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HARV ANSER Flight Test Data Retrieval and Processing Procedures

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Abstract

Under the NASA High-Alpha Technology Program the High Alpha Research Vehicle (HARV) was used to conduct flight tests of advanced control effectors, advanced control laws, and high-alpha design guidelines for future super-maneuverable fighters. The High-Alpha Research Vehicle (HARV) is a pre-production F/A-18 airplane modified with a multi-axis thrust-vectoring system for augmented pitch and yaw control power and Actuated Nose Strakes for Enhanced Rolling (ANSER) to augment body-axis yaw control power. Flight testing at the Dryden Flight Research Center (DFRC) began in July 1995 and continued until May 1996. Flight data will be utilized to evaluate control law performance and aircraft dynamics, determine aircraft control and stability derivatives using parameter identification techniques, and validate design guidelines. To accomplish these purposes essential flight data parameters were retrieved from the DFRC data system and stored on the Dynamics and Control Branch (DCB) computer complex at Langley. This report describes the multi-step task used to retrieve and process this data and documents the results of these tasks. Documentation includes software listings, flight information, maneuver information, time intervals for which data were retrieved, lists of data parameters and definitions, and example data plots.

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Introduction

Future super-maneuverable fighters will need to employ rapid nose-pointing maneuvers to be successful in air combat. These maneuvers compared with those of current fighters will require that the aircraft operate throughout significantly expanded angle-of-attack and sideslip ranges and that the aircraft have unprecedented maneuvering capabilities, particularly at low speed and high angles of attack. However, the effectiveness of conventional aerodynamic control effectors is often inadequate to meet these requirements under the conditions of high angle of attack and low dynamic pressure. One of the key technologies required to achieve this maneuverability is advanced high-angle-of-attack controls. Elements of this technology include control effectors to produce angular accelerations; digital flight control laws which effectively utilize these control effectors to achieve the desired stability, maneuverability, and handling qualities; and guidelines to effectively integrate elements of this technology during the design process.

Under the NASA High-Alpha Technology Program research was conducted in these technologies. The High Alpha Research Vehicle (HARV) was used to conduct flight tests of advanced control effectors, advanced control laws, and high-alpha design guidelines.

The High-Alpha Research Vehicle (HARV) is a pre-production F/A-18 airplane modified to incorporate a multi-axis thrust-vectoring system for augmented pitch and yaw control power and Actuated Nose Strakes for Enhanced Rolling (ANSER) to augment body-axis yaw control power. The HARV is highly instrumented and is equipped with a research flight computer in which advanced flight control laws can be implemented. This control system is known as the Research Flight Control System (RFCS).

Control laws to utilize the thrust-vectoring system and the nose strakes were designed and implemented in the RFCS. Flight testing of these ANSER control laws began in July 1995 and continued until May 1996. During the flight tests approximately 2000 aircraft parameters and measurements were transmitted to the telemetry ground station and stored on the flight data system at the NASA Dryden Flight Research Center (DFRC). A number of calculated parameters, such as calibrated, or corrected, air data parameters were added to the stored data during post-processing of the data at DFRC. The data will be utilized at the NASA Langley Research Center (LaRC) to evaluate control law performance, evaluate aircraft dynamics, determine aircraft control and stability derivatives using parameter identification techniques, and validate design guidelines. To accomplish these purposes essential parameters from the data set were retrieved from the DFRC data system and stored on the computer complex of the Dynamics and Control Branch (DCB) at LaRC. The purpose of this paper is to describe the data retrieval process and to document which ANSER data parameters were retrieved. Documentation also includes information concerning which flights, which maneuvers, and for what time intervals the ANSER data were retrieved. The retrieval process was completed when these data were made available in "user friendly" engineering units on the DCB computer complex for analysis by the project engineers and when time-history plots of the processed data were filed in the DCB HARV data library.

The Multi-Step Task for Data Retrieval/Processing

The retrieval and processing of the flight data is a multi-step task involving the use of several software packages obtained from DFRC. These software tools include the GetFdas, GetData, and Xplot computer programs. Each of the programs was used primarily for a particular step in the overall process of obtaining flight test data in a desired format.

The GetFdas program was used during data retrieval to obtain flight data information and to write either arm data files or raw data files on the DFRC computer system. Arm files contain data indicating when the RFCS was armed and engaged. The GetData program was used to process raw data files on the LaRC computers. A software tool similar to the File Transfer Protocol program (FTP) must be used to transfer files to and from DFRC. The Xplot program was used to provide time-history plots of the arm, raw, and processed data. The multi-step task necessary to retrieve and process the HARV flight data is outlined below. The listed major steps and substeps and will be discussed in detail.

Step 1: Obtain flight data information.
- SubStep 1: Connect to a DFRC computer using the Telnet program.
- SubStep 2: Access GetFdas program.
- SubStep 3: Obtain data recorded start and stop times for the desired flight.
- SubStep 4: Obtain a list of available raw variables for the desired flight.

Step 2: Retrieve arm data files using start and stop times obtained in step 1.
- SubStep 1: Transfer arm data files to LaRC using FTP.
- SubStep 2: Plot arm data files with the Xplot program to identify maneuvers and determine start and stop times for the maneuvers.

Step 3: Retrieve raw data files using the GetFdas program.
- SubStep 1: Prepare LaRC scripts to retrieve raw data files using desired subset of available variables obtained in step 1, and transfer the scripts to DFRC using FTP program.
- SubStep 2: Use GetFdas scripts from substep 1 to retrieve desired raw data files.
- SubStep 3: Transfer raw data files to LaRC using FTP program.

Step 4: Process raw data files using GetData program.
- SubStep 1: Prepare LaRC scripts to process raw data files using desired variables, new names for selected variables, conversion of units, and calculation of new variables.
- SubStep 2: Prepare GetData FORTRAN subroutines if algorithms are needed to calculate new variables.
- SubStep 3: Recompile GetData program to include new calculations that are needed.
- SubStep 4 Use GetData scripts from substep 1 to create processed data files from raw data files.

Step 5: Plot time histories of processed data files using Xplot program.

Steps indicating how software tools were involved in retrieving and processing the data are shown in figure 1. These steps were influenced by capabilities of each software program used. Full descriptions of the capabilities and commands of the programs are described in the GetFdas manual (ref. 1), the GetData manual (ref. 2), and the Xplot manual (ref. 3).

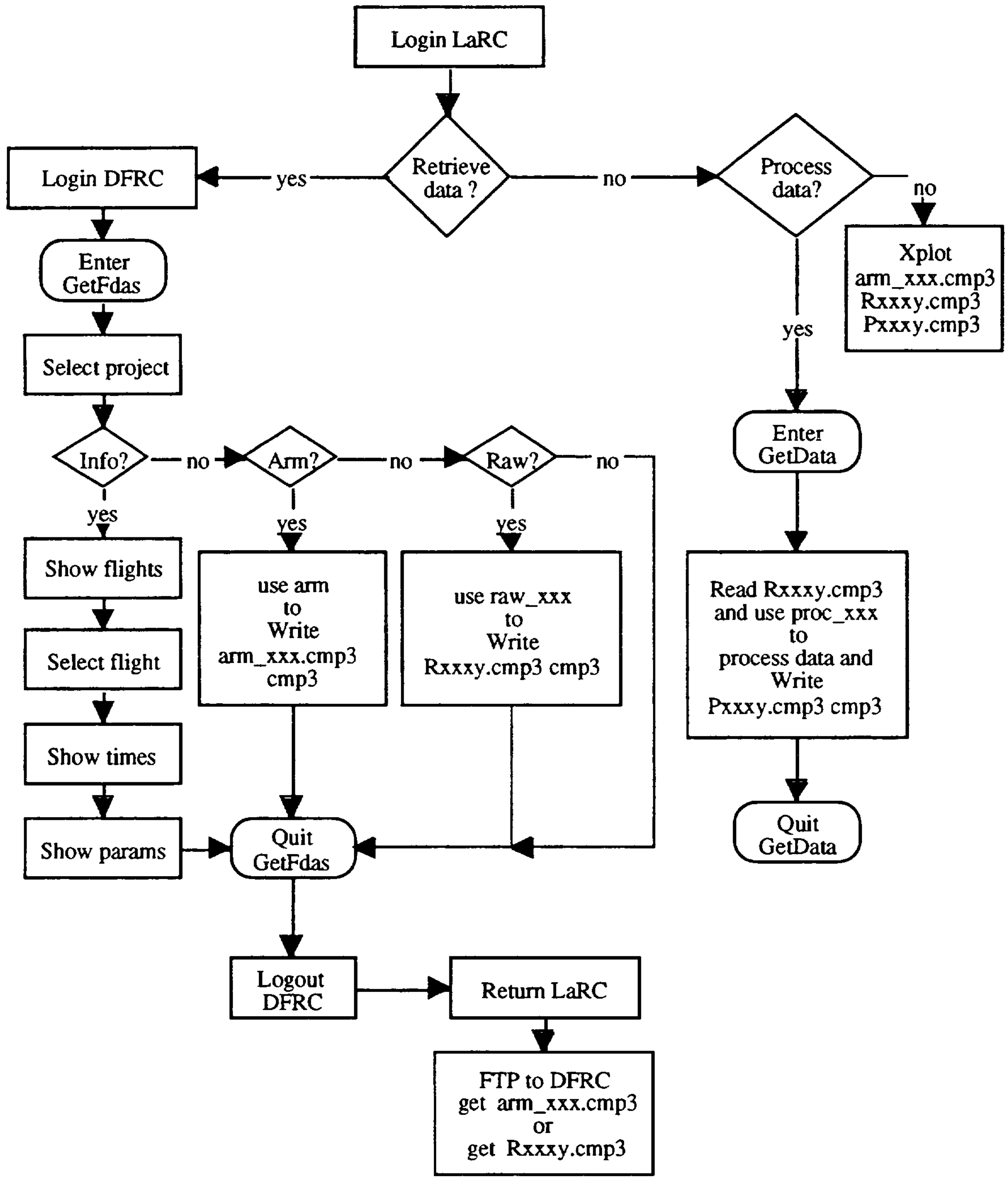

Figure 1.- Steps in data retrieval/processing.

A description of some of the capabilities of each software tool and its use in retrieving or processing HARV flight data follows in detail in the sections pertaining to each individual program used. However, there are similarities among the capabilities and implementation of the programs. Each software program allows the user to examine available variables from files that are read as input. Each program allows the user to specify variables of interest from all variables that are available. All three software programs allow commands to be invoked either interactively or from a script file using a **do *filename*** command. All programs can read data in the same formats which eliminates unnecessary data conversion steps.

A file naming convention was adopted for file names found in various stages in the retrieval and processing steps. This naming convention is explained in Table I to assist the users of the data in the discussion that follows. Italics were used for file names, bold print was used for commands to different programs used, and bold italics were used for file names used as part of command statements.

Table I.- Explanation of File Names

File name	Definition
Rxxxy.cmp3(1)	A raw data file from the DFRC data access system, where raw refers to data directly from DFRC without changes (GetFdas)
Pxxxy.cmp3	A data file processed at LaRC, where processed refers to renaming data, converting units, or calculating new data (GetData)
arm_xxxy.cmp3	A file of raw data from DFRC so named because the file includes the arm and engage flags that were used to determine maneuver times for retrieving raw data files or preparing processed data files (GetFdas)
arm	A file that specifies parameters used to write *arm_xxxy.cmp3* data files at DFRC (GetFdas)
raw_xxxy	A file that specifies parameters used to write raw data files at DFRC (*Rxxxy.cmp3*) (GetFdas)
proc_xxxy	A file that specifies parameters used to write processed data files at LaRC (*Pxxxy.cmp3*) (GetData)
do_xxxy	A script file containing commands or variable lists invoked by typing **do *do_xxxy*** (GetFdas, GetData, Xplot)

(1) xxxy is the flight number plus the suffix cmp3 is one of the available formats for writing data compatible with GetFdas, GetData, and Xplot

The Data Retrieval Step

Overview

The GetFdas program was used during the data retrieval process to obtain flight data information and to write either arm data files or raw data files. Flight data information includes flight data availability, parameters availability, and times for which data recording began and stopped. Raw data refers to data as stored on the Dryden data system even though some post-processing at Dryden had occurred. Arm data files were used to determine maneuver times, while RFCS was being used.

GetFdas

GetFdas is the flight data access program hosted on the Sun computer system at DFRC. The user must logon to an account on the DFRC system by using Telnet or a similar program to access the GetFdas program.

The GetFdas program allows the user to determine availability of data for a particular flight, determine recorded flight times of the data, view available parameters, select desired parameters, and rename selected parameters. The user can select a data rate, specify time intervals, and choose a data interpolation method if desired before writing data to a file in one of several formats.

GetFdas commands can be entered either interactively or from a script file. A discussion of commands that utilize the capabilities of the GetFdas program while retrieving ANSER flight data is found in this section.

Data availability. - The user invokes the **show project** command to determine which projects are available on the DFRC data access system. The user invokes the **project** command to select a project followed by the **show flights** command to see if the data for a specific flight are available on the DFRC data access system. The **flight** command is then used to select a flight from which to obtain information or to retrieve data.

Parameter selection. - The **show params** command allows the user to list the flight data parameters available for a selected flight. The available parameters do not normally vary much from flight to flight and can be written to a file with the **show params >** ***paramfile*** command, where *paramfile* is a file name. Figure 2 shows the process for writing a GetFdas file which lists available data parameters and the rate at which the data parameters were recorded. A typical list of available raw data parameters produced by the **show parameters** command is included in Appendix A.

Since the list of available parameters for a flight is usually very large, a desired subset of parameters can be selected for data retrieval. Parameters to be retrieved can be specified using the GetFdas **parameters** command followed by a list of desired variables. The command can be used interactively or executed from a file using the GetFdas **do** ***fname*** command where *fname* is a file containing a properly used **parameters** command. Note that a blank line should be provided at the end of the file to ensure all parameters will be read correctly by the GetFdas program.

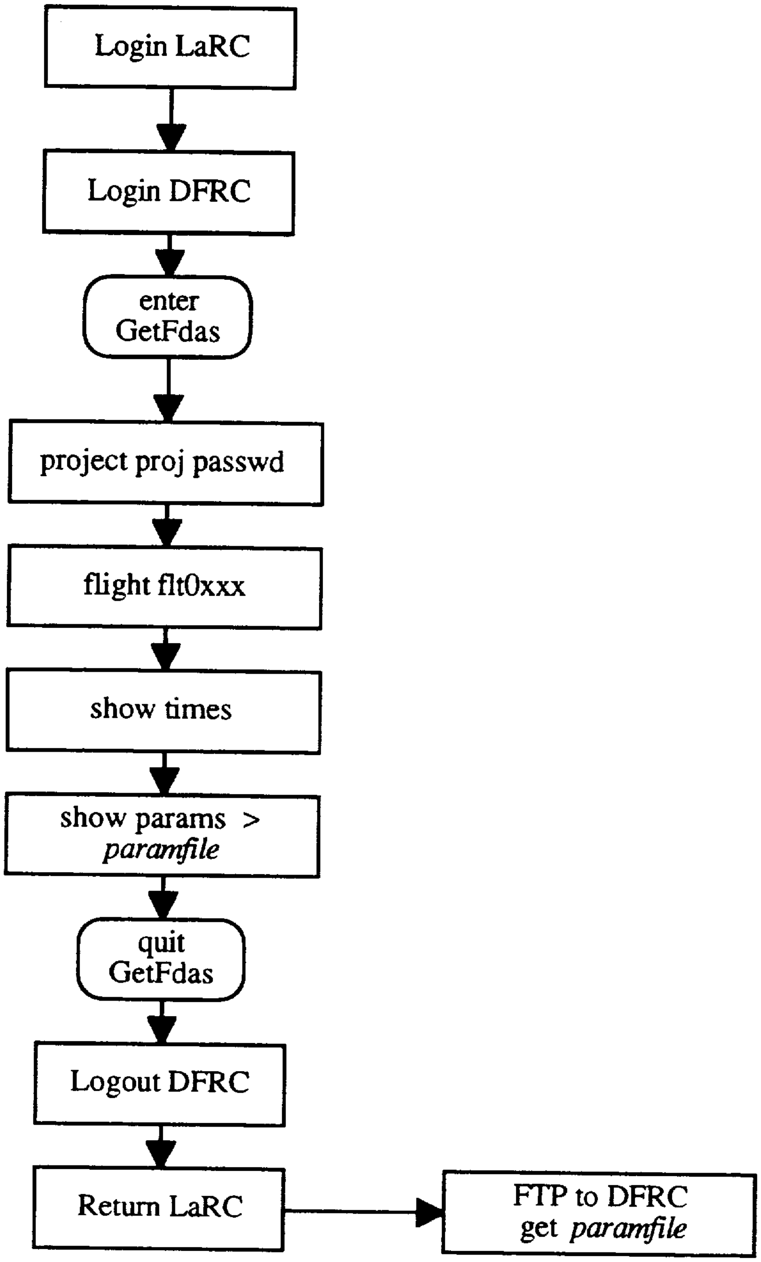

Figure 2.- Procedure for writing GetFdas file of available parameters.

***Data time selection.* -** The **show times** command displays beginning and end times of the recorded flight data. The **times** command allows the user to specify start and stop times for data retrieval. Also the user may specify a data rate at which to retrieve data to a file by expanding the **times** command with the **dt** option.

***Data interpolation.* -** The **interpolate** command allows the user to specify an interpolation method to be applied to the data during the retrieval step. Several interpolation methods are available, including linear interpolation and hold last value methods. The linear interpolation method was chosen for retrieving the ANSER flight data. An interpolation method for calculated variables cannot be directly specified. If the user chooses a **dt** other than the recorded data rate, the GetFdas program will interpolate between data points according to the chosen method.

***Calculated functions.* -** Certain variables retrieved with the GetFdas program are known as calculated parameters, which means they are calculated by DFRC-specified functions in the GetFdas program. Examples of the calculated parameters are acceleration parameters translated to the c.g. and some air data system parameters.

***Data formats.* -** The user may invoke the **write *fname* fmt** command using the **fmt** option to select a format to use while retrieving data. Several formats are available for use with the software packages obtained from the DFRC. The default format used by the latest version of GetFdas is cmp4, but the LaRC version of Xplot doesn't recognize that format. Among the optional data formats, the most frequently used at LaRC are the cmp3 format and the asc2 format.

The cmp3 format is compatible among the GetFdas, GetData, and Xplot programs. The fact that the Xplot program will plot data in this format without further conversion influenced the early decision to use this format for writing arm data, raw data, and processed data files. Therefore, the use of the **fmt** option on the GetFdas **write** command is necessary to avoid the default cmp4 format. An additional advantage is that the cmp3 format is a compressed binary format that saves storage on the computer system. The asc2 format is an ASCII format and can be created from a cmp3 formatted file, if the user needs to view or print data.

ANSER data retrieval files

A discussion of the specific application of the GetFdas capabilities and commands in retrieving ANSER flight data is found in this section. The GetFdas program was used primarily to write two types of files referred to as arm data files and raw data files. The arm data file was used as an intermediate file to determine specific time intervals for writing the actual desired raw data file.

***Arm Data or arm_xxx.cmp3 files.* -** To retrieve the desired data for a continuous interval covering an entire flight would produce a data file of prohibitive size. Therefore, a small set of parameters listed in a file called *arm* was used to write files for the entire maneuver time or a portion of maneuver time for a selected flight. The parameters specified in the file *arm* consisted of the RFCS arm and engage flags, the longitudinal and lateral stick commands, the rudder pedal commands, the strake positions, On Board Excitation System (OBES) commands, and angle of attack. The RFCS arm flag was the inspiration for naming the arm data files known as *arm_xxx.cmp3* files, since data were not usually retrieved for times when RFCS was not armed and engaged. Plots of the *arm_xxx.cmp3* file using Xplot combined with information from LaRC engineers who monitored the flight test were used to determine start and stop times of the desired flight maneuvers. These start and stop times were then used to determine start and stop times to write raw data files and processed files for the maneuver. *Arm_xxx.cmp3* files were written in the cmp3 *format using* linear interpolation at a sample interval of only 0.125 sec. A data interval of 0.125 provided ample data to identify maneuvers and determine maneuver times with sufficient accuracy for retrieving raw data files without requiring excessive computer disk space. Figure 3 shows a listing of the *arm* file demonstrating how parameters were specified with the GetFdas **parameters** command. The ampersand is the continuation symbol used in GetFdas. Note that for convenience the parameters *av21c* and *av16c* were renamed *OBES_FNCTION* and *OBES_FNCTION_2*, respectively. A flow chart showing the procedure used to write *arm_xxx.cmp3* files is shown in figure 4. A sample plot of the file *arm_383.cmp3* is included as figure E1 in Appendix E.

```
params &
zrarmm zrengm &
dep dap drp alpha &
stpl stpr OBES_FNCTION=av21c OBES_FNCTION_2=av16c
```

Figure 3.- Parameter specification in file *arm* for writing GetFdas *arm_xxxy.cmp3* file.

Raw Data or Rxxxy.cmp3 files. - Raw data, or *Rxxxy.cmp3*, files were written in the cmp3 format using linear interpolation at an interval of 0.0125 sec, which was the sample interval for the LaRC research control laws. The LaRC control law designers chose the specific variables to be written to the *Rxxxy.cmp3* data files from the raw data parameters available for the ANSER test flights. Raw data files retrieved for LaRC researchers contain the raw data parameters necessary to analyze performance of the ANSER research control laws. These parameters were specified on a file consisting of the GetFdas **parameters** command followed by a list of desired variables using Dryden variable names. Files which specified the parameters to be retrieved were named to reflect the flight number (e.g., *raw_295*). All of the *raw_xxx* files used in the retrieval of ANSER flight data are included in Appendix B. A flow chart showing the procedure used to write *Rxxxy.cmp3* files is shown in figure 5.

Although the use of the same list of raw parameters for retrieving all ANSER flight data was desirable, the list changed when new variables were added, deleted, or replaced. Table B1, located in Appendix B, provides a quick-look summary of the differences in the parameter lists used to retrieve raw data files.

Script files. - The GetFdas program allows commands in a script file to be invoked with the **do** command. Script files were very useful when problems occurred with the GetFdas system and the process had to be restarted. A summary of commands used in creating script files for data retrieval is listed in Table II.

As stated previously, the desired arm parameters were included in a file *arm*, and the desired raw data parameters were included in the file *raw_xxx*. Files containing parameter lists can be invoked from within GetFdas script files using the **do *filename*** command. A script file containing commands necessary to write raw files was created for each flight.

