX(19,24,6), 019200
      1,24),PNLX(19,22,2),PNLT(19,22,2),ALX(19,22,2),ALT(19,22,2), 019220
      2SENXD(19,22,4),CXD(19)                              019240
      COMMON /ATTN/ ATNC(24),ATNo(24),SX(22)                019260
      EQUIVALENCE (PNLX(1,1,1),SENX(1,1,1))                019280
C  ARRAY 'EA' CONTAINS THE EXCESS ATTENUATION DATA; SEE NOTE ABOVE. 019300
      DATA EA/ 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 1.09, 2.61, 019320
      1 4.53, 6.94,10.04,13.00, 0.00, 0.00, 0.00, 0.00, 0.00, 1.18,019340
      2 2.68, 4.57, 6.94, 9.93,12.53,15.00, 0.00, 0.00, 0.00, 0.00, 0.00,019360
      3 1.04, 2.34, 3.98, 6.05, 8.55,11.92,14.53,17.00, 0.00, 0.00, 0.00,019380
      4 .38, 1.25, 2.35, 3.74, 5.48, 7.68,10.44,13.92,16.53,19.00, 0.00,019400
      5 .13, .68, 1.38, 2.25, 3.35, 4.74, 6.48, 8.68,11.44,14.92,17.53,019420
      6 20.00, .19, .63, 1.18, 1.88, 2.75, 3.85, 5.24, 6.98, 9.18,11.94,019440
      7 15.42,18.03,20.50, .19, .63, 1.18, 1.88, 2.75, 3.85, 5.24, 6.98,019460
      8 9.18,11.94,15.42,18.03,20.50, 0.00, .13, .68, 1.38, 2.25, 3.35,019480
      9 4.74, 6.48, 8.68,11.44,14.92,17.53,20.00, 0.00, 0.00, 0.00, 0.00,019500
      A .15, 1.02, 2.11, 3.48, 5.21, 7.39,10.14,13.64,17.00, 0.00, 0.00,019520
      B 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 1.41, 3.20, 5.45, 8.28,11.00,019540
      C 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, .12, 1.03, 2.17,019560
      D 3.62, 5.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00,019580
      E 0.00, .68, 1.88, 3.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00,019600
      F 0.00, 0.00, 0.00, 0.00, .39, 1.00/                  019620
      FJ=0.15                                                019640
      C1=DIST*0.001                                          019660
C  ARRAY 'SX(22)' CONTAINS EXACT DISTANCE VALUES IN FEET (SEE 'OMEGA11' 019680
ROUTINE).                                                    019700
C  LABEL 260 LOOP --- COMPUTE PROFILE DATA FOR EACH PROFILE DISTANCE 019720
C  (K) FOR THE L-TH REFERENCE POWER CONDITION:              019740
      GO 260 K=1,22                                          019760
C  'IRD' IS THE STANDARD DISTANCE INDEX CORRESPONDING TO THE REFERENCE 019780
DISTANCE (PRESENTLY 250 FEET); REFERENCE DISTANCE MUST BE WITHIN 1 X 019800
OF A STANDARD DISTANCE---SEE SX(22). IRD=2 WHEN DIST=250 FEET. 019820
      SXK=SX(K)*0.001                                       019840
      D2=D1-20.0*ALOG10(SX(K))                              019860
C  DO LOOP 135 --- COMPUTE 'SPL' SPECTRUM FOR K-TH STANDARD DISTANCE 019880

```

C AND STORE IN 'SPLX(I,J)'.	019900
DO 130 J=IBNL,IBNH,KM	019920
IF (J-13) 60,60,100	019940
60 IF (K-3) 100,100,70	019960
70 IF (K-16) 80,80,90	019980
30 EAD=EA(K-3,J)	020000
GO TO 110	020020
30 EAD=EA(13,J)	020040
GO TO 110	020060
130 EAD=0.0	020080
C MARKS 'ATN8(24)' AND 'ATNC(24)' CONTAIN THE ATMOSPHERIC ABSORPTION	020100
C DATA FOR THE PROFILE AND REFERENCE WEATHER CONDITIONS RESPECTIVELY.	020120
110 D3=EAD+SXX*ATN8(J)	020140
D3=D2-D3+C1*ATNC(J)	020160
C NO EA NEEDED FOR DISTANCE D(2) IF = 250 FEET.	020180
DO 130 I=1,19	020200
SPLX(I,J)=FSPL(1,J,L)*D3	020220
130 CONTINUE	020240
135 CONTINUE	020260
C DO LOOP 250 ---> COMPUTE THE PROFILE DATA FOR THE K-TH DISTANCE AND	020280
C I-TH ANGLE:	020300
DO 250 I=1,19	020320
IF (K.EQ. IRD) GO TO 140	020340
IF (MEAS(1)) 160,160,140	020360
C CALL SUBROUTINE 'CPNL' TO COMPUTE PNLX(I,K,II).	020380
140 CALL CPNL(FJ,I,II)	020400
IF (PNLX(I,K,II)-9990.0) 160,150,150	020420
C IF PNLX(I,K,II) IS MISSING, EXTRAPOLATE MISSING DATA POINTS BY USING	020440
C THE SLOPE OF THE PREVIOUS TWO POINTS.	020460
C 'PNLX(I,K,II)' ARE EXTRAPOLATED TO MAKE THE PROFILE DATASET COMPLETE.	020480
C IT WILL NORMALLY BE MISSING ONLY WHERE THE 'SPL' DATA ARE VERY SMALL	020500
C FOR LARGE DISTANCES.	020520
150 IF (K.LE. 2) GO TO 160	020540
PNLX(I,K,II)=2.0*PNLX(I,K-1,II)-PNLX(I,K-2,II)	020560
160 IF (K.EQ. IRD) GO TO 170	020580
IF (MEAS(2)+MEAS(3)) 250,250,180	020600
C CALL SUBROUTINE 'CPTC' TO COMPUTE TONE CORRECTION (PTC) FOR THE I-TH	020620
C SPECTRA AND FOR THE 'IRD' (REFERENCE) DISTANCE ONLY.	020640
170 CALL CPTC(PTC,I)	020660
C STORE COMPUTED TONE CORRECTION FOR REFERENCE DISTANCE (IRD) IN	020680
C 'CXD(I)'.	020700
CXD(I)=PTC	020720
C CALL SUBROUTINE 'CAL' TO COMPUTE ALX(I,K,II).	020740
130 CALL CAL(I,II)	020760
250 CONTINUE	020780
260 CONTINUE	020800
C DO LOOP 400 ---> COMPUTE SMOOTHED TONE CORRECTION AND ALSO	020820
C COMPUTE 'PNLTX(I,K,II)' AND 'ALTX(I,K,II)' USING SMOOTHED TONE	020840
C CORRECTION.	020860
IF (MEAS(1)+MEAS(3)) 270,270,275	020880
270 K1=IRD	020900
K2=IRD	020920
GO TO 280	020940
275 K1=1	020960
K2=22	020980

280 DO 400 K=K1,K2	021000
IF (K-14) 285,290,290	021020
285 C1=1.0	021040
GO TO 310	021060
290 IF (K-18) 295,300,300	021080
295 C1=0.2*FLOAT(18-K)	021100
GO TO 310	021120
300 C1=0.0	021140
310 IF (K.EQ. IRO) GO TO 320	021160
IF (MEAS(3)) 335,335,320	021180
C COMPUTE TONE-CORRECTED A-WEIGHTED OVERALL SOUND LEVEL FOR EACH ANGLE	021200
320 DO 325 I=1,19	021220
325 ALTX(I,K,II)=ALX(I,K,II)+C1*CXD(I)	021240
IF (K.EQ. IRO) GO TO 340	021260
335 IF (MEAS(1)) 400,400,340	021280
C COMPUTE TONE-CORRECTED PERCEIVED NOISE LEVEL FOR EACH ANGLE	021300
340 DO 360 I=1,19	021320
IF (PNLX(I,K,II)-9999.0) 345,350,350	021340
345 PNLTX(I,K,II)=PNLX(I,K,II)+C1*CXD(I)	021360
GO TO 360	021380
350 PNLTX(I,K,II)=9999.0	021400
360 CONTINUE	021420
400 CONTINUE	021440
RETURN	021460
END	021480

```

SUBROUTINE CPNL(FJ,I,II)                                021500
*****                                                    021520
*****                                                    021540
00 DECK 6  CPNL--- COMPUTE PNL DATA FOR I-TH ANGLE      021560
00 CALLED FROM SUBROUTINE 'CDIST'.                        021580
00 SUBROUTINE CPNL(I) COMPUTES PERCEIVED NOISE LEVEL (PNL) USING THE 021600
00 METHOD DESCRIBED IN FAR PART 35 SECTION 836.2. FUNCTION FNOY 021620
00 (SEE DECK 09) IS USED TO COMPUTE THE NOY VALUES.      021640
00                                                         021660
00 PERTINENT VARIABLES USED BY CPNL ARE:                 021680
00   SPLX      - ARRAY CONTAINING SOUND PRESSURE LEVEL DATA IN DB 021700
00               FOR K-TH DISTANCE                             021720
00   PNL       - PERCEIVED NOISE LEVEL IN PNOB                021740
00   I         - INDEX OF SPL SPECTRUM FOR WHICH PNL IS BEING COMPUTED 021760
00   K         - INDEX OF DISTANCE FOR WHICH PNL IS BEING COMPUTED 021780
00   II        - INDEX OF ARRAY 'PNL' IN WHICH PNL DATA ARE STORED 021800
00               (II=1 OR 2).                                  021820
00                                                         021840
*****                                                    021860
*****                                                    021880
*****                                                    021900
00** IN THIS SUBROUTINE IBNL=1 CORRESPONDS TO BAND 17 AND IBNH=24 **021920
00** CORRESPONDS TO BAND 40. IF THIS IS CHANGED IN THE PROGRAM, **021940
00** THIS SUBROUTINE MUST BE CHANGED ACCORDINGLY.             **021960
00** PNL(I) IS ONLY COMPUTED FOR BANDS 17 TO 40.              **021980
00** IF IBNL AND IBNH ARE OUTSIDE THIS RANGE, CHANGES MUST BE **022000
00** MADE IN THIS SUBROUTINE TO LIMIT COMPUTATIONS TO THIS RANGE. **022020
00**                                                         **022040
*****                                                    022060
*****                                                    022080
COMMON M,MM,IBNL,IBNH,NC, L,N,K,DIST,MEAS(3),FSPL(19,24,6),SPLX(19,24,2),PNL(19,22,2) 022100
SUM=0                                                    022120
AMX=-10.0                                                022140
DO 60 J=IBNL,IBNH,MM                                    022160
JJ=J                                                      022180
IF (SPLX(I,J) .GT. 9990.0) GO TO 60                      022200
SPLL=SPLX(I,J)                                           022220
00 MAXIMUM SPL IN NOY ALGORITHM IS 150.0                 022240
IF (SPLL.GT. 150.00001) GO TO 70                         022260
00                                                         022280
00 USE FUNCTION FNOY TO COMPUTE NOY VALUE (FN) FOR SOUND PRESSURE LEVEL 022300
00 SPLL AND ADJUSTED BAND NUMBER JJ.                     022320
00                                                         022340
FN=FNOY(SPLL,JJ)                                         022360
00 MAXIMUM PERMITTED NOY VALUE IS 2048.0                 022380
IF (FN .GT. 2048.0001) GO TO 70                         022400
AMX=AMAX1(AMX,FN)                                        022420
SUM=SUM+FN                                               022440
60 CONTINUE                                              022460
IF (SUM .LE. 0.0001) GO TO 70                           022480
SUM=(SUM-AMX)*FJ+AMX                                    022500
00 COMPUTE PERCEIVED NOISE LEVEL (PNL) FOR THE I-TH SPECTRUM. 022520
PNL(I,K,II)=40.0+33.3*ALOG10(SUM)                      022540
GO TO 100                                                022560
*****                                                    022580

```