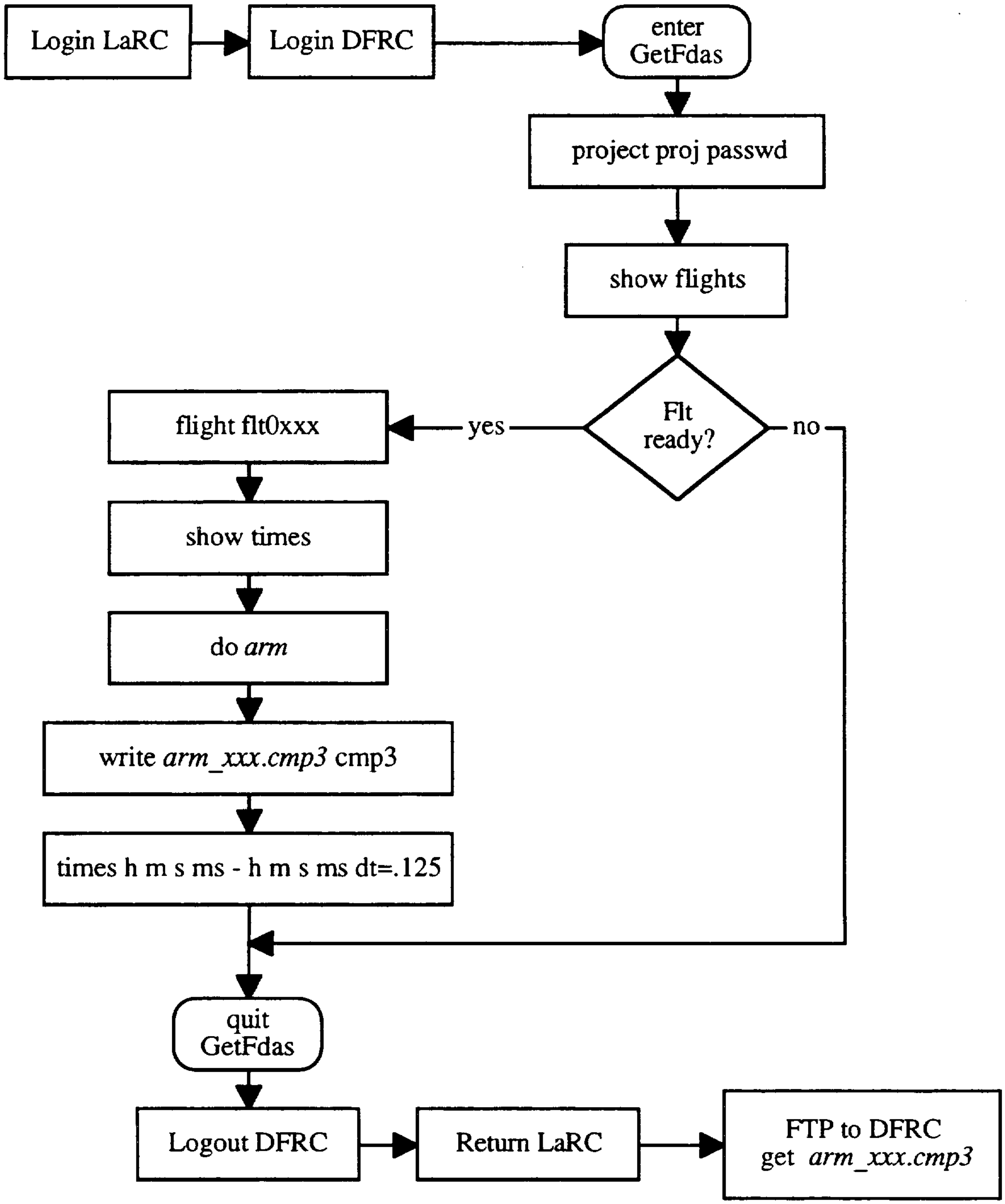

Figure 4.- Procedure for writing GetFdas *arm_xxx.cmp3* files.

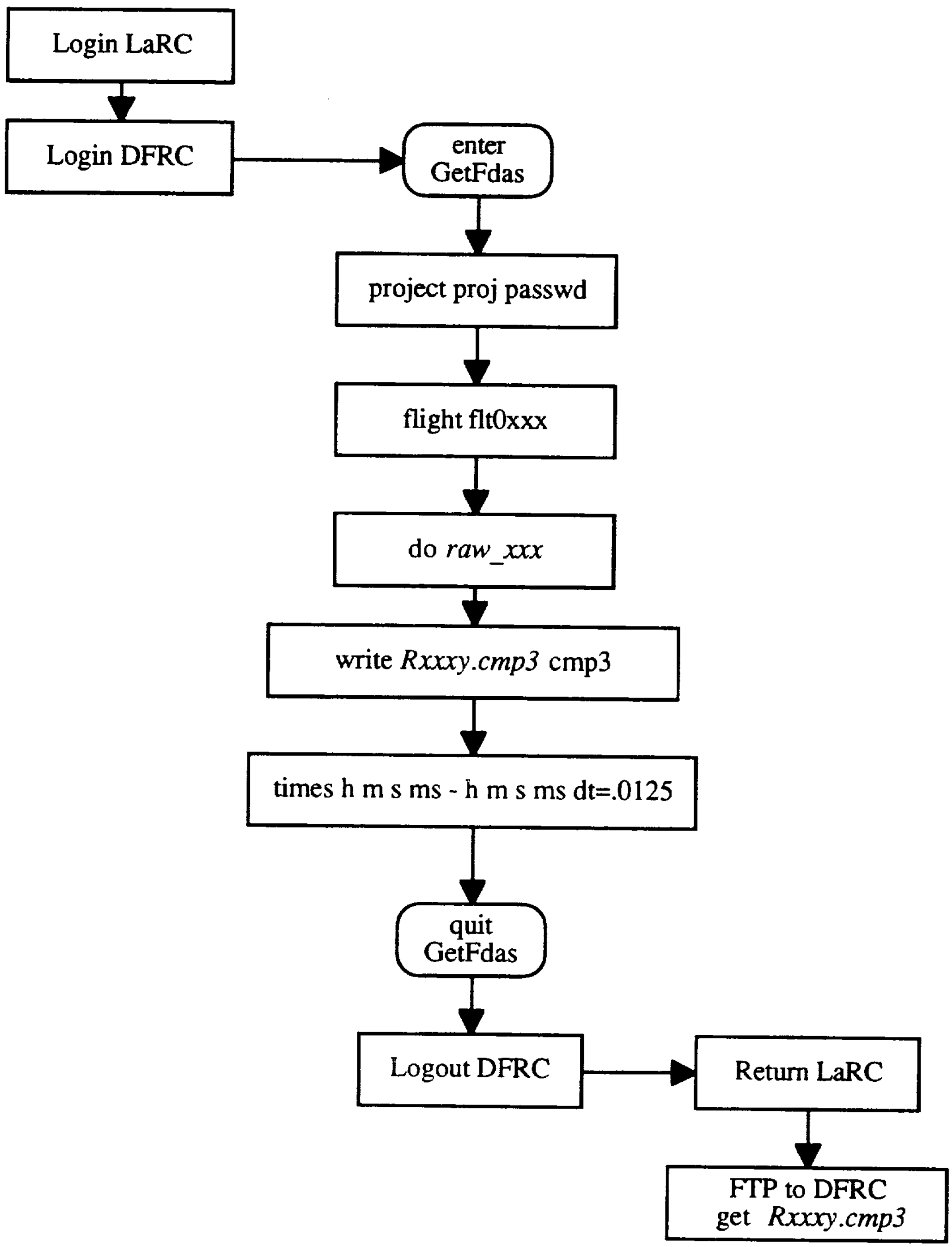

Figure 5.- Procedure for writing GetFdas raw data *Rxxxy.cmp3* files.

An example of a script file used to write the *arm_383.cmp3* file is shown in figure 6. The bold characters are required GetFdas commands and the non-bold characters represent information the user must supply to complete the command. An example of a script file used to write the *R383a.cmp3* file is shown in figure 7.

Table II.- Explanation of frequently used GetFdas Commands

Command	Definition
getfdas	enters GetFdas program
show projects(1)	lists projects on screen
project projectname passwd	selects project using password
show flights(2)	lists flight numbers on screen
flight flt0xxx	selects flight xxx
show times	lists recorded data times for a selected flight
show parameters(3)	lists parameters on screen
parameter *var1 var2*	selects the raw flight data variables to be written to a file
do *fname*	executes commands from a script file named *fname*
write *fname* cmp3	writes data to a file named *fname* and specifies the cmp3 format
times start - stop **dt**=xt	writes data for the start - stop time period on file named in write command; start and stop times are expressed in hours mins secs millisecs; xt is the sample time interval of written data
quit	exits GetFdas program

(1) **show projects** >*fname* lists projects on file *fname*
(2) **show flights** >*fname* lists flights on file *fname*
(3) **show parameters** >*fname* lists parameters on file *fname*

```
project f186 password
flight flt0383
do arm
write arm_383.cmp3 cmp3
times 11 21 00 000 - 11 43 00 000 dt=.125
quit
```

Figure 6.- GetFdas Script file to write the arm data *arm_383.cmp3* file.

```
project f186 password
flight flt0383
do raw_362
write R383a.cmp3 cmp3
times 11 22 30 000 - 11 23 15 000 dt=.0125
quit
```

Figure 7.- GetFdas Script file to write the raw data *R383a.cmp3* file.

The Data Processing Step

Overview

The GetData program was used during processing of the ANSER flight test data to read the *Rxxxy.cmp3* files and to write processed files *Pxxxy.cmp3*. Processing of the retrieved flight data refers to selecting a subset of the raw data, changing variable names to names that are familiar to the LaRC control law designers, converting the data values to convenient engineering units, and calculating new variables not available in the raw data.

GetData

The GetData software program is hosted on the DCB Sun computer system and is utilized in a manner similar to utilization of the GetFdas program. The GetFdas program is described as a successor to the GetData program since it was developed to use some of the libraries of GetData. Therefore, the following description of the use of the GetData program in processing retrieved raw data files is similar to the previous description of the use of the GetFdas program. To achieve the processing purposes, the user has several GetData options which include selecting formats, choosing a data rate, renaming variables, converting units of variables, interpolating data, and utilizing user-defined calculated functions. The user may read in data and create new data by executing calculated functions containing user-coded algorithms.

GetData commands employed when writing processed data files can be used either interactively or from a script file. The commands are explained in the GetData (ref. 2) manual. A discussion of the commands used to process raw data files follows.

Data availability. - Since the GetData program requires an input file to read before the capabilities of the program can be utilized, data are available when a raw data file has been successfully transferred from DFRC. The *Rxxxy.cmp3* files are written in a format compatible with the GetData program and can be utilized as input files without additional preparation. The GetData **read *filename*** command is invoked to read raw data, where *filename* refers to a *Rxxxy.cmp3* file. While the data file is being read, the GetData program automatically determines the file format, the rate at which the data were written, and what variables are contained in the file.

Signal selection. - Variables to be written to an output file by the GetData program are referred to as signals (equivalent to parameters in GetFdas). Since the number of available raw data parameters for a flight is very large, a subset of available raw data parameters can be selected as signals for data processing. Signals to be written to a processed file can be specified using the GetData **sigs** command followed by a list of desired variables. A properly created **sigs** command can be used interactively or can be placed in a file that can be invoked with a **do** command. A blank line should be provided at the end of the file to ensure all signals will be read correctly by the GetData program. In addition to specifying output variables, the lists of signals can perform several tasks, such as renaming raw data signals, converting units of raw data variables to more convenient units, and invoking the calculation of new variables by the user-defined calculated functions.

Data time selection. - The **copy times** command allows the user to specify start and stop times for writing the processed flight data files. The user can specify the rate at which to write the processed data by using the **dt** option of the **copy** command. Using the **copy** command without the **times** option and/or the **dt** option will result in a copy of all data for the entire time interval on the input file and/or use of the data rate at which the input data were written.

Data interpolation. - The **interpolate** command allows the user to specify an interpolation method to be applied to the data during the processing step. Interpolation options include linear interpolation and hold-last-value methods. The linear interpolation method was chosen for processing the ANSER flight data. An interpolation method for calculated variables cannot be directly specified. If the user chooses a **dt** value other than the rate at which data were recorded, the GetData program will interpolate between data points using the chosen method.

Calculated functions. - The GetData program provides the capability to calculate new data signals which are not available in the input data. Creation of new signals is achieved by coding and implementing user-defined calculated functions or algorithms. The GetData program provides a template of three FORTRAN subroutines to implement user-defined calculations. Also, a template file containing a FORTRAN common to interface with the three subroutines must be coded. The three subroutines are empty in normal GetData execution and must be replaced by the user if special calculations are desired. The template of subroutines has to be coded and compiled to create an executable version of the GetData program containing the user-defined calculations. The new variables will appear on the output data file if they are included on the signals list.

Data formats. - The user may invoke the **write *fname* fmt** command using the **fmt** option to determine which format to use for writing processed data files. The default format used by the LaRC version of GetData is cmp3, which is compatible with the LaRC version of Xplot. The cmp3 format files can be converted to asc2 format files using the **fmt** option on the GetData **write** command, if the user needs to view or print the data. A portion of a typical processed file written in the asc2 format is included in Appendix C.

ANSER data processing files

A discussion of the specific application of the GetData capabilities and commands in processing ANSER flight data is found in this section. The GetData program was used primarily to write a processed file for each maneuver.

Processed data or Pxxxy.cmp3 files. - Processed data files, referred to as *Pxxxy.cmp3* files, were written at a data time interval of 0.0125 sec, matching the data time interval of raw data *Rxxxy.cmp3* files. *Pxxxy.cmp3* files were written in the cmp3 format. A subset of signals or variables pertaining to the research control laws was chosen from the raw parameters written on *Rxxxy.cmp3* files. The selected signals used to write *Pxxxy.cmp3* files were specified by using the GetData **sigs *var1 var2*** command located in a signals file, *proc_xxx*, which was invoked by using the **do *proc_xxx*** command. The *proc_xxx* file listed the desired processed parameters resulting from renaming raw data variables, converting some raw variables to more convenient engineering units, or calculating new signals with a calculated function. Flight numbers were indicated in the file name, *proc_xxx*, where *xxx* usually reflects the flight number for which the signals file was first used. File names with the descriptive phrase "broken_strake" indicate the use of a special method for processing variables.

A printed listing of each of the *proc_xxx* files used to process ANSER data is included in Appendix C. Changes to the signals list occurred when parameters were added or deleted to reflect the needs of the LaRC engineers for analysis of the control laws during the flight testing process. Changes also occurred when new versions of the control law were flight tested. Also, on certain flights the strake position measurement was inoperable which necessitated changes in the processing of certain variables. The differences in the processed parameter lists are discussed below. Figure C1, located in Appendix C, provides a quick-look summary of the differences in the signals lists used to process data files.

File *proc_295* was used to process test data from flight 295 which was the first ANSER flight test. Version V151.0 of the control law was flown for this flight. The file *proc_295* represents the baseline list of processed variables and consists of 156 processed variables.

File *proc_296* was used to process test data from flight 296 and contains the baseline list with the addition of the variables *stpl, stpr, dstkl,* and *dstkr*. Version V151.0 of the control law was flown for this flight. The number of processed variables is 160.

File *proc_297* was used to process test data from flights 297 through 299 and is identical to *proc_296* except that the variable *icarxvc* was replaced by the variable *icarxyc*. Version V151.0 of the control law was flown for these flights. The number of processed variables is 160.

File *proc_300* was used to process test data from flights 300 through flight 359 if the data contained no bad strake position data and the version V151.1, V152, or V153 of the control law was flown. This list contains the *proc_297* list with the variables *ical314c, ical315c, ical316c, ical317c, ical318c,* and *ical319c* being replaced by the variables *av78c, av79c, av80c, av81c, av82c,* and *av83c*. The number of processed variables is 160.

File *proc_300_broken_strake* was used to process test data from flights 341 through flight 350, flights 363, 364, and flights 366 through 368, that had bad strake position data. The version V151.1, V152, or V153 of the control law was tested during these flights. This list of variables contains the *proc_300* list with the addition of the calculated variables *strkal, strkbl, strkar,* and *strkbr*. These additional variables are strake position in degrees calculated from the actuator ram positions *lsrla* , *lsrlb, rsrla,* and *rsrlb*. The number of processed variables is 164.

File *proc_361* was used to process test data from flights 361 and flight 362. This list contains the *proc_300* list with the addition of variables *dfsdif* and *dfssym*. These additional variables are differential and symmetric strake position in degrees calculated from raw data *stpr* and *stpl*. The number of processed variables is 162.

File *proc_V154_broken_strake* was used to process test data from flights 365, 369, 370 and flight 376 that did have a broken strake. These flights flew version V154 of the control laws and flight 365 was the first of the V154 flights. This parameter list is the same as the *proc_300_broken_strake* list except for the substitution of the variables *qcfilter1* and *qcfilter2* with the variables *lat_pilot_cmd* and *dir_pilot_cmd*. The number of processed variables is 164.

File *proc_V154_bs_371* was used to process test data from flight 371 and flights 377 through 379 that did have a broken strake. These flights flew version V154 of the control law. This list is the same as the *proc_V154_broken_strake* list with the addition of the variables *ramdif* and *ramsym* which are differential and symmetric strake positions in degrees calculated from the calculated variables *strkal, strkbl, strkar,* and *strkbr*. Note the list includes the substitution of the variables *qcfilter1* and *qcfilter2* with the variables *lat_pilot_cmd* and *dir_pilot_cmd*. The number of processed variables is 166.

File *proc_V151_bs_372* was used to process test data from flights 372 through 375 and flights 380 through 383. These flights flew versions V151.1, V152, or V153 of the control law and had a broken strake. This list is the same as the *proc_300_broken_strake* list with the addition of variables *ramdif* and *ramsym* . Note the variables *qcfilter1* and *qcfilter2* have not been replaced with the variables *lat_pilot_cmd* and *dir_pilot_cmd*. The number of processed variables is 166.

Variable definition lists. - The GetData program used *proc_xxx* files during the processing of data including invoking the LaRC-designed calculated function. These files were created from parameters available for the flights. A summary of processed variables was prepared for each *proc_xxx* file. The summary includes information concerning both the DFRC and the LaRC variable name, a general definition, and units for each processed variable. These definition lists are found in Appendix C.

Script files. - The GetData program allows the use of the **do** command to invoke commands in a script file. A brief summary of commands used in writing *Pxxxy.cmp3* files are listed in Table III. An example of a script file used to write the *P383a.cmp3* file is shown in figure 8 and a flow chart showing the procedure used to write *Pxxxy.cmp3* files is shown in figure 9.

read *R383a.cmp3*

do *proc_V151_bs_372*

write *P383a.cmp3* cmp3

copy time = 11 22 30 000 - 11 23 15 000 dt=.0125

quit

Figure 8.- GetData Script file to write the *P383a.cmp3* file.

Table III.- Explanation of GetData Commands

Command	Definition
getdata	enters GetData program
read *Rxxxy.cmp3*	reads raw data file *Rxxxy.cmp3* and determines format
sigs *var1 var2 var3*	selects raw variable(s) to write to output file
sigs *newvar = oldvar*	renames old variable to new variable to write to output file
sigs *newvar = oldvar * 32.174*	multiplies old variable by a conversion factor and names the result new variable
sigs *calcvar*	selects variable calculated from a user-defined calculated function to write to output file
do *proc_xxx*	selects output signals from signals file *proc_xxx*
do *scriptname*	executes commands from a file *scriptname*
write *Pxxxy.cmp3* cmp3	writes processed data on file *Pxxxy.cmp3* and selects cmp3 format
copy	writes data for the entire time period and data time interval determined by reading input data file
copy time = start - stop **dt**=xt	writes data for the start - stop time period using data time interval xt; time in hours mins secs millisecs
quit	exits GetData program

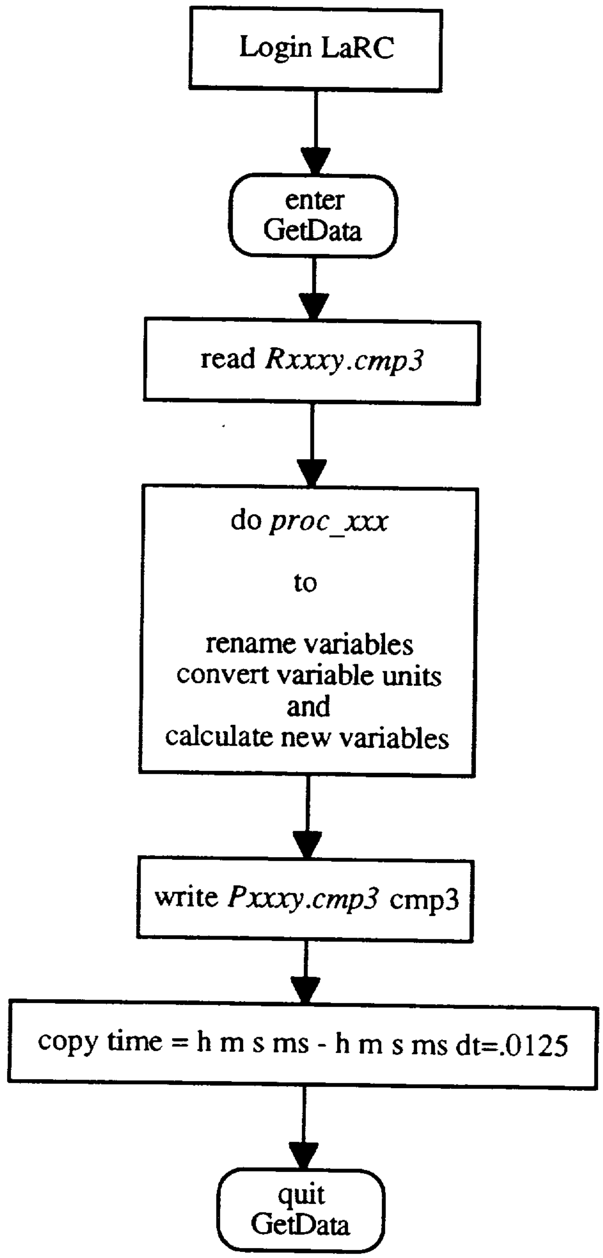

Figure 9.- Procedure for writing *Pxxxy.cmp3* files.

Calculated functions. - The GetData program provides the feature of user-designed calculated functions to create new data from one or more raw data variables. Implementing a calculated function necessitates modification and recompilation of the GetData program to form new executables.

The LaRC-designed calculated function includes modifications for converting units of desired variables. Other modifications include implementation of certain algorithms to simulate variables calculated during flight testing. A general description of the LaRC calculated function used for processing ANSER flight data follows.

The set of three FORTRAN subroutines acting as a template of a calculated function is used by the GetData program, and a discussion of these subroutines is included in this section. The three subroutines are named *allocateCF1*, *activateCF1*, and *doCF1*. The three subroutines communicate among each other with another user-defined file containing the FORTRAN common named *CF1*.

Subroutine *allocateCF1*. The subroutine *allocateCF1* is called first and defines what data inputs will be used in the calculations and assigns names and channel numbers to the calculated outputs. The subroutine also determines if the necessary inputs are available and, if not, sets the appropriate output channel number to zero indicating that the calculation can not be made.

Some examples from the subroutine follow. The first line of code selects the input *av07c* to be used in calculating the output *Vanecdg1* and determines the channel number (value of *ivc1*) for *av07c*. The second line of code defines the output name *Vanecdg1* and assigns it a channel number (value of *ovc1*). The third line of code indicates that the output (*Vanecdg1*) is not calculated when the input is unavailable by setting *ovc1* equal to zero.

```
ivc1 = sigChan ('av07c')
ovc1 = calcChan ('Vanecdg1')

if (ivc1 .eq. 0)  call cantCalc (ovc1)
```

Subroutine *activateCF1*. The subroutine *activateCF1* activates the desired calculations by setting logical flags based on values determined in subroutine *allocateCF1*. Other logicals are set to indicate which inputs will be used from current data.

Some examples from the subroutine follow. The first line of code sets the logical *usevc1* to TRUE because the user-defined output *Vanecdg1* is desired. *Vanecdg1* can be calculated because its channel number *ovc1* was assigned in subroutine *allocateCF1* when *ivc1* was available. The next line of code indicates the input *av07c* (input channel *ivc1*) is available to be used.

```
usevc1 = isUsed (ovc1)
if ( usevc1 )  call setUsed (ivc1)
```

Subroutine *doCF1*. The subroutine *doCF1* performs the calculations indicated by the logicals set in subroutine *activateCF1*. The user places the actual FORTRAN calculations in this subroutine. The input and output variables from subroutine *allocateCF1* and the logical flags from subroutine *activateCF1* are used in the actual algorithms.

An example from the subroutine follows. The lines of code indicate how the user desired output *Vanecdg1* (channel *ovc1*) will be calculated if the logical *usevc1* was set TRUE in subroutine *activateCF1*. This example shows a calculation to convert actuator position from inches to degrees using the input variable *av07c* (channel *ivc1*).

```
c 114.59156 = (360./pi)        ( comment explaining the value 114.59156 )
if ( usevc1 ) data (ovc1) = 114.59156*asin(data(ivc1)/10.) - 10.
```

Objectives. The LaRC-designed calculated function was designed to accomplish several objectives for processing ANSER flight data. The flight data for the vane commands (*vanecdg1-vanecdg6*) and vane positions (*vanepdg1-vanepdg6*) were converted from inches to degrees. The radius of the engine nozzle in inches was computed from the data representing the area of the engine nozzle in square inches. A variable *phiwnd* was calculated from angular values that had to be converted from degrees to radians. Strake actuator RAM positions were calculated after implementation of an algorithm obtained from DRFC. Then these strake actuator positions were converted to degrees from radians.

Implementation. The listing of each subroutine necessary for the full implementation of the calculated function created at LaRC to achieve the purposes discussed above is included in Appendix D. In addition to the three described subroutines a file containing the common named *CF1* which specifies the integer and logical variables used by the template subroutines had to be coded. The contents of that common is also in Appendix D. A more detailed discussion of implementation of user-defined calculated functions in the GetData program can be found in the GetData manual (ref. 2).

The Data Plotting Step

Overview

The Xplot program was used during the data retrieval process to plot the arm data files. Xplot was also used after the processing step to plot time histories of the processed data files.

Xplot

Xplot is a DFRC program hosted on the DCB Sun computer system. The time history plots of each processed file were stored in looseleaf binders in the DCB library for access by research engineers. The plots of the time histories of processed files were compared to time histories of simulation data to aid in the analysis of control laws throughout the flight testing stage.

Xplot commands can be entered either interactively or from a script file. A discussion of commands that utilize the capabilities of the Xplot program while plotting ANSER flight data is found in this section.

Mouse capabilities. - The Xplot mouse-driven capabilities to expand portions of a plot and to read values of coordinates while viewing *arm_xxx.cmp3* files were useful in determining start and stop times for the maneuvers. The left button of a three button mouse is used to select a plot. The middle mouse button is used to expand portions of a plot. The right mouse button is used to read coordinates of a point on a plot.

Multiple files. - The Xplot capability of reading multiple files made comparison of data from flight and from simulations convenient for control law analysis. The **read** ***fname*** command is used to read a single file; however, multiple files can be read by Xplot. The user needs to employ a read command for each desired data file, and each file read has to be marked with a tag. The **read** ***fname1*** **tag1** command followed by the **read** ***fname2*** **tag2** indicates the use of the read command to read two files and mark each with an identifying tag. Plotting corresponding variables from each file together on the same axis is a convenient tool for analysis of flight data and simulation data.

Formats. - The Xplot program at LaRC can read data in the cmp3 format. Both the GetFdas program and the GetData program can write in the cmp3 format so a decision to write both the raw data files and the processed data files in that format was made early to avoid additional conversion steps prior to plotting.

Plot signals. - When a file is read, all variables on that file are available for plotting and can be selected under the signals menu after entering the Xplot program. The first variable on the input data file is used as the variable for the x-axis. This is usually the variable *time*. The **plot** ***sig*** command determines the signal to be plotted after selecting an axis. To plot two signals on the same axis is indicated by the **plot** ***sig1 sig2*** command.

Signal changes. - Signals can be converted to different units within Xplot. The **mul** ***sigs*** **2** command will multiply a signal by 2 and replot automatically. Similar commands allow the user to add, subtract, or divide the value of a signal by a constant. Signals can also be renamed within Xplot with the **rename** ***oldsig newsig*** command.

Plot pages. - A plot page can be arranged with one to four frames per page. The **nplot num** command determines the number of axes per plotted page. The **select num** command selects the frame number on a plotted page. Titles can be placed at the top of a plotted page using the **T1/T2** commands. Automatic footers that reflect the input data file names are provided at bottom of page by default. The default footers can be overwritten with the **F1/F2** command.

Script files. - Commands for the Xplot program can be invoked either interactively or by employing a script file. Similar to the GetFdas and GetData programs the script file for Xplot is invoked with the **do *scriptname*** command A script file was prepared to automate the plotting of processed data and produce twenty-eight pages of plots covering all the variables on a processed data file. An additional page containing strake variables was plotted for files that needed to be processed differently due to a broken strake measurement. A listing of a script file used to plot processed data is included in Appendix E. A brief summary of commands frequently used to plot the processed data files is listed in Table IV. Detailed description of commands used in the Xplot program can be found in the Xplot User's Guide (ref. 3). A flow chart showing the use of Xplot to plot a processed data file using a script file of plotting instructions is shown in figure 10.

Table IV.- Explanation of frequently used Xplot Commands

Command	Definition
xp	enters Xplot program on DCB Sun complex
do *fname*	executes commands from script file *fname*
read *fname*	reads data from file *fname*
nplots n	specifies n frames to be plotted per page (n = 1 to 4)
select n	specifies frame n as current frame on the page
plot *var1 var2*	plots specified variable(s) in a selected frame
print	prints a plotted page
pause	pauses before changing or printing a plotted page
clear	clears a frame of data on plotted page
t1 string	specifies a character string as title 1 at top of page; t2 string2 would specify a second title, if needed
f1 string	specifies a character string as footer 1 at bottom of page; f2 string2 would specify a second footer, if needed; If footers are not specified, file names are placed automatically at bottom of page, in the same order that the files are read in.
quit	exits Xplot program

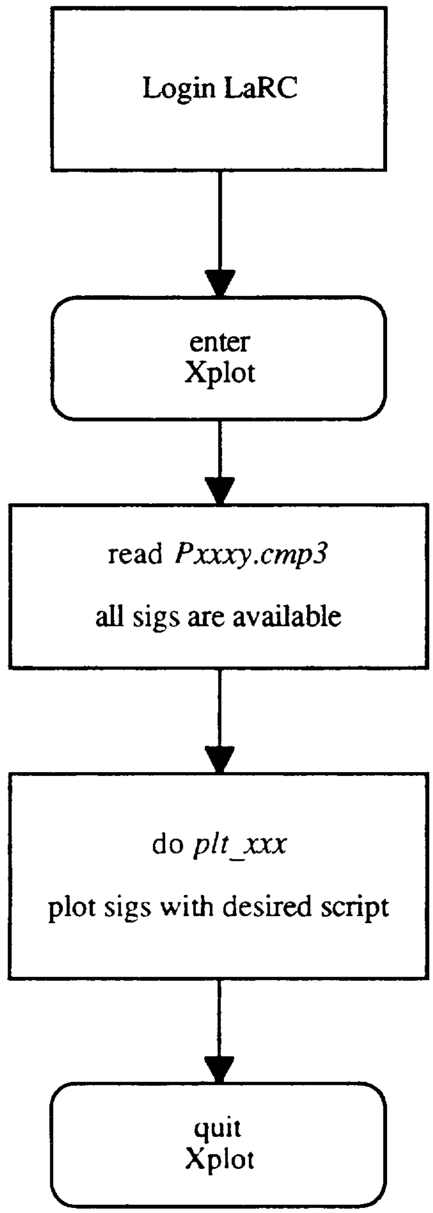

Figure 10.- Procedure to plot a *Pxxxy.cmp3* file using the Xplot program.

Results

Data Retrieved. - ANSER control law flight test data were retrieved and processed for Flights 295 through Flight 383, with the exceptions of Flights 304, 318, 338 - 340, 343, and 360. Note that Flights 304 and 318 were aborted flights. Flight 337 data were retrieved and processed but not plotted. Data for Flights 338 - 340 and 343 were not retrieved due to a broken strake position measurements. Flight 360 data were retrieved with a few 701E raw variables but were not processed due to instrumentation problems during flight.

Raw data files were retrieved with variables determined by the HARV Control Law Design Team. Additional variables that might be useful to other research studies were also included. Processed data files were prepared with the LaRC variable names from a subset of available raw data variables. Note the variable *iy* does not appear on the retrieved raw data files data for flights prior to 332 even though the processed files and plots indicate *iy* has a value of zero. If there is a need to calculate using *iy*, the user must retrieve that variable from DFRC before proceeding. This omission error was corrected starting with flight 332.

More than 143 *arm_xxx.cmp3* files were produced to determine start and stop times for maneuvers. More than 813 raw data files and 919 processed data files were produced. Approximately 1875 total files were retrieved, processed, and stored on the DCB computer complex.

Maneuver Summary. - A summary of maneuvers was prepared for each flight for which data were retrieved and processed. The maneuvers were categorized into fourteen disciplines, such as aerodynamics, controls, and flow visualization, and summarized by flight according to the number of maneuvers in each category. There were a grand total of 904 identified maneuvers. An explanation of the disciplines is included in Appendix G as Table G-I. The maneuver summary is included in Appendix G as Table G-II.

Computer Storage Location. - Data for the ANSER control law flight testing were stored on the LaRC DCB Sun computer system for use by researchers. The data are located on one of two directories. Data from flights 295 through 344 are stored in the directory ***/grissom11/anser/Flts***. A separate directory for each processed flight (e.g., ***F295***) exists in the ***Flts*** directory. Both raw and processed data specific to one test flight can be located in each directory. Note that data for flights 304 and 318 will not be found as no data were available. Also *F338plus* is a directory containing only *arm_xxx.cmp3* files for Flights 338 - 340 and 343, since data for these flights were not processed. Similarly, the data from Flights 345 through 383 are located in the directory ***/grissom14/anser2/Flts***. Note no data for flight 360 were processed. Figure 11 provides a quick look at locations of the ANSER data files.

Flight Data Log Sheets. - Log sheets were prepared for each ANSER flight for which data were retrieved and processed. The log sheets provided information for each raw and each processed flight data file. Information on the log sheets includes data file names, start and stop times for each data file, maneuver description, and name of the pilot for that flight. Also included is the date when the flight was flown, the flight card number pertinent to flight data files, comments concerning conditions occurring during flight, and comments concerning parameter availability differing from previous flights.

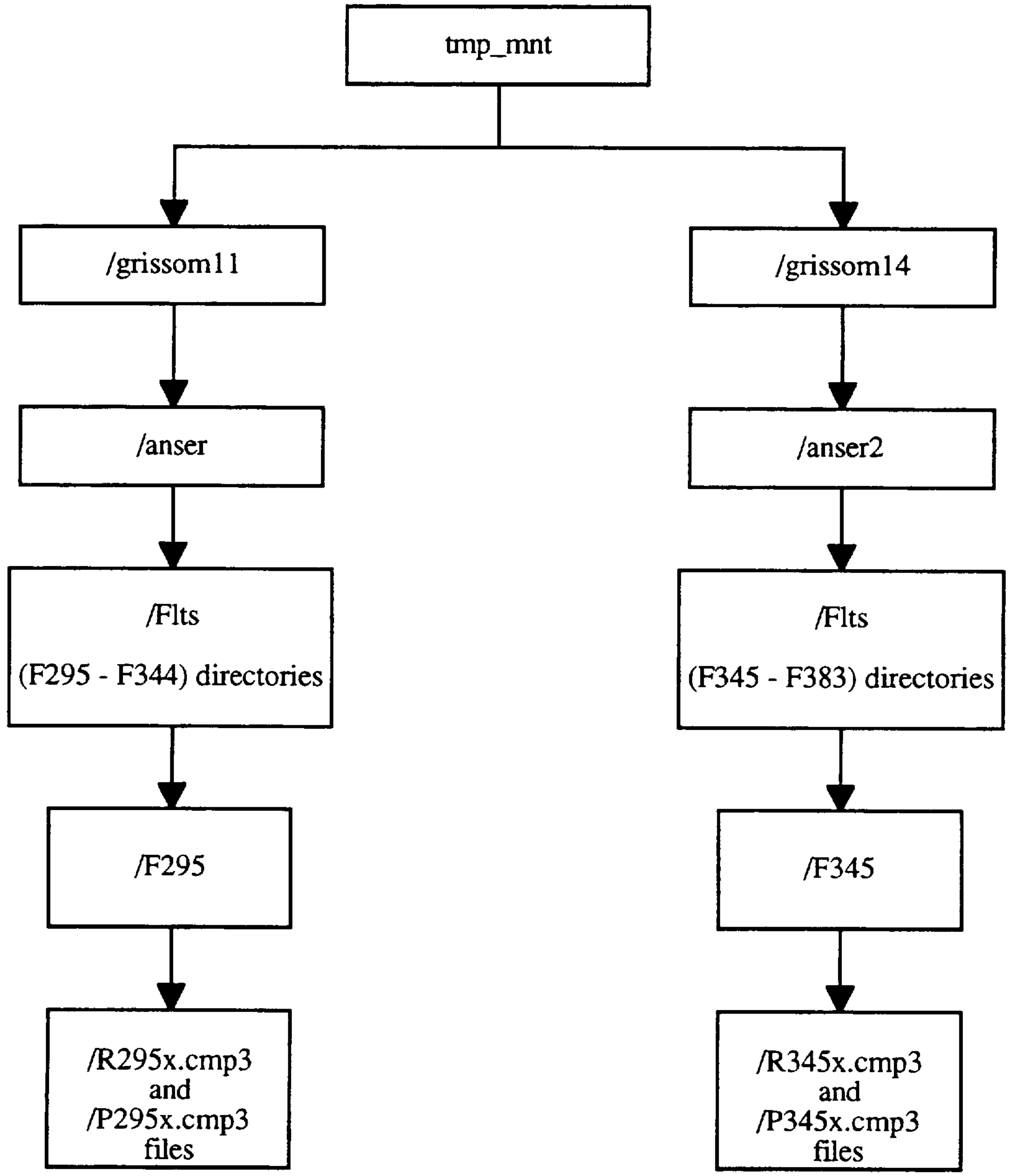

Figure 11.- Flight data Storage Locations on DCB Computer Complex.

Names of the data files reflect the flight number and indicate whether the files are raw data or processed data files. Names of the raw data and processed data end with an alphabetical designator. Some large raw data files have been separated into more than one processed file. Generally, the file R295a and the file P295a indicate a raw file and a processed file, respectively, from flight 295. The designation "a" indicates the first files retrieved and processed from the time sequence of a particular flight and generally correspond to the first research maneuver for the flight. A raw file like R295f which has more than one processed file (P295f1 - P295f5) associated with it, indicates that the raw file was separated into more than one processed file to separate maneuvers or to conserve computer disk storage. The alphabetical designation does not refer to flight card information, but refers only to order of recorded time progression during a flight.

Log sheets were stored in looseleaf binders containing plots of the processed flight data to be used by HARV team researchers. Log sheets for ANSER flights are included in Appendix F.

LEX Fence. - The LEX (Leading Edge Extension) fences were removed for some flights to accommodate experiment requirements. The LEX fence ON/OFF condition for each flight is shown in Table V.

Table V.- LEX Fence ON/OFF Condition

Flight	LEX Fence
flights 295 - 331	On
flights 332 - 343	Off
flights 344 - 350	On
flights 351 - 352	Off
flights 353 - 354	On
flights 355 - 358	Off
flights 359 - 361	On
flight 362	Off
flight 363	On
flights 364 - 365	Off
flight 366	On
flight 367	Off
flight 368	On
flight 369	Off
flights 370 - 374	On
flights 375 - 376	Off
flights 377 - 383	On

GAIN SET Default .- The first ANSER Longitudinal Gain Set to be flight tested was for control law version V151.0, which used the Low Gain Set as the default condition. When the RFCS was engaged, the default Gain Set was used unless and until another Gain Set was chosen by the pilot using push-buttons on the Digital Display Interface (DDI). Beginning with version V151.1 the flight software was programmed to use the Medium Gain Set as the default, since the Medium Gain Set had been selected during preliminary V151.0 flight tests to be the primary gains for the remaining flight tests. The Medium Gain Set remained the default set for all subsequent control law changes. Table VI lists the default Gain Set for all ANSER flights.

Table VI.- Default Gain Sets for the Longitudinal Control Law

Flights	Default gain set
flights 295 - 299	Low
flights 300 - 350	Medium
flights 351 - 383	Medium

Control Law Versions. - The original ANSER control law version, designated as version V151.0, was flown on flights 295 - 299. A total of five versions of the control law were used during ANSER flights. The control law version used for each flight is listed in Table VII.

Table VII.- Correlation of Control Law Versions with ANSER Flights.

Flights	Control Law Version
flights 295 - 299	V151.0
flights 300 - 351	V151.1
flight 352	V152
flights 353 - 356	V151.1
flights 357 - 361	V152
flights 362 - 364	V151.1
flight 365	V154
flights 366- 368	V153
flights 369 - 371	V154
flights 372 - 375	V152
flights 376 - 379	V154
flights 380 - 383	V151.1

Data Times Obtained from GetFdas. - Recorded data times for each flight were obtained by using the **show times** command in GetFdas. These times were compared to flight cards to identify times to be used to write *arm_xxx.cmp3* files. The recorded data times and times used to write arm files are included as Table H in Appendix H. Time jumps are also included in the table to indicate times where there were no data. Effort was made to avoid these time jump intervals in the retrieved data.

Time Histories Plots. - Plots for each processed data file were produced using a prepared plot script invoked from Xplot. The plots were maintained in a data library for use by LaRC researchers. Figure E2, included in Appendix E, shows a sample set of plots for file *P383a.cmp3*.

Uses of Retrieved Data and Plots. - The data, plots, and other information were used by the HARV Control Law Design Team to analyze and evaluate the ANSER Control Law, to investigate problems, to validate simulation models, and to prepare reports. For example, using GetData, a subset of the raw or processed variables from a maneuver could be extracted and written to a file in asc2 format. Such a subset of variables could be the pilot inputs which are stick, rudder pedal, and throttle positions. These variables could be read into and used to drive the Advanced Continuous Simulation Language HARV simulation or HARV SPARC simulation to perform the same maneuver for comparison with flight. Data for use in initializing or trimming the airplane at the start of simulation runs could also be obtained in asc2 format using GetData.

This library of data, plots, and flight logs was an invaluable asset in the analysis and evaluation of HARV performance during flights. The stored data which are written in the cmp3 format are easily accessible and can be converted to the asc2 format for use in other studies conducted by control law researchers.

References

1. Maine, Richard. E..: *User's Manual for GetFdas Version 0.73* , beta test version, May 29 1993.

2. Maine, Richard. E..: *Manual for GetData Version 3.1 - A FORTRAN Utility Program for time History Data.* , NASA TM 88288, October 1987.

3. Vernon, T. H., PRC Inc.: *Xplot Version 3.06 Users Guide and Command Reference*, NASA Dryden Flight Research Facility, 23 December 1992

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Appendix A
Typical List of Available Raw Parameters from GetFdas

Contents

Explanation of header information in GetFdas available parameter list.

A list of available parameters for a specified flight can be obtained by using the GetFdas show parameter command and directing the output of the command to a file. The information in the file is presented in three columns. Starting on the next page of this appendix is such a list of available parameters for Flight 295.

Column 1 is labeled "param" and lists the names of the available parameters as they are stored in the Dryden data system. These parameter names are referred to as raw parameters as they were the names used to retrieve raw data files from GetFdas. Usually no attempt was made to rename parameters during data retrieval.

Column 2 is labeled "parset" and lists the parset associated with the calculation of each parameter. See reference 1 for a discussion of parset. Note that the number at the beginning of the parset name, such as 160.0 in 160.0c1f1s1, is the rate at which the parameter was recorded. The designation "c1f1s1" is an indication that the variable was post-processed by using a GetFdas calculated function. An entry in the parset column such as "calc1" also indicates post-processing from a calculated function.

Column 3 is labeled "parameter_desc" and lists a brief description of each parameter. This information is helpful when names in the first column are not very descriptive.

```
---------------------------------------------
(from show parameters)

parameter list from ANSER FLT 295        7-11-95

---------------------------------------------
param              parset             param_desc
---------------------------------------------
a8cl               calc4
a8cr               calc4
a9cl               calc4
a9cr               calc4
aap                160.0c1f1s1        ANG ACCEL PITCH
aar                160.0c1f1s1        ANG ACCEL ROLL
aay                160.0c1f1s1        ANG ACCEL YAW
ad15               40.0c2f1s2         NOSE WHEEL STEERING ENGAGE
adot               calc1              rate of change of angle of attack
adotl              calc1              rate of change of angle of attack
adotr              calc1              rate of change of angle of attack
agc1               40.0c1f1s1         AGC 1
agc2               40.0c1f1s1         AGC 2
alpha              calc1              angle of attack
alpha1l            calc1
alpha1r            calc1
alpha2l            calc1
alpha2r            calc1
alphad             calc1              cockpit steam gage angle of
                                       attack
alphal             calc1              angle of attack
alphalc            160.0c1f1s1        LT BOOM ANGLE OF ATTACK (C)
alphaln            calc1
alphar             calc1              angle of attack
alpharc            160.0c1f1s1        RT BOOM ANGLE OF ATTACK (C)
alpharn            calc1              filtered AlphaR
aqd2fm             40.0c2f1s2         QUAD DISCRETE 2 FAIL
av01c              80.0c2f1s2         RFCS PITCH VECTORING CMND
av02c              80.0c2f1s2         RFCS YAW VECTORING CMND
av03c              80.0c2f1s2         VROLL
av04c              80.0c2f1s2         VYAW
av05c              80.0c2f1s2         VLATFILT RPS2
av06c              80.0c2f1s2         VDIRFILT RPS2
av07c              80.0c2f1s2         RFCS CLAW L TOP TVV CMND
av08c              80.0c2f1s2         RFCS CLAW L INBD TVV CMND
av09c              80.0c2f1s2         RFCS CLAW L OTBD TVV CMND
av10c              80.0c2f1s2         LATST CMD
av11c              80.0c2f1s2         NYADJ G
av12c              80.0c2f1s2         RSTABCOMP RPS
av13c              80.0c2f1s2         SFSYAW
av14c              80.0c2f1s2         LEFT STRAKE COMMAND
av15c              80.0c2f1s2         RIGHT STRAKE COMMAND
av16c              80.0c2f1s2         OBES FUNCTION 2
av17c              80.0c2f1s2         BDOT INERT DPS
av18c              80.0c2f1s2         RFCS FLAG WORD
av19c              80.0c2f1s2         PSGTERM
av20b10            80.0c2f1s2         THRUST OK
av20b11            80.0c2f1s2         INS USED
av20b12            80.0c2f1s2         FADE GAIN INPUT
av20b13            80.0c2f1s2         STRAKE GO
```