```
C  *PNL* =9999.0 FOR MISSING DATA:  
70 PNL(I,K,II)=9999.0  
100 CONTINUE  
    RETURN  
    END
```

```
022600  
022620  
022640  
022660  
022680
```



```

SUBROUTINE CPTC(PTC,I)                                023800
*****023820
*****02384J
DECK 10 CPTC---CALLED FROM SUBROUTINE 'CDIST'.        023860
SUBROUTINE CPTC(PTC,I)    COMPUTES THE TONE CORRECTION FOR THE 023920
I-TH SPECTRUM AS DESCRIBED IN FAR PART 36 SECTION B36.3. 023940
WHERE.....023960
PTC    - TONE CORRECTION FOR THE I-TH SPECTRUM IN DB    023980
I      - INDEX OF ARRAY SPLX--SPECIFIES SPECTRUM USED TO 024000
        COMPUTE PTC.                                024020
SPLX   - ARRAY CONTAINING SOUND PRESSURE LEVEL DATA IN DB 024040
        FOR K-TH DISTANCE                            024080
K      - INDEX OF DISTANCE FOR WHICH PTC IS BEING COMPUTED 024100
*****024120
*****024140
*****024160
**024180
**024200
**024220
**024240
**024260
**024280
**024300
**024320
*****024340
*****024360
    DIMENSION SPLPP(24),ICT(24)                        024380
    COMMON JMY( 2),IBNL,IBNH,DM(6),FSPL(19,24,6),SPLX(19,24) 024400
    1,SENXD(19,22,12),CXD(19),SP(25),S(24),SPL(24),F(24),SPLP(24) 024420
    EQUIVALENCE (F(1),ICT(1)),(SPLP(1),SPLPP(1))          024440
    C=0.0                                                024460
    PTC=0.0                                              024480
    ILL=3                                                024500
    IF (IBNL .GT. 3) ILL=IBNL                          024520
    AMX=-1000.0                                          024540
    DO 420 J=ILL,IBNH                                  024560
    C MAXIMUM VALUE.                                    024580
    DO 420 J=ILL,IBNH                                  024600
    SPL(J)=SPLX(I,J)                                    024620
    IF (SPL(J) .GT. 9990.0) GO TO 420                   024640
    IF (SPL(J)-AMX) 420,400,400                         024660
    400 IL1=J                                            024680
    AMX=SPL(J)                                          024700
    420 CONTINUE                                        024720
    IF 'AMX' < -900.0 --- ALL SPL DATA ARE MISSING FOR THIS SPECTRUM: 024740
    C THE FOLLOWING STATEMENT REALLY DOESN'T APPLY TO OMEGA 11 DATA: 024760
    IF (AMX .LT. -900.0) GO TO 220                      024780
    DO 440 J=IL1,IBNH                                  024800
    C END OF THE SPECTRUM:                              024820
    DO 440 J=IL1,IBNH                                  024840
    IM1=J                                                024860
    IF (SPL(J) .LT. 20.0) GO TO 450                    024880

```

440 CONTINUE	024900
GO TO 460	024920
450 IM1=IM1-1	024940
C DO LOOP 470 --- DETERMINE FIRST SPL VALUE < 20 DB FROM THE PEAK TO	024960
C THE BEGINNING OF THE SPECTRUM:	024980
460 DO 470 J=ILL,IL1	025000
IL2=IL1-J+ILL	025020
IF (SPL(IL2) .LT. 20.0) GO TO 480	025040
470 CONTINUE	025060
GO TO 490	025080
480 IL2=IL2+1	025100
C	025120
C IL2 ---> IM1 IS THE FREQUENCY INDEX OVER WHICH TONE CORRECTION IS	025140
C COMPUTED. ALL SPL(J)>20.0 DB OVER THIS RANGE.	025160
C IF (IM1-IL2-8) < 1, THERE ARE AT MOST NINE GOOD FSPL VALUES IN THE	025180
C SPECTRUM; THUS PTC=0. IN THIS PROGRAM 10 GOOD BANDS ARE REQUIRED.	025200
C	025220
490 IF (IM1-IL2-8) 220,220,5	025240
5 IF (IL2 .LT. 3) IL2=3	025260
C IL2 AND IM1 ARE THE INDICES OF THE FIRST AND LAST GOOD FSPL VALUE IN	025280
C THE SPECTRUM.	025300
S(IL2)=0	025320
ICT(IL2)=0	025340
C FROM HERE TO LABEL 40 CORRESPONDS TO STEPS 1, 2 AND 3 IN SECTION	025360
C 336.3.	025380
IL3=IL2+1	025400
IL1= IL3 + 1	025420
ICT(IL3)=0	025440
S(IL3)=SPL(IL3)-SPL(IL2)	025460
C COMPUTE SPL CHANGES (SLOPES) AND SET ICT(J) FLAG; ICT(J)=1	025480
C CORRESPONDS TO ENCIRCLED SPL IN 'FAR PART 36'.	025500
DO 40 J=IL1,IM1	025520
ICT(J)=0	025540
S(J)=SPL(J)-SPL(J-1)	025560
IF (ABS(S(J)-S(J-1))-5.0) 40,40,20	025580
20 IF (S(J) .GT. 0.0 .AND. S(J) .GT. S(J-1)) GO TO 30	025600
IF (S(J) .LE. 0.0 .AND. S(J-1) .GT. 0.0) ICT(J-1)=1	025620
GO TO 40	025640
30 ICT(J)=1	025660
40 CONTINUE	025680
C FROM HERE TO 2 LINES AFTER LABEL 60 CORRESPONDS TO STEPS 4 AND 5	025700
C IN SECTION 336.3.	025720
SPLP(IL2)=SPL(IL2)	025740
DO 60 J=IL3,IM1	025760
IF (ICT(J)) 50,50,60	025780
50 SPLP(J)=SPL(J)	025800
GO TO 60	025820
60 IF (J .EQ. IM1) GO TO 70	025840
C FOR FLAGGED SPL, COMPUTE AVERAGE OF SPL BEFORE AND AFTER:	025860
SPLP(J)=0.5*(SPL(J-1)+SPL(J+1))	025880
GO TO 60	025900
70 SPLP(J)=SPL(J-1)+S(J-1)	025920
C COMPUTE NEW SLOPE (S') -- STEP 5:	025940
60 SP(J)=SPLP(J)-SPLP(J-1)	025960
SP(IL2)=SP(IL3)	025980

SP(IH1+1)=SP(IH1)	026000
C FROM HERE TO LABEL 210 CORRESPONDS TO STEPS 6 TO 10 IN SECTION B36.3.	026020
C FIRST SPL''=INITIAL SPL:	026040
SPLPP(IL2)=SPL(IL2)	026060
DO 210 J=IL2,IH1	026080
IF (J-IH1) 90,100,100	026100
C COMPUTE THE AVERAGE SLOPE -- STEP 6:	026120
30 SA= (SP(J)+SP(J+1)+SP(J+2))/3.0	026140
C ADD THE AVERAGE SLOPE TO THE PREVIOUS SPL'' --- STEP 7:	026160
SPLPP(J+1)=SPLPP(J)+SA	026180
C F(J) IS THE SOUND PRESSURE LEVEL DIFFERENCE (STEP 8); IF F(J) < 3,	026200
C TONE CORRECTION IS ZERO.	026220
100 F(J)=SPL(J)-SPLPP(J)	026240
IF (F(J)-3.0) 210,110,110	026260
110 IF (J .GE. 11 .AND. J .LE. 21) GO TO 140	026280
C DETERMINE 'C' FOR FREQUENCIES 50 TO 400 HZ AND 6300 TO 18000 HZ:	026300
IF (F(J)-20.0) 120,130,130	026320
120 C=F(J)/6.0	026340
GO TO 160	026360
130 C=3.3333333	026380
GO TO 160	026400
C DETERMINE 'C' FOR FREQUENCIES 500 TO 5000 HZ:	026420
140 IF (F(J)-20.0) 145,150,150	026440
145 C=F(J)/3.0	026460
GO TO 160	026480
C MAXIMUM TONE CORRECTION IS 6.6666667 DB.	026500
150 C=6.6666667	026520
160 IF (C-PTC) 210,210,170	026540
170 PTC=C	026560
C IPTC(I)=J	026580
210 CONTINUE	026600
RETURN	026620
220 CONTINUE	026640
RETURN	026660
END	026680