av20b14	80.0c2f1s2	MODE TRANSITION GO
av20c	80.0c2f1s2	RFCS LOAD DEFINITION
av21c	80.0c2f1s2	OBES FUNCTION
av22c	80.0c2f1s2	AOA INS
av23c	80.0c2f1s2	PITCH RATE RFCS SS
av24c	80.0c2f1s2	YAW RATE RFCS SS
av25c	80.0c2f1s2	SIDESLIP RATE DELTA
av26c	80.0c2f1s2	COMPENSATED PITCH RATE
av27c	80.0c2f1s2	AOA RFCS SS
av28c	80.0c2f1s2	REGULATED VARIABLE ERROR
av29c	80.0c2f1s2	FEEDFORWARD CONTROL
av30c	80.0c2f1s2	MACH
av31c	80.0c2f1s2	STAB CONTROL VAR
av32c	80.0c2f1s2	IMPACT PRESS RFCS SS
av33c	40.0c2f1s2	RFCS LTV CMND
av34c	40.0c2f1s2	RFCS LOV CMND
av35c	40.0c2f1s2	RFCS LIV CMND
av36c	40.0c2f1s2	RFCS RTV CMND
av37c	40.0c2f1s2	RFCS ROV CMND
av38c	40.0c2f1s2	RFCS RIV CMND
av39c	40.0c2f1s2	PITCH RATE 100 DEG/SEC
av40c	40.0c2f1s2	YAW RATE 100 DEG/SEC
av41c	40.0c2f1s2	L/H AILERON COMMAND
av42c	40.0c2f1s2	R/H AILERON COMMAND
av43c	40.0c2f1s2	L/H RUDDER COMMAND
av44c	40.0c2f1s2	R/H RUDDER COMMAND
av45c	40.0c2f1s2	COLLECTIVE LEF COMMAND
av46c	40.0c2f1s2	DIFFERENTIAL LEF COMMAND
av50c	80.0c2f1s2	RFCS ALTITUDE
av51c	80.0c2f1s2	RFCS AIRSPEED
av52c	80.0c2f1s2	RFCS AOA
av53c	80.0c2f1s2	RFCS AOA RATE
av54c	80.0c2f1s2	RFCS SIDESLIP
av55c	80.0c2f1s2	RFCS SIDESLIP RATE
av56c	80.0c2f1s2	RFCS PSI
av57c	80.0c2f1s2	RFCS QCI
av58c	80.0c2f1s2	RFCS QCI/PSI
av59c	40.0c2f1s2	LEFT NOZZLE POSITION
av60c	40.0c2f1s2	RIGHT NOZZLE POSITION
av61c	80.0c2f1s2	RAV MESSAGE - WORD 1
av62c	80.0c2f1s2	RAV MESSAGE - WORD 2
av63c	80.0c2f1s2	RAV MESSAGE - WORD 3
av64c	80.0c2f1s2	RAV MESSAGE - WORD 4
av65c	80.0c2f1s2	RAV MESSAGE - WORD 5
av66c	80.0c2f1s2	RAV MESSAGE - WORD 6
av67c	80.0c2f1s2	RAV MESSAGE - WORD 7
av68c	80.0c2f1s2	RAV MESSAGE - WORD 8
av69c	80.0c2f1s2	RFCS NORTH WIND
av70c	80.0c2f1s2	RFCS EAST WIND
av71c	80.0c2f1s2	RFCS UP WIND
av72c	40.0c2f1s2	AILERON COMMAND - LOCAL
av73c	40.0c2f1s2	RUDDER COMMAND - LOCAL
av74c	40.0c2f1s2	LEFT TEF COMMAND
av75c	40.0c2f1s2	RIGHT TEF COMMAND
av76c	40.0c2f1s2	LEFT STAB COMMAND
av77c	40.0c2f1s2	RIGHT STAB COMMAND
av78c	40.0c2f1s2	FEEDBACK GAIN AOA
av79c	40.0c2f1s2	FEEDBACK GAIN PITCH RATE

av80c	40.0c2f1s2	FEEDBACK GAIN LOAD FACTOR
av81c	40.0c2f1s2	FILTER FEEDBACK GAIN
av82c	40.0c2f1s2	INTEGRATOR FEEDBACK GAIN
av83c	40.0c2f1s2	STATIC PRESSURE RFCS SS
ax01c	80.0c2f1s2	COLLECTIVE STAB CMND
ax02c	80.0c2f1s2	COLLECTIVE LEF CMND
ax03c	80.0c2f1s2	COLLECTIVE TEF CMND
ax04c	80.0c2f1s2	DIFFERENTIAL STAB CMND
ax05c	80.0c2f1s2	IMPACT PRESSURE FILT1
ax06c	80.0c2f1s2	IMPACT PRESSURE FILT2
ax07c	80.0c2f1s2	LEFT AILERON CMD
ax08c	80.0c2f1s2	YAW CAS CMD
ax09c	80.0c2f1s2	PITCH STICK TOTAL
ax10c	80.0c2f1s2	LTV ACTUATOR RAM POS
ax11c	80.0c2f1s2	LOV ACTUATOR RAM POS
ax12c	80.0c2f1s2	LIV ACTUATOR RAM POS
ax13c	80.0c2f1s2	VANE ACT SHUTOFF VALVE DISC
ax14c	80.0c2f1s2	BDOTINT RPS
ax15c	80.0c2f1s2	ROLL RATE
ax16c	80.0c2f1s2	RUDPED CMD
ax17c	80.0c2f1s2	NORMAL ACCELERATION
ax18c	80.0c2f1s2	LATERAL ACCELERATION
ax19c	80.0c2f1s2	NABYNTV
ax20c	80.0c2f1s2	FCES AOA LOCAL
ax21c	80.0c2f1s2	LONG STICK POSITION
ax22c	80.0c2f1s2	LATERAL STICK POSITION
ax23c	80.0c2f1s2	RUDDER PEDAL FORCE
ax24c	80.0c2f1s2	LABYLTV
ax25c	80.0c2f1s2	PSTAB RPS
ax26c	80.0c2f1s2	RFCS FLAG WORD
ax27c	80.0c2f1s2	STAB RATE COMMAND
ax28c	80.0c2f1s2	AYCORR G
ax29c	80.0c2f1s2	PDSMAX
ax30c	80.0c2f1s2	PITCH COMMAND
ax31c	80.0c2f1s2	STVYAW
ax32c	80.0c2f1s2	RFCS DISC WORD WA
axc	calc1	longitudinal acceleration (+ fwd) corrected to the c.g.
axcgc	160.0c1f1s1	LONG ACCEL APPROX A/C CG (C)
axckpt	40.0c1f1s1	COCKPIT LONG ACCEL
ayc	calc1	lateral acceleration (+ right) corrected to the c.g.
aycgc	160.0c1f1s1	LAT ACCEL APPROX A/C CG (C)
ayckpt	40.0c1f1s1	COCKPIT LATERAL ACCEL
ayvtr	800.0c0f1s2	RT VERT TAIL AFT ACCEL
ayvtr1	800.0c0f1s2	RT VERT TAIL FWD ACCEL
azc	calc1	Verticle acceleration (+ down) corrected the c.g.
azcgc	160.0c1f1s1	NORM ACCEL APPROX A/C CG (C)
azckpt	40.0c1f1s1	COCKPIT NORMAL ACCEL
bavg_cor	calc1	Betaavg corrected for the flank constraint
bavgdot	calc1	rate of change of BETAAVG with time
bdot	calc1	rate of change of angle of sideslip
bdot1	calc1	rate of change of angle of sideslip

bdotr	calc1	rate of change of angle of sideslip
beta	calc1	angle of sideslip
beta1l	calc1	
beta1r	calc1	
beta2l	calc1	
beta2r	calc1	
beta_joe	calc1	Beta derived using production alpha vanes
betaavg	calc1	average of left and right indicated sideslips
betail	calc1	
betailc	160.0c1f1s1	LT BOOM ANGLE OF SIDESLIP (C)
betair	calc1	
betairc	160.0c1f1s1	RT BOOM ANGLE OF SIDESLIP (C)
betal	calc1	angle of sideslip
betaln	calc1	
betar	calc1	angle of sideslip
betarn	calc1	Filtered BetaR
betat	calc1	[same value as bavg_cor]
bv01c	80.0c2f1s2	RFCS PITCH VECTORING CMND
bv02c	80.0c2f1s2	RFCS YAW VECTORING CMND
bv03c	80.0c2f1s2	VROLL
bv04c	80.0c2f1s2	VYAW
bv05c	80.0c2f1s2	VLATFILT RPS2
bv06c	80.0c2f1s2	VDIRFILT RPS2
bv07c	80.0c2f1s2	RFCS CLAW R TOP TVV CMND
bv08c	80.0c2f1s2	RFCS CLAW R INBD TVV CMND
bv09c	80.0c2f1s2	RFCS CLAW R OTBD TVV CMND
bv10c	80.0c2f1s2	LATST CMD
bv11c	80.0c2f1s2	NYADJ G
bv12c	80.0c2f1s2	RSTABCOMP RSP
bv13c	80.0c2f1s2	SFSYAW
bv14c	80.0c2f1s2	LEFT STRAKE COMMAND
bv15c	80.0c2f1s2	RIGHT STRAKE COMMAND
bv16c	80.0c2f1s2	OBES FUNCTION 2
bv17c	80.0c2f1s2	BDOT INERT DPS
bv18c	80.0c2f1s2	RFCS FLAG WORD
bv19c	80.0c2f1s2	PSGTERM
bv20b10	80.0c2f1s2	THRUST OK
bv20b11	80.0c2f1s2	INS USED
bv20b12	80.0c2f1s2	FADE GAIN INPUT
bv20b13	80.0c2f1s2	STRAKE GO
bv20b14	80.0c2f1s2	MODE TRANSITION GO
bv20c	80.0c2f1s2	RFCS LOAD DEFINITION
bv21c	80.0c2f1s2	OBES FUNCTION
bv22c	80.0c2f1s2	AOA INS
bv23c	80.0c2f1s2	PITCH RATE RFCS SS
bv24c	80.0c2f1s2	YAW RATE RFCS SS
bv25c	80.0c2f1s2	SIDESLIP RATE DELTA
bv26c	80.0c2f1s2	COMPENSATED PITCH RATE
bv27c	80.0c2f1s2	AOA RFCS SS
bv28c	80.0c2f1s2	REGULATED VARIABLE ERROR
bv29c	80.0c2f1s2	FEEDFORWARD CONTROL
bv30c	80.0c2f1s2	MACH
bv31c	80.0c2f1s2	STAB CONTROL VAR
bv32c	80.0c2f1s2	IMPACT PRESS RFCS SS
bv83c	40.0c2f1s2	STATIC PRESSURE RFCS SS

bx01c	80.0c2f1s2	COLLECTIVE STAB CMND
bx02c	80.0c2f1s2	COLLECTIVE LEF CMND
bx03c	80.0c2f1s2	COLLECTIVE TEF CMND
bx04c	80.0c2f1s2	DIFFERENTIAL STAB CMND
bx05c	80.0c2f1s2	IMPACT PRESSURE FILT1
bx06c	80.0c2f1s2	IMPACT PRESSURE FILT2
bx07c	80.0c2f1s2	RIGHT AILERON CMD
bx08c	80.0c2f1s2	YAW CAS CMD
bx09c	80.0c2f1s2	PITCH STICK TOTAL
bx10c	80.0c2f1s2	RTV ACTUATOR RAM POS
bx11c	80.0c2f1s2	ROV ACTUATOR RAM POS
bx12c	80.0c2f1s2	RIV ACTUATOR RAM POS
bx13c	80.0c2f1s2	VANE ACT SHUTOFF VALVE DISC
bx14c	80.0c2f1s2	BDOTINT RPS
bx15c	80.0c2f1s2	ROLL RATE
bx16c	80.0c2f1s2	RUDPED CMD
bx17c	80.0c2f1s2	NORMAL ACCELERATION
bx18c	80.0c2f1s2	LATERAL ACCELERATION
bx19c	80.0c2f1s2	NABYNTV
bx20c	80.0c2f1s2	FCES AOA LOCAL
bx21c	80.0c2f1s2	LONG STICK POSITION
bx22c	80.0c2f1s2	LATERAL STICK POSITION
bx23c	80.0c2f1s2	RUDDER PEDAL FORCE
bx24c	80.0c2f1s2	LABYLTV
bx25c	80.0c2f1s2	PSTAB RPS
bx26c	80.0c2f1s2	RFCS FLAG WORD
bx27c	80.0c2f1s2	STAB RATE COMMAND
bx28c	80.0c2f1s2	AYCORR G
bx29c	80.0c2f1s2	PDSMAX
bx30c	80.0c2f1s2	PITCH COMMAND
bx31c	80.0c2f1s2	STVYAW
bx32c	80.0c2f1s2	RFCS DISC WORD WA
cdply	40.0c1f1s1	CHUTE DEPLOY
cdplyc	40.0c1f1s1	CHUTE DEPLOY CAUTION
cfg840l	calc4	
cfg840r	calc4	
cfgratl	calc4	
cfgratr	calc4	
cfgregl	calc4	
cfgregr	calc4	
cg	calc3	
cjtsn	40.0c1f1s1	CHUTE JETTISON
cjtsnc	40.0c1f1s1	CHUTE JETTISON CAUTION
cunsfc	40.0c1f1s1	CHUTE UNSAFE CAUTION
daf	160.0c1f1s1	LATERAL STICK FORCE
dal	160.0c1f1s1	LEFT AILERON POSITION
dap	40.0c1f1s1	LATERAL STICK POSITION
dar	160.0c1f1s1	RIGHT AILERON POSITION
def	40.0c1f1s1	LONG STICK FORCE
denfab	calc2	
denfe	calc2	
dep	40.0c1f1s1	LONG STICK POSITION
dhl	160.0c1f1s1	LEFT STABILATOR POSITION
dhr	160.0c1f1s1	RIGHT STABILATOR POSITION
dlfli	160.0c1f1s1	LEFT LEAD EDGE FLAP POS INBD
dlflo	160.0c1f1s1	LFT LEAD EDGE FLAP POS OUTBD
dlfri	160.0c1f1s1	RT LEAD EDGE FLAP POS INDB
dlfro	160.0c1f1s1	RT LEAD EDGE FLAP POS OUTBD

drfl	40.0c1f1s1	L RUDDER PEDAL FORCE
drfr	40.0c1f1s1	R RUDDER PEDAL FORCE
drl	160.0c1f1s1	LEFT RUDDER POSITION
drp	40.0c1f1s1	RUDDER PEDAL POSITION
drr	160.0c1f1s1	RIGHT RUDDER POSITION
dsb	40.0c1f1s1	SPEEDBRAKE POSITION
dstkl	calc8	
dstkr	calc8	
dtfl	160.0c1f1s1	LEFT TRAIL EDGE FLAP POS.
dtfr	160.0c1f1s1	RIGHT TRAIL EDGE FLAP POS
eitbiasl	calc2	
eitbiasr	calc2	
ercodel	calc4	
ercoder	calc4	
es1001	25.0c1f1s2	LT LEX PRESS FS 253, UPR 1.99
es1002	25.0c1f1s2	LT LEX PRESS FS 253, UPR 3.01
es1003	25.0c1f1s2	LT LEX PRESS FS 253, UPR 4.79
es1004	25.0c1f1s2	LT LEX PRESS FS 253, UPR 5.68
es1005	25.0c1f1s2	LT LEX PRESS FS 253, UPR 6.82
es1006	25.0c1f1s2	LT LEX PRESS FS 253, UPR 7.9
es1007	25.0c1f1s2	LT LEX PRESS FS 253, UPR 8.92
es1008	25.0c1f1s2	LT LEX PRESS FS 253,UPR 9.89
es1009	25.0c1f1s2	LT LEX PRESS FS 253, UPR 10.82
es101	25.0c1f1s2	FRDBY PRESS FS85 72 DEG
es1010	25.0c1f1s2	LT LEX PRESS FS 253, UPR 11.24
es1011	25.0c1f1s2	LT LEX PRESS FS 253, UPR 11.66
es1012	25.0c1f1s2	LT LEX PRESS FS 253, UPR 12.03
es1013	25.0c1f1s2	LT LEX PRESS FS 253, UPR 12.4
es1014	25.0c1f1s2	LT LEX PRESS FS 253, UPR 12.77
es1015	25.0c1f1s2	LT LEX PRESS FS 253, UPR 13.14
es1016	25.0c1f1s2	LT LEX PRESS FS 253, UPR 13.44
es1017	25.0c1f1s2	LT LEX PRESS FS 253, UPR 13.74
es1018	25.0c1f1s2	LT LEX PRESS FS 253, LWR 2.26
es1019	25.0c1f1s2	LT LEX PRESS FS 253, LWR 6.68
es102	25.0c1f1s2	FRBDY PRESS FS85 60 DEG
es1020	25.0c1f1s2	LT LEX PRESS FS 253, LWR 10.3
es1021	25.0c1f1s2	LT LEX PRESS FS 253, LWR 13.44
es103	25.0c1f1s2	FRBDY PRESS FS85 49.5 DEG
es104	25.0c1f1s2	FRBDY PRESS FS85 36.1 DEG
es105	25.0c1f1s2	FRBDY PRESS FS85 24 DEG
es106	25.0c1f1s2	FRBDY PRESS FS85 12 DEG
es107	25.0c1f1s2	FRBDY PRESS FS85 1.4 DEG
es108	25.0c1f1s2	FRBDY PRESS FS70 180 DEG
es109	25.0c1f1s2	FRBDY PRESS FS70 192 DEG
es10tmp	40.0c2f1s2	ES10 TEMP
es110	25.0c1f1s2	FRBDY PRESS FS70 258 DEG
es1101	25.0c1f1s2	RT LEX PRESS FS 296, UPR 0.99
es1103	25.0c1f1s2	RT LEX PRESS FS 296, UPR 4.55
es1104	25.0c1f1s2	RT LEX PRESS FS 296, UPR 5.87
es1105	25.0c1f1s2	RT LEX PRESS FS 296, UPR 7.39
es1106	25.0c1f1s2	RT LEX PRESS FS 296, UPR 8.87
es1107	25.0c1f1s2	RT LEX PRESS FS 296, UPR 10.25
es1108	25.0c1f1s2	RT LEX PRESS FS 296, UPR 11.61
es1109	25.0c1f1s2	RT LEX PRESS FS 296, UPR 12.87
es111	25.0c1f1s2	FRBDY PRESS FS70 270 DEG
es1110	25.0c1f1s2	RT LEX PRESS FS 296, UPR 14.07
es1111	25.0c1f1s2	RT LEX PRESS FS 296, UPR 14.62
es1112	25.0c1f1s2	RT LEX PRESS FS 296, UPR 15.17

es1113	25.0c1f1s2	RT LEX PRESS FS 296, UPR 15.67
es1114	25.0c1f1s2	RT LEX PRESS FS 296, UPR 16.17
es1115	25.0c1f1s2	RT LEX PRESS FS 296, UPR 16.63
es1116	25.0c1f1s2	RT LEX PRESS FS 296, UPR 17.09
es1117	25.0c1f1s2	RT LEX PRESS FS 296, UPR 17.51
es1118	25.0c1f1s2	RT LEX PRESS FS 296, UPR 17.93
es1119	25.0c1f1s2	RT LEX PRESS FS 296, LWR 2.99
es112	25.0c1f1s2	FRBDY PRESS FS70 278 DEG
es1120	25.0c1f1s2	RT LEX PRESS FS 296, LWR 8.73
es1121	25.0c1f1s2	RT LEX PRESS FS 296, LWR 13.59
es1122	25.0c1f1s2	RT LEX PRESS FS 296, LWR 16.71
es113	25.0c1f1s2	FRBDY PRESS FS70 288 DEG
es114	25.0c1f1s2	FRBDY PRESS FS70 300 DEG
es115	25.0c1f1s2	FRBDY PRESS FS70 312 DEG
es116	25.0c1f1s2	FRBDY PRESS FS70 320.4 DEG
es117	25.0c1f1s2	FRBDY PRESS FS70 336 DEG
es118	25.0c1f1s2	FRBDY PRESS FS70 344.9 DEG
es119	25.0c1f1s2	FRBDY PRESS FS70 357.4 DEG
es11tmp	40.0c2f1s2	ES NO.11 TEMP MONITOR
es120	25.0c1f1s2	FRBDY PRESS FS70 168 DEG
es1201	25.0c1f1s2	LT LEX PRESS FS 296, UPR 2.15
es1202	25.0c1f1s2	LT LEX PRESS FS 296, UPR 3.59
es1203	25.0c1f1s2	LT LEX PRESS FS 296, UPR 5.87
es1204	25.0c1f1s2	LT LEX PRESS FS 296, UPR 7.39
es1205	25.0c1f1s2	LT LEX PRESS FS 296, UPR 8.87
es1206	25.0c1f1s2	LT LEX PRESS FS 296, UPR 10.25
es1207	25.0c1f1s2	LT LEX PRESS FS 296, UPR 11.61
es1208	25.0c1f1s2	LT LEX PRESS FS 296, UPR 12.87
es1209	25.0c1f1s2	LT LEX PRESS FS 296, UPR 14.61
es121	25.0c1f1s2	FRBDY PRESS FS70 102 DEG
es1210	25.0c1f1s2	LT LEX PRESS FS 296, UPR 15.24
es1211	25.0c1f1s2	LT LEX PRESS FS 296, UPR 15.87
es1212	25.0c1f1s2	LT LEX PRESS FS 296, UPR 17.09
es1213	25.0c1f1s2	LT LEX PRESS FS 296, UPR 17.93
es1214	25.0c1f1s2	LT LEX PRESS FS 296, LWR 2.99
es1215	25.0c1f1s2	LT LEX PRESS FS 296, LWR 6.97
es1216	25.0c1f1s2	LT LEX PRESS FS 296, LWR 9.57
es1217	25.0c1f1s2	LT LEX PRESS FS 296, LWR 17.37
es122	25.0c1f1s2	FRBDY PRESS FS70 90 DEG
es123	25.0c1f1s2	FRBDY PRESS FS70 82 DEG
es124	25.0c1f1s2	FRBDY PRESS FS70 72 DEG
es125	25.0c1f1s2	FRBDY PRESS FS70 60 DEG
es126	25.0c1f1s2	FRBDY PRESS FS70 48 DEG
es127	25.0c1f1s2	FRBDY PRESS FS70 39.6 DEG
es128	25.0c1f1s2	FRBDY PRESS FS70 24 DEG
es129	25.0c1f1s2	FRBDY PRESS FS70 15.1 DEG
es130	25.0c1f1s2	FRBDY PRESS FS70 2.6 DEG
es1301	25.0c1f1s2	RT LEX PRESS FS 357, UPR 1.34
es1302	25.0c1f1s2	RT LEX PRESS FS 357, UPR 3.58
es1303	25.0c1f1s2	L FUS PRESS FS357 BL 6.25
es1304	25.0c1f1s2	RT LEX PRESS FS 357, UPR 8.64
es1305	25.0c1f1s2	RT LEX PRESS FS 357, UPR 10.94
es1306	25.0c1f1s2	L FUS PRESS FS357 BL 12.50
es1307	25.0c1f1s2	RT LEX PRESS FS 357, UPR 15.24
es1308	25.0c1f1s2	RT LEX PRESS FS 357, UPR 17.52
es1309	25.0c1f1s2	L FUS PRESS FS357 BL 18.13
es1310	25.0c1f1s2	RT LEX PRESS FS 357, UPR 19.92
es1311	25.0c1f1s2	RT LEX PRESS FS 357, UPR 20.68