```

SUBROUTINE CAL(I,II)                                026700
.....                                              026720
.....                                              026740
.....                                              026760
JECK 11 CAL---CALLED FROM SUBROUTINE 'CDIST'.      026780
THIS SUBROUTINE COMPUTES THE A-WEIGHTING OVERALL SOUND LEVEL. 026800
.....                                              026820
WHERE.....                                         026840
  K - INDEX OF DISTANCE FOR WHICH AL IS BEING COMPUTED 026860
  I - INDEX OF ARRAY SPLX--SPECIFIES SPECTRUM USED TO COMPUTE AL. 026880
  AL - ARRAY CONTAINING THE A-WEIGHTING OVERALL SOUND LEVEL IN DBA 026900
  AW - ARRAY CONTAINING THE A-WEIGHTING COEFFICIENTS DEFINED 026920
      ONLY FOR BANDS IBL=17 TO IBNH=40 026940
  SPLX - ARRAY CONTAINING SOUND PRESSURE LEVEL DATA IN DB 026960
      FOR K-TH DISTANCE 026980
  II - INDEX OF ARRAY AL IN WHICH A-WEIGHTING DATA ARE STORED 027000
      (II=1 OR 2). 027020
.....                                              027040
.....                                              027060
.....                                              027080
**                                              **027100
**      IN THIS SUBROUTINE IBL=1 CORRESPONDS TO BAND 17 AND IBNH=24 **027120
**      CORRESPONDS TO BAND 40. IF THIS IS CHANGED IN THE PROGRAM, **027140
**      THIS SUBROUTINE MUST BE CHANGED ACCORDINGLY. **027160
**                                              **027180
.....                                              027200
      DIMENSION AW(24) 027220
      COMMON M,MM,IBNL,IBNH,NC, L,N,K,DIST,MEAS(3),FSPL(19,24,6),SPLX(19,24) 027240
      1,24),PNLX(19,22,2),PNLTx(19,22,2),AL(19,22,2) 027260
      DATA AW/-30.2,-26.2,-22.5,-19.1,-16.1,-13.4,-10.9,-8.6,-6.6,-4.6, 027280
      A-3.2,-1.9,-0.6,0.0,0.6,1.0,1.2,1.3,1.2,1.0,0.9,-0.1,-1.1,-2.5/ 027300
      ALD=0.0 027320
      DO 10 J=IBNL,IBNH,MM 027340
      IF (SPLX(I,J) .GT. 9990.0) GO TO 10 027360
      ALD=ALD+ 10.0*((SPLX(I,J)+AW(J))/10.0) 027380
10 CONTINUE 027400
      IF (ALD .LT. 0.000001) GO TO 20 027420
      AL(I,K,II)= 10.0*ALOG10(ALD) 027440
      GO TO 50 027460
C AL=9999.0 FOR MISSING DATA. 027480
20 AL(I,K,II)=9999.0 027500
50 RETURN 027520
      END 027540

```



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SUBROUTINE PPFOAT(J1,J2,J1,L1,L2,IPR,IEDIT)
*****
DECK 12 SUBROUTINE 'PPFOAT'
THIS SUBROUTINE IS CALLED FROM THE 'OMEGA11' ROUTINE TO WRITE THE
PROFILE DATASETS FOR 'PNLX', 'ALX', AND 'ALTX' ON FILE 'TAPE2' WHEN
IEDIT=1. THESE DATA ARE STORED IN ARRAY 'SENX(19,22,12)'.

EACH PROFILE DATASET CONSISTS OF THE FOLLOWING:
1) ONE 'COMDECK' CARD;
2) THREE 'COMMENT' CARDS;
3) THREE DATA CARDS FOR EACH OF THE 19 ANGLES CONTAINING NOISE
LEVEL DATA FOR THE 22 STANDARD DISTANCES.

FOR MORE DETAILS SEE THE WRITE-UP ENTITLED: 'CARD FORMAT FOR GROUND
RUNUP NOISE PROFILE DATASETS'.

THIS SUBROUTINE ALSO WRITES THE 'PNLX', 'PNLTXT', 'ALX', AND 'ALTX'
PROFILE DATA (AS REQUESTED) ON OUTPUT PAGES D, E, F, AND G
WHEN IPR>0.

THE SUBROUTINE ARGUMENTS ARE:
J1 -- INDEX OF 'PNLTXT' DATA IN ARRAY 'SENX'.
J2 -- INDEX OF 'ALTX' DATA IN ARRAY 'SENX'.
J1 -- INCREMENT OF THE INDEX OF THE PROFILE DATA IN ARRAY SENX
(J1=1 OR 2).
L1,L2 -- INDICES OF NORMALIZED DATA USED TO INTERPOLATE PROFILE
DATA.
IPR -- PROGRAM PRINT FLAG.
IEDIT -- PROGRAM ANGLE SELECTION FLAG.

*****
DIMENSION OKEY(3),CKEY(3),NR(17,3), T12(2),IDIST(22)
COMMON M,MM,IBNL,IBNH,NC, L,M,K,DIST,MEAS(3),FSPL(19,24,6),
1 SPLX(19,24),SENX(19,22,12),R(19),FMT(22)
COMMON /HEADC/ TEST(6),TT(6,6),DATE,RUN(6),IPAGE,IVER,ACC,OPC(6),
1 IT,P1,IMH,IT8,P8,IM8,FIMPR3,PV,CRI,PS(6,6),OPD(2,6),OPCC(6),DELN
2, PSC(6),PSU,NP,PSIF(6),PSCF(6),NRC(6),ICC,OPCUM,OPD1,JPD2
3, COMD(6),RUNC(6),IC,DAT4(5),IFC(6),IFCC,IFI(6),IFII
EQUIVALENCE (SPLX(1,1),NR(1,1))
DATA T12/10H(5X,1H(,17,34,2X/,RP/6H,2H ))/,A6/3H,A6/,T6/5H,F6.1/
C ARRAY 'IDIST' CONTAINS THE STANDARD DISTANCES USED FOR PRINTING ONLY.
DATA IDIST/
12000,2500,3150,4000,5000,6300,6000,10000,12500,16000,20000,25000/
DATA OKEY/4HPNLT,4HAL, 4HALT /,BLK/1M /, CKEY/1MP,1MA,14T/
J=0
OPCDM=OPCC(ICC)
IF (L) 5,5,10
5 OPD1=BLK
OPD2=BLK
GO TO 15
10 OPD1=OPD(1,L)
OPD2=OPD(2,L)

```

15 IF (IEDIT) 110,20,20	028660
C DO LOOP 100---WRITE PROFILE DATA ON FILE 'TAPE2' (FOR IEDIT>-1):	028680
20 DO 100 JJ=J1,J2,JI	028700
J=J+1	028720
IF (MEAS(J)) 100,100,30	028740
C WRITE 'COMDECK' CARD:	028760
30 WRITE(2,2100) CKEY(J),ACC,OPCDM, PV,CRI	028780
IA=0	028800
ICD=1	028820
C WRITE FIRST DATA CARD FOR ANGLE 0 DEGREES:	028840
WRITE(2,2000) DKEY(J),ACC,OPCDM, IA,(SENX(1,K,JJ),K=1,5),ICD	028860
C WRITE FIRST 'COMMENT' CARD:	028880
WRITE(2,2110) ACC,OPCDM, PV,CRI,IVER,DATE,IT8,INH,PS,TEST(1),	028900
1 RUNC(IC)	028920
C FT(6,1) CONTAINS 'NOISE SOURCE/SUBJECT' DATA FOR THE FIRST REFERENCE	028940
C FILE OPERATION POWER CODE --- 2 LINES OF 25 CHARACTERS. THESE 2 LINES	028960
C ARE WRITTEN ON THE SECOND COMMENT CARD FOR EACH PROFILE DATASET.	028980
C WRITE SECOND AND THIRD 'COMMENT' CARDS:	029000
IF (L) 35,35,40	029020
35 WRITE(2,2120) ACC,OPCDM, PV,CRI,(TT(I,1),I=1,6),ACC,COMD(L1),	029040
1 COMD(L2), ACC,OPCDM, PV,CRI,OPD1,OPD2,PSC(ICC),PSU	029060
GO TO 45	029080
40 WRITE(2,2125) ACC,OPCDM, PV,CRI,(TT(I,1),I=1,6),ACC,COMD(L),	029100
1 ACC,OPCDM, PV,CRI,OPD1,OPD2,PSC(ICC),PSU,(PS(I,L),I=3,6)	029120
45 ICD=2	029140
C WRITE SECOND AND THIRD 'DATA' CARDS FOR ANGLE 0 DEGREES:	029160
WRITE(2,2010) (SENX(1,K,JJ),K= 7,14),ICD	029180
ICD=3	029200
WRITE(2,2010) (SENX(1,K,JJ),K=15,22),ICD	029220
IAC=0	029240
C DO LOOP 60 --- WRITE 3 DATA CARDS FOR ANGLES 10 TO 170 DEGREES:	029260
DO 60 I=2,18	029280
IF (IEDIT) 50,50,60	029300
50 II=I-1	029320
IF (NR(II,J) .LE. 9) GO TO 80	029340
C 'IA' IS ANGLE IN DEGREES:	029360
60 IA=(I-1)*10	029380
C STORE ANGLES WRITTEN ON FILE 'TAPE2' IN NR(IAC,J) FOR J-TH MEASURE.	029400
IAC=IAC+1	029420
NR(IAC,J)=IA	029440
ICD=ICD+1	029460
WRITE(2,2000) BLK, ACC,OPCDM, IA,(SENX(I,K,JJ),K=1,6),ICD	029480
ICD=ICD+1	029500
WRITE(2,2010) (SENX(I,K,JJ),K= 7,14),ICD	029520
ICD=ICD+1	029540
WRITE(2,2010) (SENX(I,K,JJ),K=15,22),ICD	029560
30 CONTINUE	029580
I=19	029600
IA=180	029620
ICD=ICD+1	029640
C WRITE 3 DATA CARDS FOR THE 180 DEGREE ANGLE:	029660
WRITE(2,2000) BLK, ACC,OPCDM, IA,(SENX(I,K,JJ),K=1,6),ICD	029680
ICD=ICD+1	029700
WRITE(2,2010) (SENX(I,K,JJ),K= 7,14),ICD	029720
WRITE(2,2010) (SENX(I,K,JJ),K=15,22)	029740

100 CONTINUE	029760
C SETUP VARIABLE FORMAT ARRAY FOR PRINTING PROFILE DATA.	029790
110 IF (IPR .LT. 1) RETURN	029800
FMT(1)=T12(1)	029820
FMT(2)=T12(2)	029840
FMT(22)=RP	029860
C DO LOOP 400 ---> PRINT PROFILE DATASET DATA FOR PNL, PNL1, AL AND	029880
C ALT.	029900
JJ=0	029920
C JJ1 --- INDEX OF 'PNL' DATA WHICH IS NOT WRITTEN ON FILE 'TAPE2':	029940
JJ1=J1-JI	029960
DO 400 J=JJ1,J2,JI	029980
JJ=JJ+1	030000
IF (JJ .EQ. 1) GO TO 150	030020
IF (MEAS(JJ-1)) 400,400,150	030040
150 IF (MEAS(JJ)) 400,400,150	030060
160 JJJ=JJ+1	030080
CALL HEADS(JJJ)	030100
C 'K' IS DISTANCE INDEX:	030120
DO 350 K=1,22	030140
C 'I' IS ANGLE INDEX:	030160
DO 340 I=1,19	030180
IF (SENX(I,K,J)) 325,330,320	030200
320 IF (SENX(I,K,J)-9990.0) 330,325,325	030220
C BLANK OUT MISSING OR NEGATIVE PROFILE DATA FOR PNL TO ALT:	030240
325 R(I)=BLK	030260
FMT(I+2)=A6	030280
GO TO 340	030300
330 R(I)=SENX(I,K,J)	030320
FMT(I+2)=T6	030340
340 CONTINUE	030360
C SKIP LINE BEFORE 8-TH AND 18-TH DISTANCE:	030380
IF (K .EQ. 8 .OR. K .EQ. 18) WRITE(6,3005)	030400
350 WRITE(6,FMT) IDIST(K),R	030420
WRITE(6,3005)	030440
WRITE(6,3015)	030460
400 CONTINUE	030480
2000 FORMAT(A6,3X,A3,A2,I8,6F9.1,8X,I2)	030500
2010 FORMAT(6X,6F9.1,8X,I2)	030520
2100 FORMAT(6H*CONDECK,1X,A1,A3,A2,2A1)	030540
2110 FORMAT(6HCOMMENT ,A3,A2,2A1, 9H OMEGA11.,I1,1X,A10,I3,3H F ,I3,	030560
16H PCT ,F5.2,7H IN HG ,2X,A10,1X,A2)	030580
2120 FORMAT(6HCOMMENT ,A3,A2,2A1, 2(1X,2A9,A7),*N*,A3,A4,*-,A4/	030600
1 8HCOMMENT ,A3,A2,2A1, 2X,2A10, 3(2X,A5,1X,A6))	030620
2125 FORMAT(6HCOMMENT ,A3,A2,2A1, 2(1X,2A9,A7),*N*,A3,A4/	030640
1 8HCOMMENT ,A3,A2,2A1, 2X,2A10, 3(2X,A5,1X,A6))	030660
3005 FORMAT(5X,1H(,124X,1H))	030680
3015 FORMAT(3X,1H(,124(1H-),1H))	030700
RETURN	030720
END	030740