es1312	25.0c1f1s2	L FUS PRESS FS357 BL 21.20
es1313	25.0c1f1s2	RT LEX PRESS FS 357, UPR 22.62
es1314	25.0c1f1s2	RT LEX PRESS FS 357, UPR 23.38
es1315	25.0c1f1s2	L FUS PRESS FS357 BL 22.24
es1316	25.0c1f1s2	RT LEX PRESS FS 357, UPR 24.84
es1317	25.0c1f1s2	RT LEX PRESS FS 357, UPR 25.54
es1318	25.0c1f1s2	L FUS PRESS FS357 BL 22.60
es1319	25.0c1f1s2	RT LEX PRESS FS 357, UPR 27.74
es1320	25.0c1f1s2	RT LEX PRESS FS 357, UPR 28.56
es1321	25.0c1f1s2	RT LEX PRESS FS 357, LWR 3.56
es1322	25.0c1f1s2	RT LEX PRESS FS 357, LWR 7.24
es1323	25.0c1f1s2	RT LEX PRESS FS 357, LWR 12.92
es1324	25.0c1f1s2	RT LEX PRESS FS 357, LWR 20.02
es1325	25.0c1f1s2	RT LEX PRESS FS 357, LWR 25.9
es1326	25.0c1f1s2	FUS PRESS FS357 BL0.00
es1327	25.0c1f1s2	R FUS PRESS FS357 BL 6.25
es1328	25.0c1f1s2	R FUS PRESS FS357 BL 12.50
es1329	25.0c1f1s2	R FUS PRESS FS357 BL 18.13
es1330	25.0c1f1s2	R FUS PRESS FS357 BL 21.20
es1331	25.0c1f1s2	R FUS PRESS FS357 BL 22.24
es1332	25.0c1f1s2	R FUS PRESS FS357 BL 22.60
es13tmp	40.0c2f1s2	ES NO.13 TEMP MONITOR
es1401	25.0c1f1s2	LT LEX PRESS FS 357, UPR 1.2
es1402	25.0c1f1s2	LT LEX PRESS FS 357, UPR 3.75
es1403	25.0c1f1s2	LT LEX PRESS FS 357, UPR 6.24
es1404	25.0c1f1s2	LT LEX PRESS FS 357, UPR 8.64
es1405	25.0c1f1s2	LT LEX PRESS FS 357, UPR 10.94
es1406	25.0c1f1s2	LT LEX PRESS FS 357, UPR 13.14
es1407	25.0c1f1s2	LT LEX PRESS FS 357, UPR 15.24
es1408	25.0c1f1s2	LT LEX PRESS FS 357, UPR 17.26
es1409	25.0c1f1s2	LT LEX PRESS FS 357, UPR 19.16
es1410	25.0c1f1s2	LT LEX PRESS FS 357, UPR 20.05
es1411	25.0c1f1s2	LT LEX PRESS FS 357, UPR 20.94
es1412	25.0c1f1s2	LT LEX PRESS FS 357, UPR 21.78
es1413	25.0c1f1s2	LT LEX PRESS FS 357, UPR 22.62
es1414	25.0c1f1s2	LT LEX PRESS FS 357, UPR 23.38
es1415	25.0c1f1s2	LT LEX PRESS FS 357, UPR 24.14
es1416	25.0c1f1s2	LT LEX PRESS FS 357, UPR 24.84
es1417	25.0c1f1s2	LT EX PRESS FS 357, UPR 25.54
es1418	25.0c1f1s2	LT LEX PRESS FS 357, UPR 26.74
es1419	25.0c1f1s2	LT LEX PRESS FS 357, UPR 27.74
es1420	25.0c1f1s2	LT LEX PRESS FS 357, LWR 3.68
es1421	25.0c1f1s2	LT LEX PRESS FS 357, LWR 7.24
es1422	25.0c1f1s2	LT LEX PRESS FS 357, LWR 12.92
es1423	25.0c1f1s2	LT LEX PRESS FS 357, LWR 25.9
es1501	10.0c1f1s1	RWUS PRESS BL85, X/C=.025
es1502	10.0c1f1s1	RWUS PRESS BL85, X/C=.050
es1503	10.0c1f1s1	RWUS PRESS BL85, X/C=.075
es1504	10.0c1f1s1	RWUS PRESS BL85, X/C=.100
es1505	10.0c1f1s1	RWUS PRESS BL85, X/C=.125
es1506	10.0c1f1s1	RWUS PRESS BL85, X/C=.150
es1507	10.0c1f1s1	RWUS PRESS BL85, X/C=.226
es1508	10.0c1f1s1	RWUS PRESS BL85, X/C=.298
es1509	10.0c1f1s1	RWUS PRESS BL85, X/C=.250
es1510	10.0c1f1s1	RWUS PRESS BL85, X/C=.300
es1511	10.0c1f1s1	RWUS PRESS BL85, X/C=.350
es1512	10.0c1f1s1	RWUS PRESS BL85, X/C=.400
es1513	10.0c1f1s1	RWUS PRESS BL85, X/C=.450

es1514	10.0c1f1s1	RWUS PRESS BL85, X/C=.500
es1515	10.0c1f1s1	RWUS PRESS BL85, X/C=.550
es1516	10.0c1f1s1	RWUS PRESS BL85, X/C=.600
es1517	10.0c1f1s1	RWUS PRESS BL85, X/C=.650
es1518	10.0c1f1s1	RWLS PRESS BL85, X/C=.500
es1519	10.0c1f1s1	RWUS PRESS BL85, X/C=.236
es1520	10.0c1f1s1	RWUS PRESS BL85, X/C=.247
es1521	10.0c1f1s1	RWUS PRESS BL85, X/C=.257
es1522	10.0c1f1s1	RWUS PRESS BL85, X/C=.267
es1523	10.0c1f1s1	RWUS PRESS BL85, X/C=.277
es1524	10.0c1f1s1	RWUS PRESS BL85, X/C=.288
es1525	10.0c1f1s1	RWLS PRESS BL85, X/C=.100
es1526	10.0c1f1s1	RWLS PRESS BL85, X/C=.219
es1527	10.0c1f1s1	RWLS PRESS BL85, X/C=.300
es1528	10.0c1f1s1	RWLS PRESS BL85, X/C=.400
es1529	10.0c1f1s1	RWLS PRESS BL85, X/C=.600
es1530	10.0c1f1s1	RWLS PRESS BL85, X/C=.688
es1531	10.0c1f1s1	RWLS PRESS BL85, X/C=.688
es1532	10.0c1f1s1	RWLS PRESS BL85, X/C=.688
es1601	10.0c1f1s1	LWUS PRESS BL86, X/C=.025
es1602	10.0c1f1s1	LWUS PRESS BL86, X/C=.050
es1603	10.0c1f1s1	LWUS PRESS BL86, X/C=.075
es1604	10.0c1f1s1	LWUS PRESS BL86, X/C=.100
es1605	10.0c1f1s1	LWUS PRESS BL86, X/C=.125
es1606	10.0c1f1s1	LWUS PRESS BL86, X/C=.150
es1607	10.0c1f1s1	LWUS PRESS BL86, X/C=.226
es1608	10.0c1f1s1	LWUS PRESS BL86, X/C=.298
es1609	10.0c1f1s1	LWUS PRESS BL86, X/C=.250
es1610	10.0c1f1s1	LWUS PRESS BL86, X/C=.300
es1611	10.0c1f1s1	LWUS PRESS BL86, X/C=.350
es1612	10.0c1f1s1	LWUS PRESS BL86, X/C=.400
es1613	10.0c1f1s1	LWUS PRESS BL86, X/C=.450
es1614	10.0c1f1s1	LWUS PRESS BL86, X/C=.500
es1615	10.0c1f1s1	LWUS PRESS BL86, X/C=.550
es1616	10.0c1f1s1	LWUS PRESS BL86, X/C=.600
es1617	10.0c1f1s1	LWUS PRESS BL86, X/C=.650
es1618	10.0c1f1s1	LWLS PRESS BL86, X/C=.500
es1619	10.0c1f1s1	LWUS PRESS BL86, X/C=.236
es1620	10.0c1f1s1	LWUS PRESS BL86, X/C=.247
es1621	10.0c1f1s1	LWUS PRESS BL86, X/C=.257
es1622	10.0c1f1s1	LWUS PRESS BL86, X/C=.267
es1623	10.0c1f1s1	LWUS PRESS BL86, X/C=.277
es1624	10.0c1f1s1	LWUS PRESS BL86, X/C=.288
es1625	10.0c1f1s1	LWLS PRESS BL86, X/C=.100
es1626	10.0c1f1s1	LWLS PRESS BL86, X/C=.200
es1627	10.0c1f1s1	LWLS PRESS BL86, X/C=.300
es1628	10.0c1f1s1	LWLS PRESS BL86, X/C=.400
es1629	10.0c1f1s1	LWLS PRESS BL86, X/C=.600
es1630	10.0c1f1s1	LWLS PRESS BL86, X/C=.668
es1631	10.0c1f1s1	LWLS PRESS BL86, X/C=.668
es1632	10.0c1f1s1	LWLS PRESS BL86, X/C=.668
es1701	10.0c1f1s1	RWUS PRESS BL129, X/C=.025
es1702	10.0c1f1s1	RWUS PRESS BL129, X/C-.050
es1703	10.0c1f1s1	RWUS PRESS BL129, X/C=.075
es1704	10.0c1f1s1	RWUS PRESS BL129, X/C=.100
es1705	10.0c1f1s1	RWUS PRESS BL129, X/C=.125
es1706	10.0c1f1s1	RWUS PRESS BL129, X/C=.150
es1707	10.0c1f1s1	RWUS PRESS BL129, X/C=.650

es1708	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1709	10.0c1f1s1	RWUS PRESS BL129, X/C=.250
es1710	10.0c1f1s1	RWUS PRESS BL129, X/C=.300
es1711	10.0c1f1s1	RWUS PRESS BL129, X/C=.350
es1712	10.0c1f1s1	RWUS PRESS BL129, X/C=.400
es1713	10.0c1f1s1	RWUS PRESS BL129, X/C=.450
es1714	10.0c1f1s1	RWUS PRESS BL129, X/C=.500
es1715	10.0c1f1s1	RWUS PRESS BL129, X/C=.550
es1716	10.0c1f1s1	RWUS PRESS BL129, X/C=.600
es1717	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1718	10.0c1f1s1	RWLS PRESS BL129, X/C=.500
es1719	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1720	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1721	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1722	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1723	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1724	10.0c1f1s1	RWUS PRESS BL129, X/C=.650
es1725	10.0c1f1s1	RWLS PRESS BL129, X/C=.100
es1726	10.0c1f1s1	RWLS PRESS BL129, X/C=.218
es1727	10.0c1f1s1	RWLS PRESS BL129, X/C=.300
es1728	10.0c1f1s1	RWLS PRESS BL129, X/C=.400
es1729	10.0c1f1s1	RWLS PRESS BL129, X/C=.600
es1730	10.0c1f1s1	RWLS PRESS BL129, X/C=.658
es1731	10.0c1f1s1	RWLS PRESS BL129, X/C=.658
es1732	10.0c1f1s1	RWLS PRESS BL129, X/C=.658
es17tmp	40.0c1f1s1	ES NO. 17 TEMPERATURE
es1801	10.0c1f1s1	LWUS PRESS BL129, X/C=.025
es1802	10.0c1f1s1	LWUS PRESS BL129, X/C=.050
es1803	10.0c1f1s1	LWUS PRESS BL129, X/C=.075
es1804	10.0c1f1s1	LWUS PRESS BL129, X/C=.100
es1805	10.0c1f1s1	LWUS PRESS BL129, X/C=.125
es1806	10.0c1f1s1	LWUS PRESS BL129, X/C=.150
es1807	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1808	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1809	10.0c1f1s1	LWUS PRESS BL129, X/C=.250
es1810	10.0c1f1s1	LWUS PRESS BL129, X/C=.300
es1811	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1812	10.0c1f1s1	LWUS PRESS BL129, X/C=.400
es1813	10.0c1f1s1	LWUS PRESS BL129, X/C=.450
es1814	10.0c1f1s1	LWUS PRESS BL129, X/C=.500
es1815	10.0c1f1s1	LWUS PRESS BL129, X/C=.550
es1816	10.0c1f1s1	LWUS PRESS BL129, X/C=.600
es1817	10.0c1f1s1	LWUS PRESS BL129, X/C=.650
es1818	10.0c1f1s1	LWLS PRESS BL129, X/C=.500
es1819	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1820	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1821	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1822	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1823	10.0c1f1s1	LWUS PRESS BL129, X/C=.350
es1824	10.0c1f1s1	LWUS PRESS BL129, X/C.350
es1825	10.0c1f1s1	LWLS PRESS BL129, X/C=.100
es1826	10.0c1f1s1	LWLS PRESS BL129, X/C=.218
es1827	10.0c1f1s1	LWLS PRESS BL129, X/C=.300
es1828	10.0c1f1s1	LWLS PRESS BL129, X/C=.400
es1829	10.0c1f1s1	LWLS PRESS BL129, X/C=.600
es1830	10.0c1f1s1	LWLS PRESS BL129, X/C=.658
es1831	10.0c1f1s1	LWLS PRESS BL129, X/C=.658
es1832	10.0c1f1s1	LWLS PRESS BL129, X/C=.658

es18tmp	40.0c1f1s1	ES NO. 18 TEMPERATURE
es1901	10.0c1f1s1	RWLE PRESS BL191, X/C=.000
es1903	10.0c1f1s1	RWUS PRESS BL191, X/C=.050
es1904	10.0c1f1s1	RWUS PRESS BL191, X/C=.075
es1905	10.0c1f1s1	RWUS PRESS BL191, X/C=.100
es1906	10.0c1f1s1	RWUS PRESS BL191, X/C=.125
es1907	10.0c1f1s1	RWUS PRESS BL191, X/C=.150
es1908	10.0c1f1s1	RWUS PRESS BL191, X/C=.200
es1909	10.0c1f1s1	RWUS PRESS BL191, X/C=.662
es1910	10.0c1f1s1	RWUS PRESS BL191, X/C=.250
es1911	10.0c1f1s1	RWUS PRESS BL191, X/C=.662
es1912	10.0c1f1s1	RWUS PRESS BL191, X/C=.300
es1913	10.0c1f1s1	RWUS PRESS BL191, X/C=.662
es1914	10.0c1f1s1	RWUS PRESS BL191, X/C=.350
es1915	10.0c1f1s1	RWUS PRESS BL191, X/C=.375
es1916	10.0c1f1s1	RWUS PRESS BL191, X/C=.400
es1917	10.0c1f1s1	RWUS PRESS BL191, X/C=.425
es1918	10.0c1f1s1	RWUS PRESS BL191, X/C=.450
es1919	10.0c1f1s1	RWUS PRESS BL191, X/C=.475
es1920	10.0c1f1s1	RWUS PRESS BL191, X/C=.500
es1921	10.0c1f1s1	RWUS PRESS BL191, X/C=.525
es1922	10.0c1f1s1	RWUS PRESS BL191, X/C=.550
es1923	10.0c1f1s1	RWUS PRESS BL191, X/C=.575
es1924	10.0c1f1s1	RWUS PRESS BL191, X/C=.600
es1925	10.0c1f1s1	RWUS PRESS BL191, X/C=.625
es1926	10.0c1f1s1	RWUS PRESS BL191, X/C=.650
es1927	10.0c1f1s1	RWLS PRESS BL191, X/C=.100
es1928	10.0c1f1s1	RWLS PRESS BL191, X/C=.200
es1929	10.0c1f1s1	RWLS PRESS BL191, X/C=.300
es1930	10.0c1f1s1	RWLS PRESS BL191, X/C=.400
es1931	10.0c1f1s1	RWLS PRESS BL191, X/C=.500
es1932	10.0c1f1s1	RWLS PRESS BL191, X/C=.600
es2001	10.0c1f1s1	LWLE PRESS BL191, X/C=.000
es2002	10.0c1f1s1	LWUS PRESS BL191, X/C=.025
es2003	10.0c1f1s1	LWUS PRESS BL191, X/C=.050
es2004	10.0c1f1s1	LWUS PRESS BL191, X/C=.075
es2005	10.0c1f1s1	LWUS PRESS BL191, X/C=.100
es2006	10.0c1f1s1	LWUS PRESS BL191, X/C=.125
es2007	10.0c1f1s1	LWUS PRESS BL191, X/C=.150
es2008	10.0c1f1s1	LWUS PRESS BL191, X/C=.200
es2009	10.0c1f1s1	LWUS PRESS BL191, X/C=.225
es201	25.0c1f1s2	FRBDY PRESS FS85 180 DEG
es2010	10.0c1f1s1	LWUS PRESS BL191, X/C=.250
es2011	10.0c1f1s1	LWUS PRESS BL191, X/C=.275
es2012	10.0c1f1s1	LWUS PRESS BL191, X/C=.300
es2013	10.0c1f1s1	LWUS PRESS BL191, X/C=.325
es2014	10.0c1f1s1	LWUS PRESS BL191, X/C=.350
es2015	10.0c1f1s1	LWUS PRESS BL191, X/C=.375
es2016	10.0c1f1s1	LWUS PRESS BL191, X/C=.400
es2017	10.0c1f1s1	LWUS PRESS BL191, X/C=.425
es2018	10.0c1f1s1	LWUS PRESS BL191, X/C=.450
es2019	10.0c1f1s1	LWUS PRESS BL191, X/C=.475
es202	25.0c1f1s2	FRBDY PRESS FS85 189 DEG
es2020	10.0c1f1s1	LWUS PRESS BL191, X/C=.500
es2021	10.0c1f1s1	LWUS PRESS BL191, X/C=.525
es2022	10.0c1f1s1	LWUS PRESS BL191, X/C=.550
es2023	10.0c1f1s1	LWUS PRESS BL191, X/C=.575
es2024	10.0c1f1s1	LWUS PRESS BL191, X/C=.600

es2025	10.0c1f1s1	LWUS PRESS BL191, X/C=.625
es2026	10.0c1f1s1	LWUS PRESS BL191, X/C=.650
es2027	10.0c1f1s1	LWLS PRESS BL191, X/C=.100
es2028	10.0c1f1s1	LWLS PRESS BL191, X/C=.200
es2029	10.0c1f1s1	LWLS PRESS BL191, X/C=.300
es203	25.0c1f1s2	FRBDY PRESS FS85 198 DEG
es2030	10.0c1f1s1	LWLS PRESS BL191, X/C=.400
es2031	10.0c1f1s1	LWLS PRESS BL191, X/C=.500
es2032	10.0c1f1s1	LWLS PRESS BL191, X/C=.600
es204	25.0c1f1s2	FRBDY COVE PRES FS85 202 DEG
es205	25.0c1f1s2	FRBDY COVE PRES FS85 208 DEG
es206	25.0c1f1s2	FRBDY COVE PRES FS85 214 DEG
es207	25.0c1f1s2	FRBDY COVE PRES FS85 221 DEG
es208	25.0c1f1s2	FRBDY COVE PRES FS85 229 DEG
es209	25.0c1f1s2	FRBDY COVE PRES FS85 237 DEG
es210	25.0c1f1s2	FRBDY PRESS FS85 254 DEG
es2101	10.0c1f1s1	R FUS PRESS FS463 BL76.48
es2102	10.0c1f1s1	R FUS PRESS FS463 BL69.48
es2103	10.0c1f1s1	R FUS PRESS FS463 BL62.49
es2104	10.0c1f1s1	R FUS PRESS FS463 BL55.50
es2105	10.0c1f1s1	R FUS PRESS FS463 BL39.22
es2106	10.0c1f1s1	R FUS PRESS FS463 BL52.38
es2107	10.0c1f1s1	R FUS PRESS FS463 BL50.81
es2108	10.0c1f1s1	R FUS PRESS FS463 BL49.25
es2109	10.0c1f1s1	R FUS PRESS FS463 BL47.69
es211	25.0c1f1s2	FRBDY PRESS FS85 262 DEG
es2110	10.0c1f1s1	R FUS PRESS FS463 BL46.13
es2111	10.0c1f1s1	R FUS PRESS FS463 BL44.56
es2112	10.0c1f1s1	R FUS PRESS FS463 BL50.81
es2113	10.0c1f1s1	R FUS PRESS FS463 BL32.19
es2114	10.0c1f1s1	R FUS PRESS FS463 BL25.16
es2115	10.0c1f1s1	R FUS PRESS FS463 BL18.13
es2116	10.0c1f1s1	R FUS PRESS FS463 BL12.50
es2117	10.0c1f1s1	R FUS PRESS FS463 BL6.25
es2118	10.0c1f1s1	FUS PRESS FS463 BL0.00
es2119	10.0c1f1s1	L FUS PRESS FS463 BL6.25
es212	25.0c1f1s2	FRBDY PRESS FS85 270 DEG
es2120	10.0c1f1s1	L FUS PRESS FS463 BL12.50
es2121	10.0c1f1s1	L FUS PRESS FS463 BL18.13
es2122	10.0c1f1s1	L FUS PRESS FS463 BL25.16
es2123	10.0c1f1s1	L FUS PRESS FS463 BL32.19
es2124	10.0c1f1s1	L FUS PRESS FS463 BL39.22
es2125	10.0c1f1s1	L FUS PRESS FS463 BL44.56
es2126	10.0c1f1s1	L FUS PRESS FS463 BL47.69
es2127	10.0c1f1s1	L FUS PRESS FS463 BL49.25
es2128	10.0c1f1s1	L FUS PRESS FS463 BL52.38
es2129	10.0c1f1s1	L FUS PRESS FS463 BL55.50
es213	25.0c1f1s2	FRBDY PRESS FS85 278 DEG
es2130	10.0c1f1s1	L FUS PRESS FS463 BL62.49
es2131	10.0c1f1s1	L FUS PRESS FS463 BL69.48
es2132	10.0c1f1s1	L FUS PRESS FS463 BL76.48
es214	25.0c1f1s2	FRBDY PRESS FS85 288 DEG
es215	25.0c1f1s2	FRBDY PRESS FS85 300 DEG
es216	25.0c1f1s2	FRBDY PRESS FS85 310.5 DEG
es217	25.0c1f1s2	FRBDY PRESS FS85 323.9 DEG
es218	25.0c1f1s2	FRBDY PRESS FS85 336 DEG
es219	25.0c1f1s2	FRBDY PRESS FS85 348 DEG
es21tmp	40.0c1f1s1	ES NO. 21 TEMPERATURE

es220	25.0c1f1s2	FRBDY PRESS FS85 358.4 DEG
es2201	10.0c1f1s1	R FUS PRESS FS503 BL76.48
es2202	10.0c1f1s1	R FUS PRESS FS503 BL69.48
es2203	10.0c1f1s1	R FUS PRESS FS503 BL62.49
es2204	10.0c1f1s1	R FUS PRESS FS503 BL40.22
es2205	10.0c1f1s1	R FUS PRESS FS503 BL53.94
es2206	10.0c1f1s1	R FUS PRESS FS503 BL52.38
es2207	10.0c1f1s1	R FUS PRESS FS503 BL50.81
es2208	10.0c1f1s1	R FUS PRESS FS503 BL49.25
es2209	10.0c1f1s1	R FUS PRESS FS503 BL47.69
es221	25.0c1f1s2	FRBDY PRESS FS85 171 DEG
es2210	10.0c1f1s1	R FUS PRESS FS503 BL46.13
es2211	10.0c1f1s1	R FUS PRESS FS503 BL44.56
es2212	10.0c1f1s1	R FUS PRESS FS503 BL55.50
es2213	10.0c1f1s1	R FUS PRESS FS503 BL32.19
es2214	10.0c1f1s1	R FUS PRESS FS503 BL25.16
es2215	10.0c1f1s1	R FUS PRESS FS503 BL18.13
es2216	10.0c1f1s1	R FUS PRESS FS503 BL12.50
es2217	10.0c1f1s1	R FUS PRESS FS503 BL6.25
es2218	10.0c1f1s1	FUS PRESS FS503 BL0.00
es2219	10.0c1f1s1	L FUS PRESS FS503 BL6.25
es222	25.0c1f1s2	FRBDY PRESS FS85 162 DEG
es2220	10.0c1f1s1	L FUS PRESS FS503 BL12.50
es2221	10.0c1f1s1	L FUS PRESS FS503 BL18.13
es2222	10.0c1f1s1	L FUS PRESS FS503 BL25.16
es2223	10.0c1f1s1	L FUS PRESS FS503 BL32.19
es2224	10.0c1f1s1	L FUS PRESS FS503 BL39.22
es2225	10.0c1f1s1	L FUS PRESS FS503 BL44.56
es2226	10.0c1f1s1	L FUS PRESS FS503 BL47.69
es2227	10.0c1f1s1	L FUS PRESS FS503 BL49.25
es2228	10.0c1f1s1	L FUS PRESS FS503 BL55.38
es2229	10.0c1f1s1	L FUS PRESS FS503 BL55.50
es223	25.0c1f1s2	FRBDY COVE PRES FS85 158 DEG
es2230	10.0c1f1s1	L FUS PRESS FS503 BL62.49
es2231	10.0c1f1s1	L FUS PRESS FS503 BL69.48
es2232	10.0c1f1s1	L FUS PRESS FS503 BL76.48
es224	25.0c1f1s2	FRBDY COVE PRES FS85 152 DEG
es225	25.0c1f1s2	FRBDY COVE PRES FS85 146 DEG
es226	25.0c1f1s2	FRBDY COVE PRES FS85 139 DEG
es227	25.0c1f1s2	FRBDY COVE PRES FS85 131 DEG
es228	25.0c1f1s2	FRBDY COVE PRES FS85 123 DEG
es229	25.0c1f1s2	FRBDY PRESS FS85 106 DEG
es22tmp	40.0c1f1s1	ES NO. 22 TEMPERATURE
es230	25.0c1f1s2	FRBDY PRESS FS85 98 DEG
es2301	10.0c1f1s1	LVTO PRESS ZV90 X/L=.050
es2302	10.0c1f1s1	LVTO PRESS ZV90 X/L=.100
es2303	10.0c1f1s1	LVTO PRESS ZV90 X/L=.150
es2304	10.0c1f1s1	LVTO PRESS ZV90 X/L=.200
es2305	10.0c1f1s1	LVTO PRESS ZV90 X/L=.250
es2306	10.0c1f1s1	LVTO PRESS ZV90 X/L=.300
es2307	10.0c1f1s1	LVTO PRESS ZV90 X/L=.350
es2308	10.0c1f1s1	LVTO PRESS ZV90 X/L=.400
es2309	10.0c1f1s1	LVTO PRESS ZV90 X/L=.450
es231	25.0c1f1s2	FRBDY PRESS FS85 90 DEG
es2310	10.0c1f1s1	LVTO PRESS ZV90 X/L=.500
es2311	10.0c1f1s1	LVTO PRESS ZV90 X/L=.550
es2312	10.0c1f1s1	LVTO PRESS ZV90 X/L=.600
es2313	10.0c1f1s1	LVTO PRESS ZV90 X/L=.650