WRITE(6,3130)	031860
IF (MEAS(1) .GT. 0) WRITE(6,3135)	031880
IF (MEAS(2) .GT. 0) WRITE(6,3140)	031900
IF (MEAS(3) .GT. 0) WRITE(6,3145)	031920
WRITE(6,3180)	031940
DO 760 I=1,4	031960
760 WRITE(6,3020)	031980
WRITE(6,3155) DATE	032000
WRITE(6,3020)	032020
WRITE(6,3020)	032040
WRITE(6,3100)	032060
DO 770 I=1,4	032080
770 WRITE(6,3020)	032100
IF (T(3) .EQ. 3LK) GO TO 790	032120
C PRINT THE BOTTOM BORDER LINES:	032140
DO 780 I=1,3	032160
780 WRITE(6,3030) T,T,T,T	032180
GO TO 800	032200
790 DO 795 I=1,3	032220
795 WRITE(6,3032) T,T,T,T	032240
800 WRITE(6,3010)	032260
RETURN	032280
C	032300
3030 FORMAT(1H1,33(4HUSAF))	032320
3040 FORMAT(1X,33(4HUSAF))	032340
3020 FORMAT(1X,4HUSAF,124X,44HUSAF)	032360
3030 FORMAT(1X,4HUSAF, 4X, 4(1X,2A9,A7,4X), 4HUSAF)	032380
3042 FORMAT(1X,4HUSAF, 4X, 4(1X,2A9,A7,1X), 4HUSAF)	032400
3035 FORMAT(1X,4HUSAF,47X,31HNOISE PRODUCED ON THE GROUND BY,46X,	032420
1 4HUSAF)	032440
3040 FORMAT(1X,4HUSAF, 53X, 2A9,A7, 49X, 4HUSAF)	032460
3042 FORMAT(1X,4HUSAF, 53X, 2A9,A7, 46X, 4HUSAF)	032480
3045 FORMAT(1X,4HUSAF,47X,31HOURS GROUND RUN-UP OPERATIONS,46X,4HUSAF)	032500
1F)	032520
3050 FORMAT(1X,4HUSAF,52X,4HTEST,7X,A10, 51X,4HUSAF)	032540
3055 FORMAT(1X,4HUSAF,52X,14HAIRORAFT CODE:,4X,A3,51X,4HUSAF)	032560
3060 FORMAT(1X,4HUSAF,49X,26HCOMPUTER PROGRAM OMEGA 11.,11,48X,4HUSAF)	032580
3065 FORMAT(1X,4HUSAF,52X,16HPROFILE VERSION:,4X,A1,51X,4HUSAF)	032600
3100 FORMAT(1X,4HUSAF, 96X,4HPAGE,24X,4HUSAF)	032620
3120 FORMAT(1X,4HUSAF,24X, 53HNORMALIZED DATA AS A FUNCTION OF ANGLE AND	032640
1ND FREQUENCY ,47X, 4HUSAF/ 1X,4HUSAF,30X, 32HNORMALIZED SOUND PRE	032660
2SSURE LEVEL , 36(1H.), 14C, 25X,4HUSAF)	032680
3130 FORMAT(1X,4HUSAF,24X, 59HNOISE LEVEL AS A FUNCTION OF ANGLE AND	032700
1STANCE FROM SOURCE, 41X,4HUSAF)	032720
3135 FORMAT(1X,4HUSAF,30X,	032740
2 22HPERCEIVED NOISE LEVEL , 46(1H.), 1HD, 25X,4HUSAF/	032760
3 1X,4HUSAF, 30X, 38HTONE-CORRECTED, PERCEIVED NOISE LEVEL ,30(1H.	032780
4), 1HE, 25X,4HUSAF)	032800
3140 FORMAT(1X,4HUSAF,30X, 31HA-WEIGHTED OVERALL SOUND	032820
1LEVEL , 37(1H.) 1HF, 25X,4HUSAF)	032840
3145 FORMAT(1X,4HUSAF, 30X,	032860
1 47HTONE-CORRECTED, A-WEIGHTED OVERALL SOUND LEVEL ,21(1H.) 1HG,	032880
2 25X,4HUSAF)	032900
3155 FORMAT(1X,4HUSAF,56X,A10,56X,4HUSAF)	032920
3160 FORMAT(1X,4HUSAF,25X,734A E R O S P A C E M E D I C A L R E S	032940

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1 E A R C H   L A B O R A T O R Y, 26X,4HUSAF/ 1X,4HUSAF,25X, 032900
2 73H W R I G H T - P A T T E R S O N   A I R   F O R C E   B A S E 032900
3,   O H I O, 26X,4HUSAF) 033000
3130 FORMAT(1X,4HUSAF,24X,49HNOISE LEVEL AS A FUNCTION OF ANGLE AROUND 033020
1SOURCE ,25(1H.),1HJ,25X,4HUSAF) 033040
                                033060
                                033080
END

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```

SUBROUTINE PLT(IRD,JJ1,JJ2,JJI)                                033100
*****033120
*****033140
DECK 14 SUBROUTINE 'PLT'---CALLED FROM THE MAIN OMEGA11 ROUTINE. 033160
033180
THIS SUBROUTINE PRINTS A TAB PLOT OF PNLT, AL AND ALT VERSUS ANGLE 033200
FOR THE NORMALIZED REFERENCE DISTANCE; THE DATA ARE FROM THE PROFILE 033220
DATASETS. 033240
033260
ONLY VARIABLES BROUGHT INTO THIS SUBROUTINE ARE THE FOLLOWING: 033280
DIST,SENX(19,22,12),IRD,JJ1,JJ2, AND JJI. 033300
033320
ARRAY 'SENX(19,22,12)' CONTAINS THE 'PNLT', 'AL' AND 'ALT' PROFILE 033340
DATA. THE LOCATION OF THE DATA IN SENX IS DEFINED BY THE IRD, JJ1, 033360
JJ2, AND JJI INDICIES. 033380
033400
IRD -- INDEX OF THE REFERENCE DISTANCE. 033420
JJ1 -- INDEX OF 'PNLT' IN ARRAY SENX. 033440
JJ2 -- INDEX OF 'ALT' IN ARRAY SENX. 033460
JJ1 -- INDEX INCREMENT (JJ1+JJI IS INDEX OF 'AL' DATA). 033480
033500
*****033520
*****033540
*****033560
DIMENSION AID(16),SYM(4) 033580
COMMON M,MM,IBNL,IBNH,NC,LL,N,K,DIST,MEAS(3),FSPL(19,24,6), 033600
1 SPLX(19,24), SENX(19,22,12),IX(11),P(105,2),JJ(3),SAV(3) 033620
DATA AID/1HA,1HN,1HG,1HL,1HE,1I,1HI,1HN,1H,1HD,1HE,1HG,1HR,1HE, 033640
1 1HE,1HS/, SYM/1HP,1HA,1HT,1HX/,BLK/1H /,DOT/1H./ 033660
C DO LOOP 10, 15 AND 20 --- INITIALIZE TAB PLOT ARRAY, P(105,2), WITH 033680
C GRID DATA. 033700
DO 10 I=1,105 033720
10 P(I,1)=BLK 033740
DO 15 I=1,103,2 033760
1I=I+1 033780
P(I,2)=DOT 033800
15 P(II,2)=BLK 033820
P(105,2)=DOT 033840
DO 20 I=3,103,10 033860
20 P(I,1)=DOT 033880
IA=6 033900
K=ICV(DIST) 033920
C CALL SUBROUTINE 'HEADS' TO PRINT TAB PLOT HEADING BLOCK. 033940
CALL HEADS(IA) 033960
C PRINT SYMBOL 10 LINE: 033980
WRITE(6,2000) 034000
WRITE(6,2010) 034020
WRITE(6,2110) BLK,(P(J,1),J=1,105) 034040
AMX=-1000.0 034060
C DO LOOP 25 --- DETERMINE MAXIMUM 'PNLT' NOISE LEVEL AND THUS THE 034080
C MAXIMUM REQUIRED NOISE LEVEL SCALE VALUE: 034100
DO 25 I=1,19 034120
A1=SENX(I,IRD,JJ1) 034140
IF (A1.GT. 9990.0) GO TO 25 034160
AMX=AMAX1(A1,AMX) 034180

```

25 CONTINUE	034200
C 'MX' IS THE MAXIMUM NOISE LEVEL SCALE VALUE.	034220
MX=((ICV(AMX)/10)+1)*10	034240
DO 40 I=1,11	034260
C SETUP ABSCISSA SCALE VALUE:	034280
40 IX(I)=MX-110+I*10	034300
MX=MX+2	034320
MN=IX(1)-2	034340
JJ=2	034360
C DO LOOP 200 --- SETUP AND PRINT TAB PLOT FOR EACH OF THE 19 ANGLES:	034380
DO 200 I=1,19	034400
IF (I .GE. 6 .AND. I .LE. 13) GO TO 70	034420
A1=BLK	034440
A2=BLK	034460
GO TO 80	034480
C SETUP ORDINATE ID:	034500
70 J1=(I-6)*2+1	034520
A1=AID(J1)	034540
A2=AID(J1+1)	034560
80 IA=(I-1)*10	034580
JJ=JJ+1	034600
C 'JD' (OR ALSO 'L') CONTROLS TYPE OF GRID LINE PRINTED;	034620
C L=1 --- DOT EVERY 10 POINTS.	034640
C L=2 --- DOT EVERY SECOND PRINT POSITION.	034660
IF (JD .EQ. 3) GO TO 82	034680
L=1	034700
GO TO 85	034720
82 L=2	034740
JD=0	034760
C DO LOOP 120 --- SETUP 'PNLT', 'AL' AND 'ALT' DATA POINTS IN PLOT	034780
C ARRAY.	034800
35 J3=0	034820
DO 120 J=JJ1,JJ2,JJ1	034840
J3=J3+1	034860
C CONVERT NOISE LEVEL TO ARRAY POSITION --- 'J1'.	034880
J1=ICV(SENX(I,IRD,J))-MN+1	034900
IF (J1 .LT. 1 .OR. J1 .GT. 105) GO TO 100	034920
IF (P(J1,L) .EQ. BLK .OR. P(J1,L) .EQ. DOT) GO TO 90	034940
C SYM(4) IS SYMBOL 'X' FOR COINCIDENT POINTS.	034960
P(J1,L)=SYM(4)	034980
GO TO 100	035000
90 SAV(J3)=P(J1,L)	035020
P(J1,L)=SYM(J3)	035040
GO TO 110	035060
100 J1=0	035080
110 JJ(J3)=J1	035100
120 CONTINUE	035120
C PRINT TAB PLOT LINE FOR ANGLE 'IA'.	035140
WRITE(6,2100) A1, IA,(P(J,L),J=1,105)	035160
C DO LOOP 160 --- REINITIALIZE PLOT ARRAY DELETING PLOTTED DATA POINTS.	035180
DO 160 J=1,3	035200
IF (JJ(J)) 160,160,160	035220
160 J1=JJ(J)	035240
P(J1,L)=SAV(J)	035260
160 CONTINUE	035280

C PRINT TAB GRID LINES BETWEEN EACH ANGLE:	035300
WRITE(6,2110) A2, (P(J,1),J=1,105)	035320
200 CONTINUE	035340
WRITE(6,2030)	035360
WRITE(6,2030) IX	035380
2000 FORMAT(41X,6HP=PNLT,23X,44A=AL,23X,5HT=ALT)	035400
2010 FORMAT(10X,1H(,105(1H-),1H))	035420
2030 FORMAT(13X,11(6X,I4)/ 58X,26HNOISE LEVEL IN PNDB OR DBA)	035440
2100 FORMAT(11X,A1, 15,24 (,105A1,1H))	035460
2110 FORMAT(11X,A1,6X,1H(,105A1,1H))	035480
RETURN	035500
END	035520

```

SUBROUTINE RANK(IREQ,IERR)                                035540
*****                                                    035560
*****                                                    035580
035600
035620
035640
035660
035680
035700
035720
035740
035760
035780
035800
035820
035840
035860
035880
035900
035920
035940
035960
035980
036000
036020
036040
036060
036080
036100
036120
036140
036160
036180
036200
036220
036240
036260
036280
036300
036320
036340
036360
036380
036400
036420
036440
036460
036480
036500
036520
036540
036560
036580
036600
036620

```

DECK 15 SUBROUTINE 'RANK'
 THIS SUBROUTINE IS CALLED FROM THE MAIN ROUTINE TO DETERMINE THE
 NORMALIZED DATASETS (ONE OR TWO) REQUIRED TO COMPUTE THE PROFILE
 OUTPUT FOR EACH REQUESTED OUTPUT POWER SETTING (PSC OR PSCF). THE
 INDICIES OF THESE NORMALIZED DATA ARE STORED IN ARRAY 'IREQ' FOR
 EACH POWER SETTING.
 SUBROUTINE ARGUMENT IERR IS RETURNED GREATER THAN ZERO WHEN ERRORS
 OCCURRED IN THIS SUBROUTINE.

```

    DIMENSION IREQ(2,6),NR(6),NRI(6)
    COMMON M,MH,IL,IN,NC,L,N
    COMMON /HEADC/ TEST(6),TI(6,6),DATE,RUN(6),IPAGE,IVER,ACC,OPC(6),
    1 IT,P1,IHH,IT8,P8,IH8,FIMPR3,PV,CRI,PS(6,6),OPD(2,6),OPCC(6),DELN
    2, PSC(6),PSU,NP,PSIF(6),PSCF(6),NRC(6),ICC,OPCDM,OPD1,JPD2
    3, COMD(6),RUNC(6),IC,CATN(6),IFC(6),IFCC,IFI(6),IFII
    DATA FCT/0.001/,DUM/0.0/
    CONVERT POWER SETTING DATA FROM '4' FORMAT TO FLOATING POINT FORMAT.
    IERR=0
    DO 10 I=1,N
      DECODE(5,3000,PS(1,I)) PSIF(I)
    OUTPUT POWER SETTING UNITS (PSU) MUST BE THE SAME AS IN THE REFERENCE
    FILE
      IF (PS(2,I) .NE. PSU) GO TO 25
    10 CONTINUE
      DO 20 I=1,NP
        DECODE(5,3000,PSC(I)) PSCF(I)
      GO TO 30
    25 WRITE(6,2000) ACC,OPC(I),PS(2,I),PSU
      IERR=3
      RETURN
    INDICIES OF AFTERBURNER, WET AND WITH JETS 'PSIF' DATA (IFI>0) ARE
    STORED IN 'NRI' BUT NOT RANKED.
    30 KK=0
      IF (IFII) 50,50,35
    35 DO 45 I=1,N
      IF (IFI(I)) 45,45,40
    40 KK=KK+1
      NRI(KK)=I
    45 CONTINUE
    50 KKI=KK
    KKI --- NUMBER OF OPC'S WITH IFI>0 (KKI SHOULD =IFII).
    RANK PSIF(I) DATA AND STORE INDEX OF PSIF OF RANK 'KK' IN NRI(KK);
    RANK STARTS AFTER UNRANKED AFTERBURNER, WET AND WITH JETS DATA:
    THAT IS, FIRST KK=KKI+1.
      IF (N .EQ. KKI) GO TO 110
      IF (N .GT. 1) GO TO 60
      NRI(1)=1
      GO TO 110

```

50 N1=KKI+1	036640
DO 85 I=1,N	036660
85 NR(I)=N1	036680
N1=N-1	036700
DO 90 I=1,N1	036720
IF (IFI(I)) 70,70,90	036740
70 II=I+1	036760
DO 85 K=II,N	036780
IF (IFI(K)) 75,75,85	036800
75 IF (PSIF(I) .GT. PSIF(K)) GO TO 80	036820
NK(K)=NK(K)+1	036840
GO TO 85	036860
80 NR(I)=NR(I)+1	036880
85 CONTINUE	036900
KK=NR(I)	036920
NRI(KK)=I	036940
90 CONTINUE	036960
IF (IFI(N)) 100,100,110	036980
100 KK=NR(N)	037000
NRI(KK)=N	037020
C INJICIES OF AFTERBURNER, WET AND WITH JETS 'PSCF' DATA (IFC>0) ARE	037040
C STORED IN 'NRC' BUT NOT RANKED.	037060
110 KK=0	037080
IF (IFCC) 135,135,120	037100
120 DO 130 I=1,NP	037120
IF (IFC(I)) 130,130,125	037140
125 KK=KK+1	037160
NRC(KK)=I	037180
130 CONTINUE	037200
C KKC --- NUMBER OF PSC'S WITH IFC>0 (KKC SHOULD =IFCC).	037220
135 KKC=KK	037240
IF (NP .EQ. KKC) GO TO 220	037260
C RANK PSCF(I) DATA AND STORE INDEX OF PSCF OF RANK 'KK' IN NRC(KK);	037280
C RANK STARTS AFTER UNRANKED AFTERBURNER, WET AND WITH JETS DATA;	037300
C THAT IS, FIRST KK=KKC+1.	037320
IF (NP .GT. 1) GO TO 150	037340
NRC(1)=1	037360
GO TO 210	037380
150 N1=KKC+1	037400
DO 160 I=1,NP	037420
160 NR(I)=N1	037440
N1=NP-1	037460
DO 200 I=1,N1	037480
IF (IFC(I)) 170,170,200	037500
170 II=I+1	037520
DO 190 K=II,NP	037540
IF (IFC(K)) 180,180,190	037560
180 IF (PSCF(I) .GT. PSCF(K)) GO TO 185	037580
NK(K)=NK(K)+1	037600
GO TO 190	037620
185 NR(I)=NR(I)+1	037640
190 CONTINUE	037660
KK=NK(I)	037680
NRC(KK)=I	037700
200 CONTINUE	037720

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      IF (IFC(NP)) 205,205,210                                037740
205 KK=NR(NP)                                                  037760
      NRC(KK)=NP                                              037780
210 IF (KKC) 260,260,220                                       037800
C   JO LOOP 250 --- DETERMINE THE INDEX OF ARRAY PSIF (ALSO OPC, ETC.) 037820
C   REQUIRED TO COMPUTE PSCF(IC) DATA AND STORE INDEX IN ARRAY IREQ(1,IC) 037840
C   ONLY AFTERBURNER, WET OR WITH JETS DATA ARE CHECKED HERE.    037860
220 DO 250 IC=1,KKC                                           037880
      ICC=NRC(IC)                                             037900
      IREQ(1,IC)=0                                           037920
      IREQ(2,IC)=0                                           037940
      DO 230 IN=1,KKI                                         037960
      IN1=NRI(IN)                                             037980
      IF (ABS(PSCF(ICC)-PSIF(IN1)) .LT. FCT*PSIF(IN1)) GO TO 240 038000
230 CONTINUE                                                  038020
C   WRITE ERROR MESSAGE WHEN MATCH IS NOT FOUND.                038040
      WRITE(6,2400) PSC(ICC),ACC                             038060
      IERR=4                                                  038080
      RETURN                                                  038100
240 IREQ(1,IC)=IN1                                           038120
250 CONTINUE                                                  038140
      IF (KKC .EQ. NP) RETURN                                038160
C   JO LOOP 400 --- DETERMINE INDICIES OF ARRAY PSIF (ALSO OPC, ETC.) 038180
C   REQUIRED TO COMPUTE PSCF(IC) DATA AND STORE INDICIES IN ARRAY 038200
C   IREQ(1&2,IC) --- ALL NORMAL POWER CONDITION DATA ARE CHECKED HERE. 038220
C   IF ONE OR MORE OF THE SAME REFERENCE DATASETS ARE REQUIRED TO COMPUTE 038240
C   TWO CONSECUTIVE PROFILE DATASETS, THEN IREQ(1,IC)=IREQ(1,IC-1) OR 038260
C   IREQ(2,IC)=IREQ(2,IC-1) TO AVOID DUPLICATE COMPUTATION OF PROFILE 038280
C   DATA.                                                      038300
260 NP1=KKC+1                                                 038320
      IF (KKI .EQ. N) GO TO 500                               038340
      N1=KKI+1                                                038360
      N2=N-1                                                  038380
      DO 400 IC=NP1,NP                                         038400
      IC1=IC-1                                                 038420
C   ICC -- INDEX OF 'PSC' (OR PSCF) DATA OF RANK 'IC':        038440
      ICC=NRC(IC)                                             038460
      IREQ(1,IC)=0                                           038480
      IREQ(2,IC)=0                                           038500
      IF (N1.LT. N) GO TO 300                                  038520
      IN2=NRI(N1)                                             038540
      GO TO 320                                                038560
300 DO 310 IN=N1,N2                                           038580
      IN1=NRI(IN)                                             038600
      IN2=NRI(IN+1)                                           038620
      IF (ABS(PSCF(ICC)-PSIF(IN1)) .LT. FCT*PSIF(IN1)) GO TO 340 038640
      IF (PSCF(ICC) .GT. PSIF(IN1) .AND. PSCF(ICC) .LT. PSIF(IN2)) GO 038660
      1 TO 330                                                038680
310 CONTINUE                                                  038700
320 IF (ABS(PSCF(ICC)-PSIF(IN2)) .LT. FCT*PSIF(IN2)) GO TO 350 038720
C   WRITE ERROR MESSAGE IF MATCH IS NOT FOUND.                038740
      IN1=NRI(KKI+1)                                          038760
      IERR=2                                                  038780
      WRITE(6,2300) IERR,ACC,PSCF(ICC),PSIF(IN1),PSIF(IN2) 038800
      RETURN                                                  038820

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330 IF (IC-NP1) 360,360,335	038840