es2314	10.0c1f1s1	LVTO PRESS ZV90 X/L=.700
es2315	10.0c1f1s1	LVTO PRESS ZV90 X/L=.800
es2316	10.0c1f1s1	LVTO PRESS ZV90 X/L=.900
es2317	10.0c1f1s1	LVTI PRESS ZV90 X/L=.050
es2318	10.0c1f1s1	LVTI PRESS ZV90 X/L=.100
es2319	10.0c1f1s1	LVTI PRESS ZV90 X/L=.150
es232	25.0c1f1s2	FRBDY PRESS FS85 82 DEG
es2320	10.0c1f1s1	LVTI PRESS ZV90 X/L=.200
es2321	10.0c1f1s1	LVTI PRESS ZV90 X/L=.250
es2322	10.0c1f1s1	LVTI PRESS ZV90 X/L=.300
es2323	10.0c1f1s1	LVTI PRESS ZV90 X/L=.350
es2324	10.0c1f1s1	LVTI PRESS ZV90 X/L=.400
es2325	10.0c1f1s1	LVTI PRESS ZV90 X/L=.450
es2326	10.0c1f1s1	LVTI PRESS ZV90 X/L=.500
es2327	10.0c1f1s1	LVTI PRESS ZV90 X/L=.550
es2328	10.0c1f1s1	LVTI PRESS ZV90 X/L=.600
es2329	10.0c1f1s1	LVTI PRESS ZV90 X/L=.650
es2330	10.0c1f1s1	LVTI PRESS ZV90 X/L=.700
es2331	10.0c1f1s1	LVTI PRESS ZV90 X/L=.800
es2332	10.0c1f1s1	LVTI PRESS ZV90 X/L=.900
es23tmp	40.0c1f1s1	ES NO. 23 TEMPERATURE
es2401	10.0c1f1s1	LVTO PRESS ZV55 X/L =.030
es2402	10.0c1f1s1	LVTO PRESS ZV55 X/L=.050
es2403	10.0c1f1s1	LVTO PRESS ZV55 X/L=.075
es2404	10.0c1f1s1	LVTO PRESS ZV55 X/L=.100
es2405	10.0c1f1s1	LVTO PRESS ZV55 X/L=.150
es2406	10.0c1f1s1	LVTO PRESS ZV55 X/L=.200
es2407	10.0c1f1s1	LVTO PRESS ZV55 X/L=.250
es2408	10.0c1f1s1	LVTO PRESS ZV55 X/L=.300
es2409	10.0c1f1s1	LVTO PRESS ZV55 X/L=.350
es2410	10.0c1f1s1	LVTO PRESS ZV55 X/L=.400
es2411	10.0c1f1s1	LVTO PRESS ZV55 X/L=.450
es2412	10.0c1f1s1	LVTO PRESS ZV55 X/L=.500
es2413	10.0c1f1s1	LVTO PRESS ZV55 X/L=.550
es2414	10.0c1f1s1	LVTO PRESS ZV55 X/L=.600
es2415	10.0c1f1s1	LVTO PRESS ZV55 X/L=.650
es2416	10.0c1f1s1	LVTO PRESS ZV55 X/L=.700
es2417	10.0c1f1s1	LVTI PRESS ZV55 X/L=.030
es2418	10.0c1f1s1	LVTI PRESS ZV55 X/L=.050
es2419	10.0c1f1s1	LVTI PRESS ZV55 X/L=.075
es2420	10.0c1f1s1	LVTI PRESS ZV55 X/L=.100
es2421	10.0c1f1s1	LVTI PRESS ZV55 X/L=.150
es2422	10.0c1f1s1	LVTI PRESS ZV55 X/L=.200
es2423	10.0c1f1s1	LVTI PRESS ZV55 X/L=.250
es2424	10.0c1f1s1	LVTI PRESS ZV55 X/L=.300
es2425	10.0c1f1s1	LVTI PRESS ZV55 X/L=.350
es2426	10.0c1f1s1	LVTI PRESS ZV55 X/L=.400
es2427	10.0c1f1s1	LVTI PRESS ZV55 X/L=.450
es2428	10.0c1f1s1	LVTI PRESS ZV55 X/L=.500
es2429	10.0c1f1s1	LVTI PRESS ZV55 X/L=.550
es2430	10.0c1f1s1	LVTI PRESS ZV55 X/L=.600
es2431	10.0c1f1s1	LVTI PRESS ZV55 X/L=.650
es2432	10.0c1f1s1	LVTI PRESS ZV55 X/L=.700
es2501	10.0c1f1s1	LVTO PRESS ZV19 X/L=.025
es2502	10.0c1f1s1	LVTO PRESS ZV19 X/L=.050
es2503	10.0c1f1s1	LVTO PRESS ZV19 X/L=.075
es2504	10.0c1f1s1	LVTO PRESS ZV19 X/L=.100
es2505	10.0c1f1s1	LVTO PRESS ZV19 X/L=.150

es2506	10.0c1f1s1	LVTO PRESS ZV19 X/L=.200
es2507	10.0c1f1s1	LVTO PRESS ZV19 X/L=.250
es2508	10.0c1f1s1	LVTO PRESS ZV19 X/L=.300
es2509	10.0c1f1s1	LVTO PRESS ZV19 X/L=.350
es2510	10.0c1f1s1	LVTO PRESS ZV19 X/L=.400
es2511	10.0c1f1s1	LVTO PRESS ZV19 X/L=.450
es2512	10.0c1f1s1	LVTO PRESS ZV19 X/L=.500
es2513	10.0c1f1s1	LVTO PRESS ZV19 X/L=.550
es2514	10.0c1f1s1	LVTO PRESS ZV19 X/L=.600
es2515	10.0c1f1s1	LVTO PRESS ZV19 X/L=.650
es2516	10.0c1f1s1	LVTO PRESS ZV19 X/L=.700
es2517	10.0c1f1s1	LVTI PRESS ZV19 X/L=.025
es2518	10.0c1f1s1	LVTI PRESS ZV19 X/L=.050
es2519	10.0c1f1s1	LVTI PRESS ZV19 X/L=.075
es2520	10.0c1f1s1	LVTI PRESS ZV19 X/L=.100
es2521	10.0c1f1s1	LVTI PRESS ZV19 X/L=.150
es2522	10.0c1f1s1	LVTI PRESS ZV19 X/L=.200
es2523	10.0c1f1s1	LVTI PRESS ZV19 X/L=.250
es2524	10.0c1f1s1	LVTI PRESS ZV19 X/L=.300
es2525	10.0c1f1s1	LVTI PRESS ZV19 X/L=.350
es2526	10.0c1f1s1	LVTI PRESS ZV19 X/L=.400
es2527	10.0c1f1s1	LVTI PRESS ZV19 X/L=.450
es2528	10.0c1f1s1	LVTI PRESS ZV19 X/L=.500
es2529	10.0c1f1s1	LVTI PRESS ZV19 X/L=.550
es2530	10.0c1f1s1	LVTI PRESS ZV19 X/L=.600
es2531	10.0c1f1s1	LVTI PRESS ZV19 X/L=.650
es2532	10.0c1f1s1	LVTI PRESS ZV19 X/L=.700
es25tmp	40.0c1f1s1	ES NO. 25 TEMPERATURE
es2tmp	40.0c2f1s2	ES2 TEMP
es301	25.0c1f1s2	FRBDY PRESS FS107 181 DEG
es302	25.0c1f1s2	FRBDY PRESS FS107 183 DEG
es303	25.0c1f1s2	FRBDY PRESS FS107 186 DEG
es304	25.0c1f1s2	FRBDY PRESS FS107 189 DEG
es305	25.0c1f1s2	FRBDY PRESS FS107 192 DEG
es306	25.0c1f1s2	FRBDY PRESS FS107 195 DEG
es307	25.0c1f1s2	FRBDY PRESS FS107 198 DEG
es308	25.0c1f1s2	FRBDY PRESS FS107 201 DEG
es309	25.0c1f1s2	FRBDY PRESS FS107 204 DEG
es310	25.0c1f1s2	FRBDY PRESS FS107 207 DEG
es311	25.0c1f1s2	FRBDY PRESS FS107 211 DEG
es312	25.0c1f1s2	FRBDY PRESS FS107 212 DEG
es313	25.0c1f1s2	FRBDY COVE PRESS FS107 218 DEG
es314	25.0c1f1s2	FRBDY COVE PRESS FS107 222 DEG
es315	25.0c1f1s2	FRBDY COVE PRESS FS107 226 DEG
es316	25.0c1f1s2	FRBDY COVE PRESS FS107 230 DEG
es317	25.0c1f1s2	FRBDY COVE PRESS FS107 234 DEG
es318	25.0c1f1s2	FRBDY COVE PRESS FS107 238 DEG
es319	25.0c1f1s2	FRBDY PRESS FS107 248 DEG
es320	25.0c1f1s2	FRBDY PRESS FS107 251.5 DEG
es321	25.0c1f1s2	FRBDY PRESS FS107 255 DEG
es322	25.0c1f1s2	FRBDY PRESS FS107 260 DEG
es323	25.0c1f1s2	FRBDY PRESS FS107 265 DEG
es324	25.0c1f1s2	FRBDY PRESS FS107 270 DEG
es325	25.0c1f1s2	FRBDY PRESS FS107 276 DEG
es326	25.0c1f1s2	FRBDY PRESS FS107 288 DEG
es327	25.0c1f1s2	FRBDY PRESS FS107 300 DEG
es328	25.0c1f1s2	FRBDY PRESS FS107 312 DEG
es329	25.0c1f1s2	FRBDY PRESS FS107 324.2 DEG

es330	25.0c1f1s2	FRBDY PRESS FS107 335 DEG
es331	25.0c1f1s2	FRBDY PRESS FS107 348 DEG
es332	25.0c1f1s2	FRBDY PRESS FS107 359 DEG
es401	25.0c1f1s2	FRBDY PRESS FS107 179 DEG
es402	25.0c1f1s2	FRBDY PRESS FS107 177 DEG
es403	25.0c1f1s2	FRBDY PRESS FS107 174 DEG
es404	25.0c1f1s2	FRBDY PRESS FS107 171 DEG
es405	25.0c1f1s2	FRBDY PRESS FS107 168 DEG
es406	25.0c1f1s2	FRBDY PRESS FS107 165 DEG
es407	25.0c1f1s2	FRBDY PRESS FS107 162 DEG
es408	25.0c1f1s2	FRBDY PRESS FS107 159 DEG
es409	25.0c1f1s2	FRBDY PRESS FS107 156 DEG
es410	25.0c1f1s2	FRBDY PRESS FS107 153 DEG
es411	25.0c1f1s2	FRBDY PRESS FS107 149 DEG
es412	25.0c1f1s2	FRBDY PRESS FS107 148 DEG
es413	25.0c1f1s2	FRBDY COVE PRESS FS107 142 DEG
es414	25.0c1f1s2	FRBDY COVE PRESS FS107 138 DEG
es415	25.0c1f1s2	FRBDY COVE PRESS FS107 134 DEG
es416	25.0c1f1s2	FRBDY COVE PRESS FS107 130 DEG
es417	25.0c1f1s2	FRBDY COVE PRESS FS107 126 DEG
es418	25.0c1f1s2	FRBDY COVE PRESS FS107 122 DEG
es419	25.0c1f1s2	FRBDY PRESS FS107 112 DEG
es420	25.0c1f1s2	FRBDY PRESS FS107 108.5 DEG
es421	25.0c1f1s2	FRBDY PRESS FS107 105 DEG
es422	25.0c1f1s2	FRBDY PRESS FS107 100 DEG
es423	25.0c1f1s2	FRBDY PRESS FS107 95 DEG
es424	25.0c1f1s2	FRBDY PRESS FS107 90 DEG
es425	25.0c1f1s2	FRBDY PRESS FS107 84 DEG
es426	25.0c1f1s2	FRBDY PRESS FS107 72 DEG
es427	25.0c1f1s2	FRBDY PRESS FS107 60 DEG
es428	25.0c1f1s2	FRBDY PRESS FS107 48 DEG
es429	25.0c1f1s2	FRBDY PRESS FS107 35.8 DEG
es430	25.0c1f1s2	FRBDY PRESS FS107 25 DEG
es431	25.0c1f1s2	FRBDY PRESS FS107 12 DEG
es432	25.0c1f1s2	FRBDY PRESS FS107 1 DEG
es501	25.0c1f1s2	FBDY PRESS FS 138.5, O DEG
es502	25.0c1f1s2	FBDY PRESS FS 138.5, 10 DEG
es503	25.0c1f1s2	FBDY PRESS FS 138.5, 24 DEG
es504	25.0c1f1s2	FBDY PRESS FS 138.5, 36 DEG
es505	25.0c1f1s2	FBDY PRESS FS 138.5, 45 DEG
es506	25:0c1f1s2	FBDY PRESS FS 142.5, 60 DEG
es507	25.0c1f1s2	FBDY PRESS FS 142.5, 72 DEG
es508	25.0c1f1s2	FBDY PRESS FS 142.5, 80 DEG
es509	25.0c1f1s2	FBDY PRESS FS 142.5, 90 DEG
es510	25.0c1f1s2	FBDY PRESS FS 142.5, 95 DEG
es511	25.0c1f1s2	FBDY PRESS FS 142.5, 102 DEG
es512	25.0c1f1s2	FBDY PRESS FS 142.5, 106 DEG
es513	25.0c1f1s2	FBDY PRESS FS 142.5, 108 DEG
es514	25.0c1f1s2	FBDY PRESS FS 142.5, 114 DEG
es515	25.0c1f1s2	FBDY PRESS FS 142.5, 120 DEG
es516	25.0c1f1s2	FBDY PRESS FS 142.5 123 DEG
es517	25.0c1f1s2	FBDY PRESS FS 142.5 126 DEG
es518	25.0c1f1s2	FBDY PRESS FS 142.5 129 DEG
es519	25.0c1f1s2	FBDY PRESS FS 142.5 131 DEG
es520	25.0c1f1s2	FBDY PRESS FS 142.5 135 DEG
es521	25.0c1f1s2	FBDY PRESS FS 143.25 142 DEG
es522	25.0c1f1s2	FBDY PRESS FS 143.25 144 DEG
es523	25.0c1f1s2	FBDY PRESS FS 143 147 DEG

es524	25.0c1f1s2	FBDY PRESS FS 143 150 DEG
es525	25.0c1f1s2	FBDY PRESS FS 143 153 DEG
es526	25.0c1f1s2	FBDY PRESS FS 143 156 DEG
es527	25.0c1f1s2	FBDY PRESS FS 143, 159 DEG
es528	25.0c1f1s2	FBDY PRESS FS 143 161 DEG
es529	25.0c1f1s2	FBDY PRESS FS 142.5, 168 DEG
es530	25.0c1f1s2	FBDY PRESS FS 142.5, 171 DEG
es531	25.0c1f1s2	FBDY PRESS FS 142.5, 174 DEG
es532	25.0c1f1s2	FBDY PRESS FS 142.5, 177 DEG
es5tmp	40.0c2f1s2	ES5 TEMP
es601	25.0c1f1s2	FBDY PRESS FS 142.5, 180 DEG
es602	25.0c1f1s2	FBDY PRESS FS 142.5, 183 DEG
es603	25.0c1f1s2	FBDY PRESS FS 142.5, 186 DEG
es604	25.0c1f1s2	FBDY PRESS FS 142.5, 189 DEG
es605	25.0c1f1s2	FBDY PRESS FS 142.5, 192 DEG
es606	25.0c1f1s2	FBDY PRESS FS 142.5, 198 DEG
es607	25.0c1f1s2	FBDY PRESS FS 142.5, 201 DEG
es608	25.0c1f1s2	FBDY PRESS FS 142.5, 204 DEG
es609	25.0c1f1s2	FBDY PRESS FS 142.5, 207 DEG
es610	25.0c1f1s2	FBDY PRESS FS 142.5, 210 DEG
es611	25.0c1f1s2	FBDY PRESS FS 142.5, 213 DEG
es612	25.0c1f1s2	FBDY PRESS FS 142.5, 216 DEG
es613	25.0c1f1s2	FBDY PRESS FS 142.5, 219 DEG
es614	25.0c1f1s2	FBDY PRESS FS 142.5, 222 DEG
es615	25.0c1f1s2	FBDY PRESS FS 142.5, 225 DEG
es616	25.0c1f1s2	FBDY PRESS FS 142.5, 231 DEG
es617	25.0c1f1s2	FBDY PRESS FS 142.5, 234 DEG
es618	25.0c1f1s2	FBDY PRESS FS 142.5, 237 DEG
es619	25.0c1f1s2	FBDY PRESS FS 142.5, 240 DEG
es620	25.0c1f1s2	FBDY PRESS FS 142.5, 246 DEG
es621	25.0c1f1s2	FBDY PRESS FS 183, 252 DEG
es622	25.0c1f1s2	FBDY PRESS FS 183, 255 DEG
es623	25.0c1f1s2	FBDY PRESS FS 183, 258 DEG
es624	25.0c1f1s2	FBDY PRESS FS 142.5, 265 DEG
es625	25.0c1f1s2	FBDY PRESS FS 142.5, 270 DEG
es626	25.0c1f1s2	FBDY PRESS FS 142.5, 280 DEG
es627	25.0c1f1s2	FBDY PRESS FS 142.5, 288 DEG
es628	25.0c1f1s2	FBDY PRESS FS 142.5, 300 DEG
es629	25.0c1f1s2	FBDY PRESS FS 138.5 315 DEG
es630	25.0c1f1s2	FBDY PRESS FS 138.5 324 DEG
es631	25.0c1f1s2	FBDY PRESS FS 138.5, 336 DEG
es632	25.0c1f1s2	FBDY ORESS FS 138.5, 350 DEG
es701	25.0c1f1s2	FBDY PRESS FS 184, 48 DEG
es702	25.0c1f1s2	FBDY PRESS FS 184, 60 DEG
es703	25.0c1f1s2	FBDY PRESS FS 184, 72 DEG
es704	25.0c1f1s2	FBDY PRESS FS 184, 84 DEG
es705	25.0c1f1s2	FBDY PRESS FS 184, 92 DEG
es706	25.0c1f1s2	FBDY PRESS FS 184, 95 DEG
es707	25.0c1f1s2	FBDY PRESS FS 184, 100 DEG
es708	25.0c1f1s2	FBDY PRESS FS 184, 105 DEG
es709	25.0c1f1s2	FBDY PRESS FS 184, 108 DEG
es710	25.0c1f1s2	FBDY PRESS FS 184, 111 DEG
es711	25.0c1f1s2	FBDY PRESS FS 184, 117 DEG
es712	25.0c1f1s2	FBDY PRESS FS 184 120 DEG
es713	25.0c1f1s2	FBDY PRESS FS 184, 123 DEG
es714	25.0c1f1s2	FBDY PRESS FS 184, 126 DEG
es715	25.0c1f1s2	FBDY PRESS FS 184, 129 DEG
es716	25.0c1f1s2	FBDY PRESS FS 184, 132 DEG

es717	25.0c1f1s2	FBDY PRESS FS 184, 135 DEG
es718	25.0c1f1s2	FBDY PRESS FS 184, 138 DEG
es719	25.0c1f1s2	FBDY PRESS FS 184, 141 DEG
es720	25.0c1f1s2	FBDY PRESS FS 184, 143 DEG
es721	25.0c1f1s2	FBDY PRESS FS 184, 147 DPS
es722	25.0c1f1s2	FBDY PRESS FS 184, 150 DEG
es723	25.0c1f1s2	FBDY PRESS FS 184 153 DEG
es724	25.0c1f1s2	FBDY PRESS FS 184 156 DEG
es725	25.0c1f1s2	FBDY PRESS FS 184 159 DEG
es726	25.0c1f1s2	FBDY PRESS FS 184 161 DEG
es727	25.0c1f1s2	FBDY PRESS FS 184 165 DEG
es728	25.0c1f1s2	FBDY PRESS FS 184 167 DEG
es729	25.0c1f1s2	FBDY PRESS FS 184 171 DEG
es730	25.0c1f1s2	FBDY PRESS FS 184 174 DEG
es731	25.0c1f1s2	FBDY PRESS FS 184 177 DEG
es732	25.0c1f1s2	FBDY PRESS FS 184 180 DEG
es801	25.0c1f1s2	FBDY PRESS FS 184, 183 DEG
es802	25.0c1f1s2	FBDY PRESS FS 184, 186 DEG
es803	25.0c1f1s2	FBDY PRESS FS 184, 189 DEG
es804	25.0c1f1s2	FBDY PRESS FS 184, 192 DEG
es805	25.0c1f1s2	FBDY PRESS FS 184, 194 DEG
es806	25.0c1f1s2	FBDY PRESS FS 184, 198 DEG
es807	25.0c1f1s2	FBDY PRESS FS 184, 201 DEG
es808	25.0c1f1s2	FBDY PRESS FS 184, 204 DEG
es809	25.0c1f1s2	FBDY PRESS FS 184, 207 DEG
es810	25.0c1f1s2	FBDY PRESS FS 184, 210 DEG
es811	25.0c1f1s2	FBDY PRESS FS 184, 213 DEG
es812	25.0c1f1s2	FBDY PRESS FS 184, 216 DEG
es813	25.0c1f1s2	FBDY PRESS FS 184, 219 DEG
es814	25.0c1f1s2	FBDY PRESS FS 184, 222 DEG
es815	25.0c1f1s2	FBDY PRESS FS 184, 225 DEG
es816	25.0c1f1s2	FBDY PRESS FS 184, 228 DEG
es817	25.0c1f1s2	FBDY PRESS FS 184, 231 DEG
es818	25.0c1f1s2	FBDY PRESS FS 184, 234 DEG
es819	25.0c1f1s2	FBDY PRESS FS 184, 237 DEG
es820	25.0c1f1s2	FBDY PRESS FS 184, 240 DEG
es821	25.0c1f1s2	FBDY PRESS FS 184, 243 DEG
es822	25.0c1f1s2	FBDY PRESS FS 184, 249 DEG
es823	25.0c1f1s2	FBDY PRESS FS 184, 252 DEG
es824	25.0c1f1s2	FBDY PRESS FS 184, 255 DEG
es825	25.0c1f1s2	FBDY PRESS FS 184, 260 DEG
es826	25.0c1f1s2	FBDY PRESS FS 184, 265 DEG
es827	25.0c1f1s2	FBDY PRESS FS 184, 268 DEG
es828	25.0c1f1s2	FBDY PRESS FS 184, 276 DEG
es829	25.0c1f1s2	FBDY PRESS FS 184, 288 DEG
es830	25.0c1f1s2	FBDY PRESS FS 184, 300 DEG
es831	25.0c1f1s2	FBDY PRESS FS 184, 312 DEG
es901	25.0c1f1s2	RT LEX PRESS FS 253, UPR 1.99
es902	25.0c1f1s2	RT LEX PRESS FS 253, UPR 3.22
es903	25.0c1f1s2	RT LEX PRESS FS 253, UPR 4.33
es904	25.0c1f1s2	RT LEX PRESS FS 253, UPR 5.68
es905	25.0c1f1s2	RT LEX PRESS FS 253, UPR 6.82
es906	25.0c1f1s2	RT LEX PRESS FS 253, UPR 7.9
es907	25.0c1f1s2	RT LEX PRESS FS 253, UPR 8.92
es908	25.0c1f1s2	RT LEX PRESS FS 253, UPR 9.89
es909	25.0c1f1s2	RT LEX PRESS FS 253, UPR 10.82
es910	25.0c1f1s2	RT LEX PRESS FS 253, UPR 11.24
es911	25.0c1f1s2	RT LEX PRESS FS 253, UPR 11.66