C LABELS 335 TO 355 -- CHECK TO DETERMINE IF THE SAME REFERENCE DATA	038860
C WERE USED FOR THE PREVIOUS 'IC'	038880
335 IF (IN2 .EQ. IREQ(1,IC1) .OR. IN1 .EQ. IREQ(2,IC1)) GO TO 370	038900
GO TO 360	038920
340 IF (IC-NP1) 365,365,345	038940
345 IF (IN1 .EQ. IREQ(2,IC1)) GO TO 375	038960
GO TO 365	038980
350 IF (IC-NP1) 380,380,355	039000
355 IF (IN2 .EQ. IREQ(2,IC1)) GO TO 385	039020
GO TO 380	039040
C LABELS 380 TO 385 -- SET 'IREQ' EQUAL TO THE INDICES OF THE	039060
C REFERENCE POWER SETTING DATA REQUIRED TO COMPUTE THE 'PSC(IC)'	039080
C DATA	039100
360 IREQ(2,IC)=IN2	039120
365 IREQ(1,IC)=IN1	039140
GO TO 400	039160
370 IREQ(1,IC)=IN2	039180
375 IREQ(2,IC)=IN1	039200
GO TO 400	039220
380 IREQ(1,IC)=IN2	039240
GO TO 400	039260
385 IREQ(2,IC)=IN2	039280
400 CONTINUE	039300
RETURN	039320
C WRITE ERROR MESSAGE WHEN ALL IFI>0 FOR INPUT DATASETS BUT NOT ALL	039340
C IFC>0 FOR REQUESTED PROFILE DATA.	039360
500 IERR=1	039380
DO 510 IC=NP1,NP	039400
ICC=MRC(IC)	039420
510 WRITE(6,2300) IERR,ACC,PSCF(ICC),DUM,DUM	039440
RETURN	039460
2000 FORMAT(*1 FOR ACC= *,A3,* AND OPC= *,A2/* POWER SETTING UNITS	039480
1 READ FROM NORMALIZED DATASET DO NOT MATCH UNITS ON CODE SHEET*/	039500
2 * PS(2,I)=*,A6/* PSU=*,A6/	039520
3 * ALL DATA FOR THIS ACC DELETED FROM THIS JOB.*/	039540
2300 FORMAT(*1 REQUESTED POWER SETTING DATA OUTSIDE RANGE OF AVAILABLE	039560
1E INPUT DATA.*//* SEE SUB. RANK --- IERR=*,I2,* DATA FOR ACC	039580
2= *,A3,* DELETED FROM THIS JOB.*//* PS(2,I)=*,F11.5,	039600
3 * AND MIN AND MAX INPUT POWER SETTINGS ARE *,F11.5,* AND *,	039620
* F11.5,* RESPECTIVELY.*/	039640
2400 FORMAT(*1 REQUESTED AFTERBURNER, WET OR WITH JETS POWER SETTING	039660
1--- PSC= *,A5/* DOES NOT MATCH POWER SETTING IN NORMALIZED REFERENCE	039680
2REFERENCE FILE.*/ * ALL DATA FOR AIRCRAFT CODE *,A3,* DELETED FROM	039700
3THIS JOB.*/	039720
3000 FORMAT(F5.0)	039740
END	039750

	SUBROUTINE SUMRY(IREQ,IEDIT,FMXR)	039790
C	*****	039800
C	*****	039820
C	DECK 16 SUBROUTINE 'SUMRY'	039860
C	THIS SUBROUTINE IS CALLED FROM THE 'MAIN' ROUTINE TO PRINT THE	039880
C	OMEGA 11 SUMMARY PAGE WHICH LISTS JOB 'ID' PARAMETERS AS WELL AS A	039900
C	SUMMARY OF THE INPUT AND OUTPUT DATA.	039920
C		039940
C	FOR IPR<1, THIS IS THE ONLY TAB OUTPUT.	039960
C	*****	039980
C	*****	040000
C	*****	040020
	DIMENSION YN(2),IREQ(2,6),ANG(3)	040040
	COMMON M,MM,IBNL,IBNH,NC, L,N,ID,DIST,MEAS(3)	040060
	COMMON /HEADC/ TEST(6),TT(6,6),DATE,RUN(6),IPAGE,IVER,ACC,OPC(6),	040080
	1 IT,P1,IMH,IT8,P8,IM8,FIMPR8,PV,CRI,PS(6,6),OPD(2,6),OPCC(6),DELN	040100
	2, PSC(6),PSU,NP,PSIF(6),PSCF(6),NRC(6),ICU,OPCOM,OPD1,OPD2	040120
	3, COMD(6),KUNC(6),IC,DAIV(5),IFC(6),IFCC,IFI(6),IFII	040140
	DATA YN/3HNO, 3MYES/,ANG/3H NO,3H 10,3HALL/,BLK/1H /	040160
	WRITE(6,2000) TEST(1),(TT(I,1),I=1,3)	040180
	WRITE(6,2010) IVER,ACC,PV,CRI,DATE,DELN	040200
	WRITE(6,2020)	040220
C	PRINT SUMMARY OF REFERENCE DATA (INPUT) FOR EACH POWER SETTING:	040240
	DO 50 L=1,N	040260
	50 WRITE(6,2030) ACC,COMD(L),OPC(L),IFI(L),PS(1,L),PS(2,L),TEST(L),	040280
	1 RUN(L),OPD(1,L),OPD(2,L)	040300
	WRITE(6,2040)	040320
	DO 60 L=1,N	040340
	60 WRITE(6,2050) ACC,COMD(L),(TT(I,L),I=1,6),DATN(L)	040360
C	START OUTPUT DATA SUMMARY:	040380
	WRITE(6,2060)	040400
	I1=1	040420
	I2=1	040440
	I3=1	040460
	IF (MEAS(1) .GT. 0) I1=2	040480
	IF (MEAS(2) .GT. 0) I2=2	040500
	IF (MEAS(3) .GT. 0) I3=2	040520
	WRITE(6,2070) YN(I1),YN(I2),YN(I3)	040540
	IF (IEDIT) 70,80,90	040560
	70 I1=1	040580
	GO TO 100	040600
	80 I1=2	040620
	GO TO 100	040640
	90 I1=3	040660
	100 WRITE(6,2080) ANG(I1)	040680
	IF (IEDIT) 110,105,110	040700
	105 WRITE(6,2085) FMXR	040720
	110 WRITE(6,2090) IT8,P8,IM8	040740
	WRITE(6,2100) TEST(1),(TT(I,1),I=1,6)	040760
	WRITE(6,2110)	040780
C	PRINT PROFILE DATA SUMMARY FOR EACH POWER SETTING:	040800
	DO 150 I=1,NP	040820
	I1=NRC(I)	040840
	I2=IREQ(1,I)	040860

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I3=IREQ(2,I)                                040880
IF (I2.EQ. 3) GO TO 120                      040900
IF (I3.EQ. 0) GO TO 130                      040920
WRITE(6,2120) ACC,OPCC(I1),PV,CRI,OPCC(I1),RUNC(I),PSC(I1), 040940
1 PSU,ACC,COMD(I2),YN(I),ACC,COMD(I3)        040960
GO TO 150                                    040980
120 I2=I3                                    041000
130 WRITE(6,2120) ACC,OPCC(I1),PV,CRI,OPCC(I1),RUNC(I),PSC(I1), 041020
1 PSU,ACC,COMD(I2),BLK,BLK,BLK,OPU(1,I2),OPD(2,I2) 041040
130 CONTINUE                                041060
WRITE(6,2130)                                041080
RETURN                                         041100
2000 FORMAT(1H1, 3X,*SUMMARY OF I/O FOR TEST *,A10,* FOR THE *,2A9,A7) 041120
1)                                             041140
2010 FORMAT(/10X,*PROGRAM: OMEGA 11.*,I1/    041160
1 10X,*AIRCRAFT CODE: *,A3/ 10X,*PROFILE VERSION CODE: *,A1/ 041180
2 10X,*COMDECK REVISION IDENTIFIER: *,A1/ 10X,*DATE: *,A10/ 041200
3 10X,*DELTA N (JR DELN)=*,F6.2,* DB*)      041220
2020 FORMAT(/10X,31(1H*),* INPUT DATA *,31(1H*) 041240
1 /11X,*COMDECK*,8X,*FLAG POWER*,9X,        041260
2 *TEST RUN POWER DESCRIPTION*/             041280
3 13X,*NAME OPC IFI SETTING*,3X,2(6X,2HNO)) 041300
2030 FORMAT(10X,*N*,A3,A4,3X,A2, 16,3X,A5,1X,A6,2X,A10,2X,A2,2X,2A10) 041320
2040 FORMAT(/11X,*COMDECK *,15(1H-),* NOISE SOURCE/SUBJECT *,15(1H-) 041340
1,* DATE OF*/13X,*NAME PART 1*,21X,*PART 2*,21X,*NORM. RUN*) 041360
2050 FORMAT(10X,*N*,A3,A4,2(2X,2A9,A7),2X,A10) 041380
2060 FORMAT(/10X,30(1H*),* OUTPUT DATA *,31(1H*)) 041400
2070 FORMAT( 10X,*MEASURES COMPUTED: PNLT(P)--*,A3,4X,*A_ (A)--*,A3, 041420
1 4X,*ALT(T)--*,A3)                          041440
2080 FORMAT(10X,*ANGLE SELECTION MODE: PROFILE DATA FOR *,A3, 041460
1 * ANGLES WRITTEN ON FILE *TAPE2**)          041480
2085 FORMAT(10X,*MAX ERROR PERMITTED IN PROFILE DATA ANGLE SELECTION (F 041500
1ILE TAPE2)=*,F5.1,* DB*)                    041520
2090 FORMAT(10X,*METEOROLOGY: TEMP*,6X,*=*,I6,* F*/ 041540
1 24X,*BAR PRESS =*,F6.2,* IN HG*/ 24X,*REL HUMID =*,I5,* %*) 041560
2100 FORMAT(/10X,*TEST NUMBER FOR ALL RUNS: *,A10/ 041580
1 10X,*NOISE SOURCE/SUBJECT FOR ALL RUNS, PART 1: *,2A9,A7/ 041600
2 40X,*PART 2: *,2A9,A7)                     041620
2110 FORMAT(/10X,*PROFILE*, 7X,*RUN POWER*,6X, 041640
1 *NORMALIZED COMDECKS POWER DESCRIPTION*/ 041660
2 12X,*ID*,5X,*OPC NO SETTING FIRST SECOND*) 041680
2120 FORMAT(10X,A3,A2,2A1,2(3X,A2),2X,A5,1X,A6,2X,*N*,A3,A4,2X, 041700
1 A1,A3,A4,3X,2A10)                          041720
2130 FORMAT(/10X,26(1H*),* GENERAL INFORMATION *,27(1H*)/ 041740
1 10X,*OPC --- OPERATION POWER CODE*/        041760
2 10X,*FLAG IFI=1 --- REFERENCE DATA ARE FOR AFTERBURNER, MET OR W 041780
3TH JETS*/ 10X,* IFI=0 --- NORMAL REFERENCE DATA WHICH CAN BE I 041800
4NTERPOLATED*/                                041820
5 10X,*PROFILE COMDECK NAME = SYMBOL P, A OR T + PROFILE ID LISTED 041840
6ABOVE*)                                       041860
END                                             041880

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SUBROUTINE EDIT(IRD,J1,J2,J1,ACC,PSC,PSU,FMXR) 041900
***** 041920
***** 041940
J1=17 SUBROUTINE 'EDIT' 041960
THIS SUBROUTINE IS CALLED FROM THE 'MAIN' ROUTINE TO SELECT THE TEN 041980
(0 AND 180 DEGREES PLUS 6 ANGLES IN BETWEEN) ANGLES FOR EACH MEASURE 042000
(PNLT, AL, AND ALT) WHICH BEST DEFINE THE ANGLE VERSUS NOISE LEVEL 042020
DATA FOR THAT MEASURE AT THE REFERENCE DISTANCE (250 FEET). 042040
***** 042060
***** 042080
***** 042100
DIMENSION TYPE(3) 042120
COMMON IDH(9),MEAS(3),FSP(19,2,6),NR(17,3),NRA(17,8),ER(19,3), 042140
1 ERA(19,8),R15(3),RMSA(8),OBC(19),DB(10),ANG(10),DUM(10), 042160
2 SENX(19,22,12),SENX(19,3),SL(18,3),DSL(17,3),NRD(17,3) 042180
DATA TYPE/4HPNLT,4HAL,4ALT/,ERMAX/1.49/ 042200
ARKAY 'MEAS(3)' IS THE FLAG TO INDICATE MEASURES TO BE COMPUTED: 042220
MEAS(1)>0 --- COMPUTE 'PNLT' DATA. 042240
MEAS(2)>0 --- COMPUTE 'AL' DATA. 042260
MEAS(3)>0 --- COMPUTE 'ALT' DATA. 042280
J=0 042300
JM=3 042320
DO 100 JJ=J1,J2,J1 042340
J=J+1 042360
SENX(1,J)=SENX(1,IRD,JJ) 042380
C COMPUTE ANGLE TO ANGLE SLOPE: 042400
DO 30 I=2,19 042420
SENX(I,J)=SENX(I,IRD,JJ) 042440
I=I-1 042460
30 SL(II,J)=SENX(I,J)-SENX(II,J) 042480
C COMPUTE CHANGES IN SLOPE: 042500
DO 35 I=2,18 042520
II=I-1 042540
35 DSL(II,J)=SL(I,J)-SL(II,J) 042560
DO 40 I=1,17 042580
+0 NR(I,J)=1 042600
C RANK CHANGES IN THE SLOPES: 042620
DO 50 I=1,16 042640
II=I+1 042660
DO 50 K=II,17 042680
IF (ABS(DSL(I,J)) .GT. ABS(DSL(K,J))) GO TO 45 042700
NR(K,J)=NR(K,J)+1 042720
GO TO 50 042740
45 NR(I,J)=NR(I,J)+1 042760
50 CONTINUE 042780
100 CONTINUE 042800
C NR(I,J) CONTAINS RANK OF I-TH DSL. 042820
C WRITE(6,2000) 042840
ICK=0 042860
C 'J' IS THE MEASURE INDEX: 042880
DO 200 J=1,3 042900
C WRITE(6,2100) TYPE(J),ACC,PSC,PSU,(I,I=10,180,10) 042920
C WRITE(6,2200) (SENX(I,J),I=1,19),(SL(I,J),I=1,16) 042940
C WRITE(6,2300) (DSL(I,J),I=1,17),(NR(I,J),I=1,17) 042960
C WRITE(6,2400) 042980

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RMSMN=1000.0	043000
C COMPUTE 'RMS' OF ERROR USING ALL THREE SETS OF ANGLES FOR EACH	043020
C MEASURE. THE 8 ANGLES WITH THE LARGEST CHANGE IN SLOPE	043040
C (PLUS 0 AND 180 DEGREE ANGLES) ARE SELECTED AND LINEAR INTERPOLATION	043060
C IS USED TO COMPUTE THE MEASURE DATA FOR THE REMAINING ANGLES.	043080
C THE ERROR IS THE DIFFERENCE BETWEEN ACTUAL DATA AND THE INTERPOLATED	043100
C DATA.	043120
DO 150 JR=1,3	043140
CALL ERR(J,JR,NR,RMS,ER,JM)	043160
IF (RMS(JR) .GE. RMSMN) GO TO 150	043180
RMSMN=RMS(JR)	043200
JMN=JR	043220
150 CONTINUE	043240
C WRITE(6,2120) JMN, (ER(I,JMN), I=1,19)	043260
C WRITE(6,2500) RMS	043280
DO 155 I=1,17	043300
155 NRD(I,J)=NR(I,JMN)	043320
RMS(J)=RMSMN	043340
C USING THE ANGLE SET WITH THE SMALLEST 'RMS' ERROR, SELECT THE	043360
C ANGLES WITH THE LARGEST ERRORS IN AN ATTEMPT TO IMPROVE THE ANGLE	043380
C SELECTION:	043400
CALL ITER(J,JMN,ICK,EKMAX,NRD)	043420
C AFTER 'ITER':	043440
RMS(J) CONTAINS THE RMS DATA	043460
ER(19,3) CONTAINS ERROR DATA.	043480
NRD(17,3) CONTAINS RANK DATA	043500
C IF 'ICK' > 0, CHANGES WERE MADE IN 'ER' AND 'NRD' IN SUB. 'ITER'.	043520
200 CONTINUE	043540
IF (ICK) 235,235,210	043560
C IF THE ANGLE SELECTION WAS CHANGED BY SUBROUTINE 'ITER' ABOVE	043580
C (ICK > 0), RECOMPUTE THE 'RMS' ERROR FOR EACH ANGLE SET FOR EACH	043600
C MEASURE AND CALL SUBROUTINE 'ITER' AGAIN; IE., REPEAT	043620
C LABEL 200 LOOP COMPUTATIONS (IN LOOP 230):	043640
210 DO 230 J=1,3	043660
RMSMN=1000.0	043680
DO 220 JR=1,3	043700
CALL ERR(J,JR,NRD,RMS,ER,JM)	043720
IF (RMS(JR) .GE. RMSMN) GO TO 220	043740
RMSMN=RMS(JR)	043760
JMN=JR	043780
220 CONTINUE	043800
DO 225 I=1,17	043820
225 NRD(I,J)=NRD(I,JMN)	043840
C WRITE(6,2500) RMS	043860
C 'JMN=J' ITERATION HAS ALREADY BEEN COMPUTED ABOVE:	043880
IF (JMN .EQ. J) GO TO 230	043900
RMS(J)=RMSMN	043920
CALL ITER(J,JMN,ICK,EKMAX,NR)	043940
230 CONTINUE	043960
235 IHOR=0	043980
C COMPUTE THE FINAL ERROR AND 'RMS' ERROR DATA FOR EACH MEASURE;	044000
C ANGLES WITH RANK (NR OR NRD) > 9 ARE INCLUDED IN THE PROFILE DATASET	044020
C WRITTEN ON FILE 'TAPE2':	044040
DO 310 J=1,3	044060
IF (MEAS(J)) 310,310,240	044080

240 IF (ICK) 245,245,255	044100
245 DO 250 I=1,17	044120
250 NR(I,J)=NRD(I,J)	044140
255 CALL EKR(J,J,NR,RMS,ER,JH)	044160
IERR=0	044180
C CHECK FOR ERRORS GREATER THAN 'FMXER'; IF ERRORS OCCUR, PRINT	044200
C WARNING MESSAGES WITH ERROR AND RANK DATA. THE DATA ARE USED	044220
C REGARDLESS OF THE MAGNITUDE OF THE ERRORS:	044240
DO 260 I=2,18	044260
IF (ABS(ER(I,J)) .LT. FMXER) GO TO 260	044280
IERR=IERR+1	044300
260 CONTINUE	044320
C IF (IERR) 300,300,270	044340
IF (IERR) 310,310,270	044360
270 IF (IHDR) 275,275,260	044380
275 IHDR=1	044400
WRITE(6,2000) ACC,PSC,PSU	044420
230 WRITE(6,2005) TYPE(J),FMXER	044440
300 WRITE(6,2110) (I,I=10,180,10)	044460
WRITE(6,2130) (NR(I,J),I=1,17)	044480
WRITE(6,2120) J,(ER(I,J),I=1,19)	044500
310 CONTINUE	044520
C WRITE(6,2500) RMS	044540
RETURN	044560
2000 FORMAT(*1AIRCRAFT CODE: *,A3,* POWER SETTING: *,A5,1X,A6)	044580
2005 FORMAT(/** FOR *,A4,* DATA, THE 10 ANGLES SELECTED RESULT IN ONE	044600
1R MORE ERRORS GREATER THAN FMXER= *,F6.3/ * ANGLES SELECTED ARE 0	044620
2AND 180 PLUS 8 ANGLES WITH RANK > 9.*/	044640
02100 FORMAT(/** ID: *,A4,2X,A3,2X,A5,A6/** ANG 0*,18I7)	044660
2110 FORMAT(/** ANG 0*,18I7)	044680
2120 FORMAT(* ER*,11,F6.1,18F7.1)	044700
2130 FORMAT(* RANK*,4X,17I7)	044720
02200 FORMAT(* DAT*,F6.1,18F7.1/* SL *,18F7.2)	044740
02300 FORMAT(* DSL*,6X,17F7.2/* RANK*,4X,17I7)	044760
02400 FORMAT(1H)	044780
02500 FORMAT(3X,*RMS1=*,F7.3,5X,*RMS2=*,F7.3,5X,*RMS3=*,F7.3)	044800
END	044820

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      SUBROUTINE ERR(J,JA,NRA,RMSA,ERA,JM)
      *****
      DECK 18 SUBROUTINE 'ERR'
      THIS SUBROUTINE IS CALLED FROM SUBROUTINES 'EDIT' AND 'ITER'.
      IT USES LINEAR INTERPOLATION TO COMPUTE THE MEASURE DATA FOR ANGLES
      WITH RANK < 10, THEN COMPUTES THE ERROR AND 'RMS' ERROR BETWEEN THE
      GIVEN JATA AND THIS INTERPOLATED DATA. NINE ANGLES ARE INTERPOLATED
      FOR EACH SET.
      *****
      DIMENSION AG(19),NRA(17,J),RMSA(JM),ERA(19,JM)
      COMMON IDN(9),MEAS(3),FSPL(19,24,6),NRER(407),DBC(19),DB(10),
      1 ANG(10),DUM(10),SENXD(19,22,12),SENX(19,3)
      DATA AG/0.,10.,20.,30.,40.,50.,60.,70.,80.,90.,100.,110.,120.,130.,
      1, 140.,150.,160.,170.,180./
      K=1
      SET ANGLE AND DB ARRAYS FOR ANGLES 0 AND 180 DEGREES:
      ANG(K)=0.0
      DB(K)=SENX(K,J)
      ANG(10)=180.0
      DB(10)=SENX(19,J)
      DO 50 I=1,17
      II=I+1
      IF (NRA(I,JA) .LT. 10) GO TO 50
      K=K+1
      SET UP ANGLE AND DB ARRAYS FOR THE 8 SELECTED ANGLES:
      ANG(K)=AG(II)
      DB(K)=SENX(II,J)
      50 CONTINUE
      IF (K .NE. 9) WRITE(6,2000) K
      2000 FORMAT(// 'ERROR IN K IN SUBROUTINE ERR---K=*,I4)
      SUM=0.0
      USE SUBROUTINE 'FINTP' TO INTERPOLATE DB LEVEL FOR ANGLE AG(I),
      THEN COMPUTE ERROR AND 'RMS' SUM:
      CALL FINTP(AG,DBC,ANG,DB)
      DO 70 I=1,19
      ERA(I,JA)=SENX(I,J)-DBC(I)
      70 SUM=SUM+ERA(I,JA)**2
      COMPUTE 'RMS':
      RMSA(JA)=SQRT(SUM/9.0)
      RETURN
      END

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SUBROUTINE FINTP(AG,DBC,X,Y)                                045720
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SUBROUTINE ITER(J,JMN,ICK,ERMAX,NRD)
C*****
C*****
C DECK 20 SUBROUTINE 'ITER'
C THIS SUBROUTINE IS CALLED FROM SUBROUTINE 'EDIT' TO SELECT THE
C ANGLES WITH THE LARGEST ERROR > 'ERMAX' AND DELETE THE ANGLES WHICH
C RESULT IN THE SMALLEST 'RMS' ERROR. A MAXIMUM OF 5 LARGE ANGLES ARE
C SELECTED, ONE AT A TIME.
C*****
C*****
C DIMENSION NRD(17,3)
C COMMON IDH(9),MEAS(3),FSP_(19,24,6),NRDH(17,3),NRA(17,5),ER(19,3),
C 1 ERA(19,6),RMS(3),RMSA(8)
C JM=8
C PERFORM 5 ITERATION SETS REPLACING ANGLES > ERMX; IN MOST CASES
C THERE ARE FEWER THAN 5 ANGLES WITH ERROR > ERMX;
C DO 190 IRP=1,5
C ERMX=-1.0
C DETERMINE THE MAXIMUM ERROR (ERMX) AND THE CORRESPONDING ANGLE
C INDEX (IMX):
C DO 160 I=2,18
C D1=ABS(ER(I,JMN))
C IF (D1 .LE. ERMX) GO TO 150
C ERMX=D1
C IMX=I
C 100 CONTINUE
C IMXKK -- INDEX OF MAXIMUM ERROR IN RANK ARRAY (NRA OR NRD):
C IMXKK=IMX-1
C IF (ERMX .LT. ERMX) RETURN
C ICK=1
C RMSMN=1000.0
C SELECT 'IMX' ANGLE AND DELETE ANGLES WITH RANK 10 TO 17 ONE AT A
C TIME TO DETERMINE THE MINIMUM 'RMS':
C DO 170 II=1,8
C IRK=II+9
C DO 160 I=1,17
C NRA(I,II)=NRD(I,J)
C IF (NRD(I,J) .EQ. IRK) NRA(I,II)=0
C 105 CONTINUE
C NRA(IMXKK,II)=IRK
C COMPUTE ERROR DATA:
C CALL ERR(J,II,NRA,RMSA,ERA,JM)
C IF (RMSA(II) .GE. RMSMN) GO TO 170
C II=II
C RMSMN=RMSA(II)
C 170 CONTINUE
C IF (RMSMN .GE. RMS(J)) GO TO 185
C IF RESULTING 'RMSMN' IS LESS THAN THE ORIGINAL 'RMS' FOR THE J-TH
C MEASURE, REDEFINE 'ER', 'NRD', AND 'RMS' ARRAYS WITH THE REVISED
C DATA:
C DO 175 I=1,19
C 175 ER(I,JMN)=ERA(I,II)
C DO 180 I=1,17