es912	25.0c1f1s2	RT LEX PRESS FS 253, UPR 12.11
es913	25.0c1f1s2	RT LEX PRESS FS 253, UPR 12.56
es914	25.0c1f1s2	RT LEX PRESS FS 253, UPR 12.85
es915	25.0c1f1s2	RT LEX PRESS FS 253, UPR 13.14
es916	25.0c1f1s2	RT LEX PRESS FS 253, UPR 13.44
es917	25.0c1f1s2	RT LEX PRESS FS 253, UPR 13.74
es918	25.0c1f1s2	RT LEX PRESS FS 253, LWR 2.26
es919	25.0c1f1s2	RT LEX PRESS FS 253, LWR 6.68
es920	25.0c1f1s2	RT LEX PRESS FS 253, LWR 10.3
es921	25.0c1f1s2	RT LEX PRESS FS 253, LWR 13.44
es9tmp	40.0c2f1s2	ES NO.9 TEMP
esp101	25.0c1f1s2	FADS PRESS FS 59.82, 0 DEG
esp102	25.0c1f1s2	FADS PRESS FS 59.90, 0 DEG
esp103	25.0c1f1s2	FADS PRESS FS 60.71, 0 DEG
esp107	25.0c1f1s2	FADS PRESS FS 60.71, 45 DEG
esp110	25.0c1f1s2	FADS PRESS FS 59.90, 90 DEG
esp111	25.0c1f1s2	FADS PRESS FS 60.71, 90 DEG
esp114	25.0c1f1s2	FADS PRESS FS 60.71, 135 DEG
esp118	25.0c1f1s2	FADS PRESS FS 59.90, 180 DEG
esp119	25.0c1f1s2	FADS PRESS FS 60.71, 180 DEG
esp122	25.0c1f1s2	FADS PRESS FS 60.71, 225 DEG
esp125	25.0c1f1s2	FADS PRESS FS 59.90, 270 DEG
esp126	25.0c1f1s2	FADS PRESS FS 60.71, 270 DEG
esp129	25.0c1f1s2	FADS PRESS FS 60.71,315 DEG
esp132	25.0c1f1s2	FADS PRESS STATIC 132
esp1tmp	40.0c2f1s2	ESP1 TEMP
esp202	25.0c1f1s2	FADS PRESS FS 60.14 , 00 DEG
esp203	25.0c1f1s2	FADS PRESS FS 61.57 , 00 DEG
esp207	25.0c1f1s2	FADS PRESS FS 61.57 , 45 DEG
esp210	25.0c1f1s2	FADS PRESS FS 60.14 , 90 DEG
esp211	25.0c1f1s2	FADS PRESS FS 61.57 , 90 DEG
esp214	25.0c1f1s2	FADS PRESS FS 61.57 , 135 DEG
esp218	25.0c1f1s2	FADS PRESS FS 60.14 , 180 DEG
esp219	25.0c1f1s2	FADS PRESS FS 61.57 , 180 DEG
esp222	25.0c1f1s2	FADS PRESS FS 61.57 , 225 DEG
esp225	25.0c1f1s2	FADS PRESS FS 60.14 , 270 DEG
esp226	25.0c1f1s2	FADS PRESS FS 61.57 , 270 DEG
esp229	25.0c1f1s2	FADS PRESS FS 61.57 , 315 DEG
esp301	25.0c1f1s2	R WNG UP PRESS BL86 X=.8
esp302	25.0c1f1s2	R WNG UP PRESS BL86 X=.55
esp303	25.0c1f1s2	R WNG UP PRESS BL86 X=.27
esp304	25.0c1f1s2	R WNG UP PRESS BL86 X=.08
esp305	25.0c1f1s2	R WNG LE PRESS BL86 X=.00
esp306	25.0c1f1s2	R WNG LOW PRESS BL86 X=.08
esp307	25.0c1f1s2	R WNG LOW PRESS BL86 X=.27
esp308	25.0c1f1s2	R WNG LOW PRESS BL86 X=.55
esp309	25.0c1f1s2	R WNG LOW PRESS BL86 X=.8
esp310	25.0c1f1s2	R WNG UP PRESS BL129 X=.51
esp311	25.0c1f1s2	R WNG UP PRESS BL129 X=.34
esp312	25.0c1f1s2	R WNG UP PRESS BL129 X=.20
esp313	25.0c1f1s2	R WNG UP PRESS BL129 X=.07
esp314	25.0c1f1s2	R WNG LE PRESS BL129 X=.00
esp315	25.0c1f1s2	R WNG LOW PRESS BL129 X=.07
esp316	25.0c1f1s2	R WNG LOW PRESS BL129 X=.20
esp317	25.0c1f1s2	R WNG LOW PRESS BL129 X=.34
esp318	25.0c1f1s2	R WNG LOW PRESS BL129 X=.51
esp401	25.0c1f1s2	L WNG UP PRESS BL86 X=.8
esp402	25.0c1f1s2	L WNG UP PRESS BL86 X=.55

esp403	25.0c1f1s2	L WNG UP PRESS BL86 X=.27	
esp404	25.0c1f1s2	L WNG UP PRESS BL86 X=.08	
esp405	25.0c1f1s2	L WNG LE PRESS BL86 X=.00	
esp406	25.0c1f1s2	L WNG LOW PRESS BL86 X=.08	
esp407	25.0c1f1s2	L WNG LOW PRESS BL86 X=.27	
esp408	25.0c1f1s2	L WNG LOW PRESS BL86 X=.55	
esp409	25.0c1f1s2	L WNG LOW PRESS BL86 X=.8	
esp410	25.0c1f1s2	L WNG UP PRESS BL129 X=.51	
esp411	25.0c1f1s2	L WNG UP PRESS BL129 X=.34	
esp412	25.0c1f1s2	L WNG UP PRESS BL129 X=.20	
esp413	25.0c1f1s2	L WNG UP PRESS BL129 X=.07	
esp414	25.0c1f1s2	L WNG LE PRESS BL129 X=.00	
esp415	25.0c1f1s2	L WNG LOW PRESS BL129 X=.07	
esp416	25.0c1f1s2	L WNG LOW PRESS BL129 X=.20	
esp417	25.0c1f1s2	L WNG LOW PRESS BL129 X=.34	
esp418	25.0c1f1s2	L WNG LOW PRESS BL129 X=.51	
event	40.0c1f1s1	EVENT MARKER	
fgcl	calc4		
fgcr	calc4		
fgharvl	calc4		
fgharvr	calc4		
fmtid2	800.0c0f1s2	FORMAT ID	
fnetcl	calc4		
fnetcr	calc4		
fnharvl	calc4		
fnharvr	calc4		
fnrttml	calc4		
fnrttmr	calc4		
fpai	calc1	Flight path angle	
fphi	calc1	Flight path heading	
fqtylw	40.0c1f1s1	FUEL QUANTITY LEFT WING	
fqtyrw	40.0c1f1s1	FUEL QUANTITY RIGHT WING	
fqtyt1	40.0c1f1s1	FUEL QUANTITY TANK 1	
fqtyt2	40.0c1f1s1	FUEL QUANTITY TANK 2	
fqtyt3	40.0c1f1s1	FUEL QUANTITY TANK 3	
fqtyt4	40.0c1f1s1	FUEL QUANTITY TANK 4	
fqtytot	40.0c1f1s1	FUEL QUANTITY TOTAL	
framcl	calc4		
framcr	calc4		
hp	calc1	pressure altitude	
hpl	calc1	pressure altitude	
hydro2a	80.0c2f1s2	STRAKE HYDRO PRESSURE 2A	
iaalrtc	40.0c2f1s2	PRESURE ALTITUDE RATE (C)	TC
iaatmpc	40.0c2f1s2	AMBIENT TEMPERATURE (C)	TC
iabcalc	40.0c2f1s2	BARO-CORR PRESS ALTITUDE (C)	
iaftpr	40.0c2f1s2	FUEL TANKS PRESSURE	
iaiaspc	40.0c2f1s2	INDICATED AIRSPEED (C)	TC
iaimprc	40.0c2f1s2	IMPACT PRESSURE (C)	TC
iallaac	40.0c2f1s2	FUSELAGE LOCAL ALPHA LT (C)	TC
iamachc	40.0c2f1s2	MACH NUMBER (C)	TC
iarlaac	40.0c2f1s2	FUSELAGE LOCAL ALPHA RT (C)	TC
iarpos	40.0c2f1s2	REFUEL PROBE EXTENDED	
iataspc	40.0c2f1s2	TRUE AIRSPEED (C)	TC
iattfa	40.0c2f1s2	TOTAL TEMP ALT FUNCT ACTVD	
iattmpc	40.0c2f1s2	TOTAL TEMERATURE (C)	TC
iaunsl	40.0c2f1s2	UNSAFE LANDING	
ical32	40.0c2f1s2	CH 1 LT RDR SOV OPEN	
ical33	40.0c2f1s2	CH1 LCL RUD SRV AMP OFF	

ica134	40.0c2f1s2	CH1 LT AIL SOV OPEN
ica135	40.0c2f1s2	CH1 LCL AIL SRV AMP OFF
ica136	40.0c2f1s2	CH1 L TEF SOV 2 OPEN
ica137	40.0c2f1s2	CH1 L TEF SOV 1 OPEN
ica138	40.0c2f1s2	CH1 R TEF SOV 1 OPEN
ica139	40.0c2f1s2	CH1 R TEF SOV 2 OPEN
ica13a	40.0c2f1s2	CH1 LEF SOV 2 OPEN
ica13b	40.0c2f1s2	CH1 LEF SOV 1 OPEN
ica13c	40.0c2f1s2	CH 1 STAB SOV 1 OPEN
ica13d	40.0c2f1s2	CH 1 R STAB SOV 1 OPEN
ica13e	40.0c2f1s2	CH 1 R STAB SOV 2 OPEN
ica13f	40.0c2f1s2	CH 1 L STAB SOV 2 OPEN
ica230	40.0c2f1s2	CH2 RT PLC SOV OPEN
ica231	40.0c2f1s2	CH2 NWS SOV OPEN
ica232	40.0c2f1s2	CH2 RT RDR SOV OPEN
ica233	40.0c2f1s2	CH2 LCL RUD SRV AMP OFF
ica234	40.0c2f1s2	CH2 RT AIL SOV OPEN
ica235	40.0c2f1s2	CH2 LCL AIL SRV AMP OFF
ica236	40.0c2f1s2	CH2 L TEF SOV 2 OPEN
ica237	40.0c2f1s2	CH2 L TEF SOV 1 OPEN
ica238	40.0c2f1s2	CH2 R TEF SOV 1 OPEN
ica239	40.0c2f1s2	CH2 R TEF SOV 1 OPEN
ica23a	40.0c2f1s2	CH2 LEF SOV 2 OPEN
ica23b	40.0c2f1s2	CH2 LEF SOV 1 OPEN
ica23c	40.0c2f1s2	CH2 L STAB SOV 1 OPEN
ica23d	40.0c2f1s2	CH2 R STAB SOV 1 OPEN
ica23e	40.0c2f1s2	CH 2 R STAB SOV 2 OPEN
ica23f	40.0c2f1s2	CH 2 L STAB SOV 2 OPEN
ica332	40.0c2f1s2	CH 3 RT RDR SOV OPEN
ica333	40.0c2f1s2	CH3 LCL RUD SRV AMP OFF
ica334	40.0c2f1s2	CH3 RT AIL SOV OPEN
ica335	40.0c2f1s2	CH3 LCL AIL SRV AMP OFF
ica336	40.0c2f1s2	CH3 L TEF SOV 2 OPEN
ica337	40.0c2f1s2	CH3 L TEF SOV 1 OPEN
ica338	40.0c2f1s2	CH3 R TEF SOV 1 OPEN
ica339	40.0c2f1s2	CH3 R TEF SOV 2 OPEN
ica33a	40.0c2f1s2	CH3 LEF SOV 2 OPEN
ica33b	40.0c2f1s2	CH3 LEF SOV 1 OPEN
ica33c	40.0c2f1s2	CH3 L STAB SOV 1 OPEN
ica33d	40.0c2f1s2	CH3 RT STAB SOV 1 OPEN
ica33e	40.0c2f1s2	CH3 RT STAB SOV 2 OPEN
ica33f	40.0c2f1s2	CH3 L STAB SOV 2 OPEN
ica430	40.0c2f1s2	CH4 LT PLC SOV OPEN
ica431	40.0c2f1s2	CH4 NWS SOV OPEN
ica432	40.0c2f1s2	CH4 LT RDR SOV OPEN
ica433	40.0c2f1s2	CH4 LCL RUD SRV AMP OFF
ica434	40.0c2f1s2	CH4 LT AIL SOV OPEN
ica435	40.0c2f1s2	CH4 LCL AIL SRV AMP OFF
ica436	40.0c2f1s2	CH4 L TEF SOV 2 OPEN
ica437	40.0c2f1s2	CH4 L TEF SOV 1 OPEN
ica438	40.0c2f1s2	CH4 R TEF SOV 1 OPEN
ica439	40.0c2f1s2	CH4 R TEF SOV 2 OPEN
ica43a	40.0c2f1s2	CH4 LEF SOV 2 OPEN
ica43b	40.0c2f1s2	CH4 LEF SOV 1 OPEN
ica43c	40.0c2f1s2	CH4 L STAB SOV 1 OPEN
ica43d	40.0c2f1s2	CH4 R STAB SOV 1 OPEN
ica43e	40.0c2f1s2	CH4 R STAB SOV 2 OPEN
ica43f	40.0c2f1s2	CH 4 L STAB SOV 2 OPEN

icaacmc	40.0c2f1s2	RFCS AILERON CMND (C)	
icaaloc	40.0c2f1s2	FCES LOCAL ALPHA (C)	TC
icaatrc	40.0c2f1s2	FCES TRUE ALPHA (C)	TC
icabd1	40.0c2f1s2	CH1 BADSA DATA FAIL	
icabd2	40.0c2f1s2	CH2 BADSA DATA FAIL	
icabd3	40.0c2f1s2	CH3 BADSA DATA FL	
icabd4	40.0c2f1s2	CH4 BADSA DATA FAIL	
icacp1	40.0c2f1s2	CH1 PITCH CAS FAIL	
icacp2	40.0c2f1s2	CH2 PITCH CAS FAIL	
icacp3	40.0c2f1s2	CH3 PITCH CAS FAIL	
icacp4	40.0c2f1s2	CH4 PITCH CAS FAIL	
icacr1	40.0c2f1s2	CH1 ROLL CAS FAIL	
icacr2	40.0c2f1s2	CH2 ROLL CAS FAIL	
icacr3	40.0c2f1s2	CH3 ROLL CAS FAIL	
icacr4	40.0c2f1s2	CH4 ROLL CAS FAIL	
icacsc	40.0c2f1s2	RFCS COLLECTIVE STAB CMND (C)	
icacy1	40.0c2f1s2	CH1 YAW CAS FAIL	
icacy2	40.0c2f1s2	CH2 YAW CAS FAIL	
icacy3	40.0c2f1s2	CH3 YAW CAS FAIL	
icacy4	40.0c2f1s2	CH4 YAW CAS FAIL	
icadg1	40.0c2f1s2	CH1 DEGRADED	
icadg2	40.0c2f1s2	CH2 DEGRADED	
icadg3	40.0c2f1s2	CH3 DEGRADED	
icadg4	40.0c2f1s2	CH4 DEGRADED	
icadlc	40.0c2f1s2	RFCS DIFF LEF CMND (C)	
icadsc	40.0c2f1s2	RFCS DIFF STAB CMND (C)	
icadtc	40.0c2f1s2	RFCS DIFF TEF CMND (C)	
icafbu	40.0c2f1s2	FLAP BLOW-UP	
icaiipc	40.0c2f1s2	INDICATED IMPACT PRESS (C)	TC
icailfc	40.0c2f1s2	LEFT INBD LEF POSITION (C)	TC
icairfc	40.0c2f1s2	RT INBD LEF POSITION (C)	TC
icaispc	40.0c2f1s2	INDICATED STATIC PRESS (C)	TC
icala1	40.0c2f1s2	CH1 AILERON SERVO OFF	
icala2	40.0c2f1s2	CH4 AILERON SERVO OFF	
icalacc	40.0c2f1s2	LATERAL ACCELERATION (C)	TC
icalapc	40.0c2f1s2	LEFT AILERON POSITION (C)	TC
icallc	40.0c2f1s2	RFCS COLLECTIVE LEF CMND (C)	
icallg	40.0c2f1s2	GEAR DOWN	
icalloc	40.0c2f1s2	LEFT OUTBD LEF POSITION (C)	TC
icalr1	40.0c2f1s2	CH1 RUDDER SERVO OFF	
icalr2	40.0c2f1s2	CH4 RUDDER SERVO OFF	
icalrpc	40.0c2f1s2	LEFT RUDDER POSITION (C)	TC
icals1	40.0c2f1s2	CH1 L STAB SERVO FAIL	
icals2	40.0c2f1s2	CH2 L STAB SERVO FAIL	
icals3	40.0c2f1s2	CH3 L STAB SERVO FAIL	
icals4	40.0c2f1s2	CH4 L STAB SERVO FAIL	
icalspc	40.0c2f1s2	LEFT STAB POSITION (C)	TC
icaltpc	40.0c2f1s2	LEFT TRAILING EDGE FLAP (C)	TC
icamf0	40.0c2f1s2	RUDDER OFF CAUT	
icamf1	40.0c2f1s2	FLAPS OFF CAUT	
icamf2	40.0c2f1s2	FLAPS SCHED CAUT	
icamf3	40.0c2f1s2	NWS FAIL CAUT	
icamf4	40.0c2f1s2	ROLL RATE CAUTION FLAG	
icamf5	40.0c2f1s2	FCS AIR DATA CAUT	
icamf6	40.0c2f1s2	FCS CAUT FLAG	
icamf7	40.0c2f1s2	THRUST VECTOR VANE OFF CAUTION	
icamf8	40.0c2f1s2	RFCS MODE FAIL ABORT CAUTION	
icaml0	40.0c2f1s2	RESET OK	

icaml1	40.0c2f1s2	RESET NOT FUNC GOOD	
icaml4	40.0c2f1s2	DEL ON FLAG	
icaml5	40.0c2f1s2	MECH ON FLAG	
icaml6	40.0c2f1s2	AILERON OFF FLAG	
icaml8	40.0c2f1s2	G LIM CAUTION	
icanacc	40.0c2f1s2	NORMAL ACCELERATION (C)	TC
icancl	40.0c2f1s2	WONW FOR ACL DISENGAGE	
icanlg	40.0c2f1s2	NOSEGEAR DOWN	
icaoa1	40.0c2f1s2	CH1 AOA FAIL	
icaoa2	40.0c2f1s2	CH2 AOA FAIL	
icaoa3	40.0c2f1s2	CH3 AOA FAIL	
icaoa4	40.0c2f1s2	CH4 AOA FAIL	
icapd1	40.0c2f1s2	CH1 RUDDER PED FAIL	
icapd2	40.0c2f1s2	CH2 RUDDER PED FAIL	
icapd3	40.0c2f1s2	CH3 RUDDER PED FAIL	
icapd4	40.0c2f1s2	CH4 RUDDER PED FAIL	
icapllc	40.0c2f1s2	LEFT POWER LEVER ANGLE (C)	TC
icaplrc	40.0c2f1s2	RIGHT POWER LEVER ANGLE	TC
icapr1	40.0c2f1s2	CH1 PROCESSOR OFF	
icapr2	40.0c2f1s2	CH2 PROCESSOR OFF	
icapr3	40.0c2f1s2	CH3 PROCESSOR OFF	
icapr4	40.0c2f1s2	CH4 PROCESSOR OFF	
icaprtc	40.0c2f1s2	PITCH RATE (C)	TC
icapsfc	40.0c2f1s2	LONG STICK POSITION (C)	TC
icaptic	40.0c2f1s2	PITCH TRIM INTEGRATOR (C)	
icara1	40.0c2f1s2	CH2 AILERON SERVO OFF	
icara2	40.0c2f1s2	CH3 AILERON SERVO OFF	
icarapc	40.0c2f1s2	RIGHT AILERON POSITION (C)	TC
icarcmc	40.0c2f1s2	RFCS RUDDER CMND (C)	
icarlg	40.0c2f1s2	GEAR NOT UP	
icarloc	40.0c2f1s2	RT OUTBD LEF POSITION (C)	TC
icarpfc	40.0c2f1s2	RUDDER PEDAL FORCE (C)	TC
icarr1	40.0c2f1s2	CH2 RUDDER SERVO OFF	
icarr2	40.0c2f1s2	CH3 RUDDER SERVO OFF	
icarrc	40.0c2f1s2	RFCS RT EST GROSS THRUST (C)	
icarric	40.0c2f1s2	RFCS LT EST GROSS THRUST (C)	
icarrl	40.0c2f1s2	ROLL RATE LIMIT ENGAGED	
icarrpc	40.0c2f1s2	RIGHT RUDDER POSITION (C)	TC
icarrtc	40.0c2f1s2	ROLL RATE (C)	TC
icars1	40.0c2f1s2	CH1 R STAB SERVO FAIL	
icars2	40.0c2f1s2	CH2 R STAB SERVO FAIL	
icars3	40.0c2f1s2	CH3 R STAB SERVO FAIL	
icars4	40.0c2f1s2	CH4 STAB SERVO FAIL	
icarsfc	40.0c2f1s2	LATERAL STICK POSITION (C)	TC
icarspc	40.0c2f1s2	RIGHT STAB POSITION (C)	TC
icartic	40.0c2f1s2	ROLL TRIM INTEGRATOR (C)	
icartpc	40.0c2f1s2	RIGHT TRAILING EDGE FLAP (C)	TC
icarxpc	40.0c2f1s2	RFCS LEFT EST NOZ PRESS RATIO	
icarxyc	40.0c2f1s2	RFCS RIGHT EST NOZ PRESS RATIO	
icasbc	40.0c2f1s2	RFCS STATUS DISCRETE WORD	
icask1	40.0c2f1s2	CH1 STICK FAIL	
icask2	40.0c2f1s2	CH2 STICK FAIL	
icask3	40.0c2f1s2	CH3 STICK FAIL	
icask4	40.0c2f1s2	CH4 STICK FAIL	
icaslr	40.0c2f1s2	STICK LEFT FOR RECOVERY	
icaspn	40.0c2f1s2	SPIN RECOVERY MODE	
icasps	40.0c2f1s2	SPIN SWITCH ON	
icasrr	40.0c2f1s2	STICK RIGHT FOR RECOVERY	