```

180	NRD(I,J)=NRA(I,II1)	047630
	RMS(J)=RMSMN	047700
C	WRITE(6,2600) IRP,RMSMN,(NRA(I,II1),I=1,17),II1,(ER(I,JMN),I=1,19)	047720
	GO TO 190	047740
135	ER(IMX,JMN)=0.0	047760
C	WRITE(6,2610) IRP,RMSMN	047780
130	CONTINUE	047800
	RETURN	047820
02600	FORMAT(* RMSA*,I1,*=*,F7.3/* RANK*,4X,17I7/ * ERA*,I1,F5.1,18F7.1)	047840
02610	FORMAT(* RMSA*,I1,*=*,F7.3,5X,*NO IMPROVEMENT*)	047860
	END	047880

***** SUPER INDEX *****

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I N D E X

***** SUPER INDEX *****

J	-	OMEGA11				
01	-	CUIST	ITER	OMEGA11		
02	-	CDIST				
03	-	COIST				
DACC	-	OMEGA11	RSPLN			
DATE	-	HEADS	OMEGA11	PPFOAT	SUMRY	ITTPG
DATN	-	RSPLN	SUMRY			
DB	-	ERR				
JBC	-	ERR	FINTP			
DD	-	ICV				
UDATN	-	RSPLN				
DELN	-	HEADS	OMEGA11	SUMRY	TESTN	
DELND	-	OMEGA11				
DFMXR	-	OMEGA11				
DIF	-	FINTP				
DIST	-	CDIST	OMEGA11	>LT		
JKEY	-	PPFOAT				
JOPC	-	KSPLN				
DDT	-	PLT				
JRUN	-	KSPLN				
DSL	-	EDIT				
DTEST	-	RSPLN				
DUM	-	RANK				
EA	-	CDIST				
EAD	-	CDIST				
EDIT	-	OMEGA11				
EOF	-	RSPLN	TESTN			
ER	-	EDIT	ITER			
EKA	-	ERR	ITER			
ERMAX	-	EDIT	ITER			
ERMX	-	ITER				
EKR	-	EDIT	ITER			
EX	-	TESTN				
F	-	ALPH	CPTC			
FCT	-	RANK				
FIMPK6	-	OMEGA11	TESTN			
FINTP	-	ERR				
FJ	-	CDIST	CPNL			
FL	-	FNOY				
FLOAT	-	CDIST	ICV	OMEGA11	TESTN	

..... SUPER INDEX

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I N D E X

***** SUPER INDEX *****

[illegible]

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******* SUPER INDEX *******

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INDEX

***** SUPER INDEX *****

IM - TESTN
 IMB - TESTN
 IT - HEADS
 IYPE - EDIT
 W - TESTN
 X - ALPH
 XI - ATKN
 XX - ATKN
 Y - ALPH
 YN - SUMRY
 YY - ATKN
 ZERO - TESTN

PPFOAT 2SPLN SUMRY IITPG

OMEGA11

ATKN FINTP

FINTP

ATKN FINTP

INDEX

END OF COMPUTATION,

1 DECEMBER 1967 VERSION.

(PROGRAM INDEX COPYRIGHT 1966, HARRY M. MURPHY, JR.)

REFERENCES

1. Bishop, D.E. Community Noise Exposure Resulting From Aircraft Operations: Acquisition and Analysis of Aircraft Noise and Performance Data, AMRL-TR-73-107, Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, OH, 1975.
2. "Standard Values of Atmospheric Absorption As A Function of Temperature and Humidity", SAE Aerospace Recommended Practice 866A, Society of Automotive Engineers, Warrendale, PA, 1975.
3. Cole, J.N., USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content, and Application, AMRL-TR-75-50(1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, OH, 1975.
4. "Noise Standards: Aircraft Type Certification", Federal Aviation Regulations, Part 36, December 1969.
5. "Definitions and Procedures For Computing The Perceived Noise Level of Aircraft Noise", SAE Aerospace Recommended Practice 865A, Society of Automotive Engineers, Warrendale, PA, 1969.
6. Kryter, K.D., The Effects of Noise on Man, Academic Press, New York, 1970.
7. Kryter, K.D., "Concepts of Perceived Noisiness, Their Implementation and Application", J. Acoust. Soc. Am. 43, 344-361, 1968.

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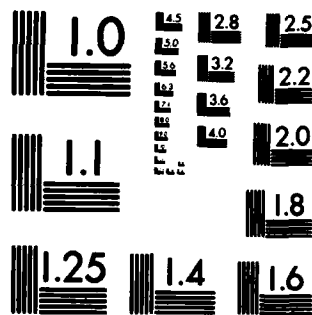
COMPUTER PROGRAMS FOR PRODUCING SINGLE-EVENT AIRCRAFT
NOISE DATA FOR SPECIFIC DAYTON UNIVERSITY RESEARCH INST
H I MOHLMAN APR 83 UDR-TR-82-30 AFAMRL-TR-83-020
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END
PAGE
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

SUPPLEMENTARY

INFORMATION

AD-A127419

ERRATA FOR AFAMRL-TR-83-020
JANUARY 1987

PROGRAMS FOR PRODUCING SINGLE-EVENT AIRCRAFT
FOR SPECIFIC ENGINE POWER AND METEOROLOGICAL
S FOR USE WITH USAF COMMUNITY NOISE MODEL
(NOISEMAP)

ing changes apply to the OMEGA 10.5 documentation:

23 - change EA(13,13) to EA(22,24) where
,24) is the excess atmospheric attenuation in dB
bands 17 to 40 and distances 200 to 25,000 feet.

41 - In the third paragraph change 800 Hz to
0 Hz and change 400 and 6300 feet to 200 and
0 feet, respectively. These EA data are
nted in Table 7 which is included with this
a. They were taken from AFAMRL-TR-84-017
rence 8).

44 and 45 - In the section Adjust SPL Spectra
round-to-Ground Propagation replace the first
ion with:

$$SPLX_{I,J} = SPLX_{I,J} - EA_{I,J}$$

:

- = the distance index defined for all 22
distances;
- = the frequency band index defined for bands 17
through 40;
- = excess attenuation in dB for the I^{th} distance
and the J^{th} frequency.

, the second equation and the last three lines in
paragraph.

(4)

The

(1)

(2)

(3)

REPE

(8)

- (4) Pages 58 to 60 - the following change applies to item (6a) and (6d). A minor change was also made in the extrapolation criteria in that now all requested output power settings (PSC) for operation power codes 04, 05, 06, 07 and 13 must be less than or equal to the reference file takeoff power setting. The takeoff power must be used as the reference (OPCR) for all requested PSC values greater than the reference file takeoff power setting.

The following changes apply to the OMEGA 11.2 documentation:

- (1) Page 74 - change EA(13,13) to EA(22,24) where EA(22,24) is the atmospheric attenuation in dB for bands 17 to 40 and distances 200 to 25000 feet.
- (2) Page 93 - In the first paragraph, change 800 Hz to 10,000 Hz and change 400 and 6300 feet to 200 and 25,000 feet, respectively. These EA data are presented in Table 7 which is included with this errata. They were taken from AFAMRL-TR-84-017 (Reference 8).
- (3) Page 93 - EAD is defined as the excess atmospheric attenuation of sound in dB over distance SX_K for frequency band index J where SX_K and J are defined for all standard distances and bands. The EA data are in the data statement array and $EAD = EA_{K,J}$.

REFERENCES:

- (8) Bishop, D.E., Overground Excess Sound Attenuation (ESA), Volume 3: Application of ESA Data in NOISEMAP, AFAMRL-TR-84-017 - Volume 3, Air Force Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, OH, April 1985.

TABLE 7
EXCESS SOUND ATTENUATION (8)

	DISTANCE FROM SOURCE IN FEET										SEA (dB)									
	250	300	350	400	500	600	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ALL SEA DATA FOR BANDS LESS THAN BAND 17 ARE THE SAME AS PER BAND 17 FOR EACH DISTANCE.
 ALL SEA DATA FOR BANDS GREATER THAN BAND 40 ARE THE SAME AS PER BAND 40 FOR EACH DISTANCE.
 ALL SEA DATA FOR DISTANCES GREATER THAN 2500 FEET ARE THE SAME AS PER 2500 FEET FOR EACH BAND.
 ALL SEA DATA ARE 0 FOR ALL DISTANCES LESS THAN OR EQUAL TO 250 FEET.

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