icassa	40.0c2f1s2	AUTO SPIN SELECTED	
icatlc	40.0c2f1s2	RFCS COLLECTIVE TEF CMND (C)	
icatts	40.0c2f1s2	TAKE-OFF TRIM SWITCH	
icawow	40.0c2f1s2	WEIGHT ON WHEELS	
icayrtc	40.0c2f1s2	YAW RATE (C)	TC
ieaauc	40.0c2f1s2	AVAIR HOT	
ieagdl	40.0c2f1s2	ARREST GEAR DMP PR LOW	
ieahnu	40.0c2f1s2	ARRESTING HOOK UP	
ieaoll	40.0c2f1s2	L AMAD OIL LOW	
ieaolr	40.0c2f1s2	R AMAD OIL LOW	
ieapal	40.0c2f1s2	APU ACCUM LOW	
ieapcp	40.0c2f1s2	AR PROBE CONT POS	
ieapol	40.0c2f1s2	APU OIL LEVEL LOW	
ieascf	40.0c2f1s2	ANTI SKID CONT FL	
ieaslx	40.0c2f1s2	ANTI SKID L/H XDCR FL	
ieasrx	40.0c2f1s2	ANTI SKID R/H XDCR FL	
ieasvf	40.0c2f1s2	ANTI SKID VLV CHK FL	
ieaswo	40.0c2f1s2	ANTI SKID SW OFF	
iebacl	40.0c2f1s2	BRAK ACCUM LOW	
iebc01	40.0c2f1s2	BORESIGHT COMPENSATION 01	
iebc02	40.0c2f1s2	BORESIGHT COMPENSATION 02	
iebc03	40.0c2f1s2	BORESIGHT COMPENSATION 03	
iebc04	40.0c2f1s2	BORESIGHT COMPENSATION 04	
iebc05	40.0c2f1s2	BORESIGHT COMPENSATION 05	
iebc06	40.0c2f1s2	BORESIGHT COMPENSATION 06	
iebc07	40.0c2f1s2	BORESIGHT COMPENSATION 07	
iebc08	40.0c2f1s2	BORESIGHT COMPENSATION 08	
iebc09	40.0c2f1s2	BORESIGHT COMPENSATION 09	
iebc10	40.0c2f1s2	BORESIGHT COMPENSATION 10	
iebc11	40.0c2f1s2	BORESIGHT COMPENSATION 11	
iebc12	40.0c2f1s2	BORESIGHT COMPENSATION 12	
iebc13	40.0c2f1s2	BORESIGHT COMPENSATION 13	
iebc14	40.0c2f1s2	BORESIGHT COMPENSATION 14	
iebc15	40.0c2f1s2	BORESIGHT COMPENSATION 15	
iebngf	40.0c2f1s2	BINGO FUEL	
iebpll	40.0c2f1s2	L BOOST PRESS LOW	
iebplr	40.0c2f1s2	R BOOST PRESS LOW	
iec105	40.0c2f1s2	FUEL DUMP OPEN	
iec106	40.0c2f1s2	RT SHUT OFF VALVE NOT OPEN	
iec107	40.0c2f1s2	CROSSFIELD VALVE OPEN	
iec108	40.0c2f1s2	LT SHUT OFF VALVE NOT OPEN	
iec109	40.0c2f1s2	LGCU BIT STATUS	
iec110	40.0c2f1s2	LT BLEED OFF	
iec111	40.0c2f1s2	RT BLEED OFF	
iec112	40.0c2f1s2	CROSSFIELD VALVE CONFIG	
iec113	40.0c2f1s2	LMG PLNG LNK FAIL	
iec114	40.0c2f1s2	RMG PLNG LNK FAIL	
iec115	40.0c2f1s2	MSDC DISC IN 115	
iec116	40.0c2f1s2	L ATSCV OPEN	
iec117	40.0c2f1s2	R ATSCV OPEN	
iec118	40.0c2f1s2	SPR RSVD (LT VENT FUEL)	
iec119	40.0c2f1s2	SPR RSVD (RT VENT FUEL)	
iec120	40.0c2f1s2	SPR RSVD (BIT IN PROG)	
iec121	40.0c2f1s2	EXT TANK PRESSURIZED	
iec122	40.0c2f1s2	EXT TANK OVERPRESSURIZED	
iec123	40.0c2f1s2	CO-OP MODE SW DISCRETE #1	
iec124	40.0c2f1s2	CO-OP MODE SW DISCRETE #2	
iec125	40.0c2f1s2	ALT MODE SW DISCRETE #1	

iecl26	40.0c2f1s2	ALT MODE SW DISCRETE #2	
iecanu	40.0c2f1s2	CANOPY UNLOCK	
iecbsw	40.0c2f1s2	BATTERY SW CHK	
iecdplc	40.0c2f1s2	LT COMP DISCHRG PRESS P3 (C)	TC
iecdprc	40.0c2f1s2	RT COMP DISCHRG PRESS P3 (C)	TC
iedcdl	40.0c2f1s2	LEFT DUCT DOOR	
iedcdr	40.0c2f1s2	RIGHT DUCT DOOR	
ieeaht	40.0c2f1s2	ESSENTIAL AVIONICS HOT	
ieeasp	40.0c2f1s2	ENG ANTI-ICE SWITCH POS	
ieeavl	40.0c2f1s2	L ENG ANTI ICE VLV	
ieeavr	40.0c2f1s2	R ENG ANTI ICE VLV	
ieebcf	40.0c2f1s2	EMER BATTERY/CHARGER FAIL	
ieeblo	40.0c2f1s2	EMERGENCY BATTERY LOW	
ieegtlc	40.0c2f1s2	LEFT EXHAUST GAS TEMP (C)	TC
ieegtrc	40.0c2f1s2	RIGHT EXHAUST GAS TEMP (C)	TC
ieeitlc	40.0c2f1s2	L/H ENGINE INLET TEMP (C)	
ieeitrc	40.0c2f1s2	R/H ENGINE INLET TEMP (C)	
ieeoll	40.0c2f1s2	L ENGINE OIL LOW	
ieeolr	40.0c2f1s2	R ENGINE OIL LOW	
iefexl	40.0c2f1s2	FIRE EXTINGUISHER LOW	
iefgst	40.0c2f1s2	FUEL GAGING SYS IN TEST	
iefitlc	40.0c2f1s2	LT FUEL INLET TEMP	
iefitrc	40.0c2f1s2	RT FUEL INLET TEMP	
iefulo	40.0c2f1s2	FUEL LOW	
ieggp1	40.0c2f1s2	GUN GAS PURGE PR FAIL (P1)	
ieggp2	40.0c2f1s2	GUN GAS PURGE PR FAIL (P2)	
iegpcf	40.0c2f1s2	GROUND POWER CIRCUIT FAIL	
ieholl	40.0c2f1s2	HYD SYS 1 OIL LEVEL LOW	
ieholr	40.0c2f1s2	HYD SYS 2 OIL LEVEL LOW	
ieidtf	40.0c2f1s2	ICE DETECTOR FAIL	
ieilao	40.0c2f1s2	INT LOW AIR PRS OVRPR	
ielate	40.0c2f1s2	LT ATS EXCEEDANCE	
ielatsc	40.0c2f1s2	LT ATS SPEED	
ielbrf	40.0c2f1s2	L BAR RETRACT SW FAIL	
ielcfl	40.0c2f1s2	LEFT LINE CONTACTOR FAIL (0)	
ielcfr	40.0c2f1s2	RIGHT LINE CONTACTOR FAIL (0)	
ielddd	40.0c2f1s2	LADDER DEPLOYED	
ielepf	40.0c2f1s2	LDG CU EMERGENCY PWR FAIL	
ielgcf	40.0c2f1s2	LAND GEAR CNTL UNIT FAIL	
ielgdf	40.0c2f1s2	LMG DOWNLINK SW FAIL	
ielghd	40.0c2f1s2	LNDG GEAR HANDLE DOWN	
ielgno	40.0c2f1s2	L GEN OUT	
ielguf	40.0c2f1s2	LMG UPLOCK SW FAIL	
ielgul	40.0c2f1s2	LMG UPLOCK	
ielgwf	40.0c2f1s2	LMG WOW SW FAIL	
ielhstc	40.0c2f1s2	LT HORZ TAIL STRAIN (MSW)	
ieloplc	40.0c2f1s2	LEFT ENG OIL PRESS	
ieloprc	40.0c2f1s2	RIGHT ENG OIL PRESS	
ieloxl	40.0c2f1s2	LOX LEVEL LOW (40%)	
ielpho	40.0c2f1s2	L PITOT HEAT OFF	
ielqlo	40.0c2f1s2	RLCS LIQUID LEVEL LOW	
ielvstc	40.0c2f1s2	LT VERT TAIL STRAIN (MSW)	
iemc47	40.0c2f1s2	CANOPY OPEN	
iemc75	40.0c2f1s2	MSDC DISC IN 75 - SPARE	
iemc79	40.0c2f1s2	L AMAD OIL TEMP HIGH	
iemc80	40.0c2f1s2	R AMAD OIL TEMP HIGH	
iemeflc	40.0c2f1s2	LEFT MAIN FUEL FLOW (C)	TC
iemefrc	40.0c2f1s2	RIGHT MAIN FUEL FLOW (C)	

iengdf	40.0c2f1s2	NG DOWNLOCK SW FAIL
ienguf	40.0c2f1s2	NG UPLOCK SW FAIL
iengul	40.0c2f1s2	NG UPLOCK
iengwf	40.0c2f1s2	NG WOW SW FAIL
ienozlc	40.0c2f1s2	LEFT ENG NOZZLE POSITION (C)TC
ienozrc	40.0c2f1s2	RIGHT ENG NOZ POSITION (C) TC
ieogst	40.0c2f1s2	OXYGEN GAGING SYS IN TEST
ieoxll	40.0c2f1s2	OXYGEN LEV LOW
ieptho	40.0c2f1s2	PILOT HEAT ON
ierate	40.0c2f1s2	RT ATS EXCEEDANCE
ieratsc	40.0c2f1s2	RT ATS SPEED
iercdc	40.0c2f1s2	RLCS DOOR OPEN
iercfo	40.0c2f1s2	FLCS FILTER OVERPRESSURE
iercpl	40.0c2f1s2	RLCS PRESSURE LOW
iercpo	40.0c2f1s2	RLCS PUMP ON
iercth	40.0c2f1s2	RLCS TEMPERATURE HIGH
iergdf	40.0c2f1s2	RMG DOWNLOCK SW FAIL
iergno	40.0c2f1s2	R GEN OUT
ierguf	40.0c2f1s2	RMG UPLOCK SW FAIL
iergul	40.0c2f1s2	RMG UPLOCK
iergwf	40.0c2f1s2	RMG WOW SW FAIL
ierhstc	40.0c2f1s2	RT HORZ TAIL STRAIN (MSW)
ierpho	40.0c2f1s2	R PITOT HEAT OFF
iervstc	40.0c2f1s2	RT VERT TAIL STRAIN (MSW)
ies5v1c	40.0c2f1s2	L/H TURBINE DISCH TEMP
ies5v2c	40.0c2f1s2	R/H TURBINE DISCH TEMP
iesbnu	40.0c2f1s2	SPEED BRAKE EXTENDED
iesll1	40.0c2f1s2	SPARE LIQUID LEVEL 1
iesll2	40.0c2f1s2	SPARE LIQUID LEVEL 2
iesll3	40.0c2f1s2	SPARE LIQUID LEVEL 3
iesll4	40.0c2f1s2	SPARE LIQUID LEVEL 4
iesll5	40.0c2f1s2	SPARE LIQUID LEVEL 5
iesll6	40.0c2f1s2	SPARE LIQUID LEVEL 6
iesll7	40.0c2f1s2	SPARE LIQUID LEVEL 7
iesll8	40.0c2f1s2	SPARE LIQUID LEVEL 8
iesll9	40.0c2f1s2	SPARE LIQUID LEVEL 9
ietdplc	40.0c2f1s2	LT TURB DISCHARGE PRESS (C) TC
ietdprc	40.0c2f1s2	RT TURB DISCHARGE PRESS (C) TC
ietk1e	40.0c2f1s2	TANK NO 1 EMPTY
ietk2s	40.0c2f1s2	TANK NO 2 START OF DEPLET
ietk3s	40.0c2f1s2	TANK NO 3 START OF DEPLET
ietk4e	40.0c2f1s2	TANK NO 2 EMPTY
ieubcf	40.0c2f1s2	UTILITY BATT/CHAR FAIL
ieublo	40.0c2f1s2	UTILITY BATTERY LOW
ievscl	40.0c2f1s2	LEFT VSCF FAIL (0)
ievscr	40.0c2f1s2	RIGHT VSCF FAIL (0)
iewgun	40.0c2f1s2	WING UNLOCK
iewsht	40.0c2f1s2	WINDSHIELD HOT
iexnhlc	40.0c2f1s2	LEFT HIGH ROTOR RPM N2 (C) TC
iexnhrc	40.0c2f1s2	RIGHT HIGH ROTOR RPM N2 (C) TC
iexnllc	40.0c2f1s2	LEFT LOW ROTOR RPM N1 (C) TC
iexnlrc	40.0c2f1s2	RIGHT LOW ROTOR RPM N1 (C) TC
iieiice	40.0c2f1s2	INLET ICE
inaccv	40.0c2f1s2	HORIZ ACCEL VALID
inacvv	40.0c2f1s2	VERT (PLAT Z) ACC VALID
inarsh	40.0c2f1s2	AHRS TRUE HEADING
inattv	40.0c2f1s2	INS ATT VALID
inbdrv	40.0c2f1s2	BODY RATES VALID

inbialc	40.0c2f1s2	BARO INERTIAL ALTITUDE (C)	
inbiav	40.0c2f1s2	BARO INERTIAL ALT VALID	
inevelc	40.0c2f1s2	E/W VELOCITY (C)	TC
inhovv	40.0c2f1s2	HORIZ VELOCITIES VALID	
inirolc	40.0c2f1s2	INNER ROLL ANGLE (C)	
inlatac	40.0c2f1s2	LATERAL ACCELERATION (C)	TC
inldav	40.0c2f1s2	LOAD FACTOR ACCEL VALID	
inlonac	40.0c2f1s2	LONGITUDINAL ACCEL (C)	TC
innaccc	40.0c2f1s2	N/S ACCELERATION (C)	TC
innrmac	40.0c2f1s2	NORMAL ACCELERATION (C)	TC
innvelc	40.0c2f1s2	N/S VELOCITY (C)	TC
inorolc	40.0c2f1s2	OUTER ROLL ANGLE (C)	
inpbst	40.0c2f1s2	PARKING BRAKE SET	
inphdgc	40.0c2f1s2	PLATFORM HEADING (C)	
inphdv	40.0c2f1s2	PLATFORM HEADING VALID	
inplatc	40.0c2f1s2	PRESENT POS LATITUDE (C)	
inplonc	40.0c2f1s2	PRESENT POS LONGITUDE (C)	
inposv	40.0c2f1s2	PRESENT POSITION VALID	
inprnbc	40.0c2f1s2	PITCH RATE NARROW BAND (C)	TC
inprwbc	40.0c2f1s2	PITCH RATE WIDE BAND (C)	TC
inptchc	40.0c2f1s2	PITCH ANGLE (C)	
inrrnbc	40.0c2f1s2	ROLL RATE NARROW BAND (C)	TC
inrrwbc	40.0c2f1s2	ROLL RATE WIDE BAND (C)	TC
insdlf	40.0c2f1s2	SET D/L TO SINS FREQ	
inshdg	40.0c2f1s2	STORED HEADING AVAIL	
insinv	40.0c2f1s2	SINS DATA VALID	
inthdgc	40.0c2f1s2	TRUE HEADING (C)	
inthdv	40.0c2f1s2	TRUE HEADING VALID	
invaccc	40.0c2f1s2	VERTICAL ACCELERATION (C)	TC
invldz	40.0c2f1s2	SINS Z LEVER ARM VALID	
invvelc	40.0c2f1s2	VERTICAL VELOCITY (C)	TC
invvvl	40.0c2f1s2	VERT VEL VALID	
inxaccc	40.0c2f1s2	PLATFORM X ACCELERATION (C)	TC
inxvelc	40.0c2f1s2	PLATFORM X VELOCITY (C)	
inyaccc	40.0c2f1s2	PLATFORM Y ACCELERATION (C)	TC
inyrnbc	40.0c2f1s2	YAW RATE NARROW BAND (C)	TC
inyrwbc	40.0c2f1s2	YAW RATE WIDE BAND (C)	TC
inyvelc	40.0c2f1s2	PLATFORM Y VELOCITY (C)	
inzaccc	40.0c2f1s2	PLATFORM Z ACCELERATION (C)	TC
inzvelc	40.0c2f1s2	PLATFORM Z VELOCITY (C)	TC
ix	calc3		
ixz	calc3		
iy	calc3		
iz	calc3		
k0901	320.0c0f1s1	RIGHT LEX FS 252 Y/S.6	
k0902	320.0c0f1s1	RIGHT LEX FS 252 Y/S.9	
k1101	320.0c0f1s1	RIGHT LEX FS 295 Y/S.6	
k1102	320.0c0f1s1	RIGHT LEX FS 295 Y/S.9	
kcas	calc1	calibrated airspeed	
kcasl	calc1	calibrated airspeed	
keas	calc1	equivalent airspeed	
keasl	calc1	equivalent airspeed	
kp01	320.0c0f1s1	INBD RVT PRESS S15 C10	
kp03	320.0c0f1s1	INBD RVT PRESS S15 C45	
kp05	320.0c0f1s1	INBD RVT PRESS S15 C70	
kp07	320.0c0f1s1	INBD RVT PRESS S30 C10	
kp09	320.0c0f1s1	INBD RVT PRESS S30 C45	
kp11	320.0c0f1s1	INBD RVT PRESS S30 C70	

kp13	320.0c0f1s1	INBD RVT PRESS S50 C10
kp15	320.0c0f1s1	INBD RVT PRESS S50 C45
kp17	320.0c0f1s1	INBD RVT PRESS S50 C70
kp19	320.0c0f1s1	INBD RVT PRESS S60 C10
kp21	320.0c0f1s1	INBD RVT PRESS S60 C45
kp23	320.0c0f1s1	INBD RVT PRESS S60 C70
kp25	320.0c0f1s1	INBD RVT PRESS S85 C10
kp27	320.0c0f1s1	INBD RVT PRESS S85 C45
kp29	320.0c0f1s1	INBD RVT PRESS S85 C70
kp31	320.0c0f1s1	INBD RVT PRESS S85 C90
ks02	320.0c0f1s1	OUTBD RVT PRESS S15 C10
ks04	320.0c0f1s1	OUTBD RVT PRESS S15 C45
ks06	320.0c0f1s1	OUTBD RVT PRESS S15 C70
ks08	320.0c0f1s1	OUTBD RVT PRESS S30 C10
ks10	320.0c0f1s1	OUTBD RVT PRESS S30 C45
ks12	320.0c0f1s1	OUTBD RVT PRESS S30 C70
ks14	320.0c0f1s1	OUTBD RVT PRESS S50 C10
ks16	320.0c0f1s1	OUTBD RVT PRESS S50 C45
ks18	320.0c0f1s1	OUTBD RVT PRESS S50 C70
ks20	320.0c0f1s1	OUTBD RVT PRESS S60 C10
ks22	320.0c0f1s1	OUTBD RVT PRESS S60 C45
ks24	320.0c0f1s1	OUTBD RVT PRESS S60 C70
ks26	320.0c0f1s1	OUTBD RVT PRESS S85 C10
ks28	320.0c0f1s1	OUTBD RVT PRESS S85 C45
ks30	320.0c0f1s1	OUTBD RVT PRESS S85 C70
ks32	320.0c0f1s1	OUTBD RVT PRESS S85 C90
la36	160.0c1f1s1	LOWER PUSH/PULL ROD LOAD
la37	160.0c1f1s1	UPPER PUSH/PULL ROD LOAD
lb128	40.0c1f1s1	LATERAL BENDING, FS128.5
lb160	40.0c1f1s1	LATERAL BENDING, FS160.0
lb190	40.0c1f1s1	LATERAL BENDING, FS190.0
lb35	160.0c1f1s1	OTBD PUSH/PULL ROD LOAD B
lbnd160	calc8	
lf38	40.0c1f1s1	LOWER FAIRING SWING LINK LOAD
lf71	160.0c1f1s1	A/C UPPER SHEAR #1 FS633
lf94	160.0c1f1s1	A/C OUTBD SHEAR #2 FS657
ln02	40.0c1f1s1	UPPER FAIRING BEND LOAD (FOIL)
lowl	calc4	
lowr	calc4	
ls128	40.0c1f1s1	LATERAL SHEAR, FS128.5
ls160	40.0c1f1s1	LATERAL SHEAR, FS160.0
ls190	40.0c1f1s1	LATERAL SHEAR, FS190.0
lsca	40.0c1f1s1	L STRAKE COMMAND CH1
lscb	40.0c1f1s1	L STRAKE COMMAND CH4
lscfa	40.0c2f1s2	L.SERVOAMP FAIL CH.1
lscfb	40.0c2f1s2	L.SERVOAMP FAIL CH.4
lshm	40.0c1f1s1	LEFT STRAKE HINGE MOMENT
lshm5	calc8	
lshpfa	40.0c2f1s2	L.HYDRO PRESSURE FAIL CH.1
lshpfb	40.0c2f1s2	L.HYDRO PRESSURE FAIL CH.4
lshr128	calc8	
lslfa	40.0c2f1s2	L.LOGIC FAIL CH.1
lslfb	40.0c2f1s2	L.LOGIC FAIL CH.4
lspofa	40.0c2f1s2	L.HYDRO PRESSURE OFF CH.1
lspofb	40.0c2f1s2	L.HYDRO PRESSURE OFF CH.4
lsrla	40.0c1f1s1	L STRAKE RAM POS. CH1
lsrlb	40.0c1f1s1	L STRAKE RAM POS. CH4
lssila	40.0c1f1s1	L STR LOCAL SERVO CUR CH1

lssilb	40.0c1f1s1	L STR LOCAL SERVO CUR CH4
lssira	40.0c1f1s1	L STR REMOTE SERVO CUR CH1
lssirb	40.0c1f1s1	L STR REMOTE SERVO CUR CH4
lssla	40.0c1f1s1	L STRAKE SPOOL POS. CH1
lsslb	40.0c1f1s1	L STRAKE SPOOL POS. CH4
lssofla	40.0c2f1s2	L.LOCAL SERVOAMP OFF CH.1
lssoflb	40.0c2f1s2	L.LOCAL SERVOAMP OFF CH.4
lssuma	40.0c1f1s1	L STRAKE RAM LVDT SUM CH1
lssumb	40.0c1f1s1	L STRAKE RAM LVDT SUM CH4
lssumfa	40.0c2f1s2	L.LVDT SUM MONITOR FAIL CH.1
lssumfb	40.0c2f1s2	L.LVDT SUM MONITOR FAIL CH.4
lssvona	40.0c2f1s2	L.SHUTOFF VALVE ON CH.1
lssvonb	40.0c2f1s2	L.SHUTOFF VALVE ON CH.4
lsvvfa	40.0c2f1s2	L.SERVO POS/CURRENT FAIL CH.1
lsvvfb	40.0c2f1s2	L.SERVO POS/CURRENT FAIL CH.4
lwpst	40.0c1f1s1	LT WING PS SONIX TEMP
lwptt	40.0c1f1s1	LT WING PT SONIX TEMP
m800tmp	40.0c1f1s1	SYS1 MASTER TEMPERATURE
mi	calc1	indicated Mach number
mil	calc1	indicated Mach number
minf	calc1	free-stream Mach number
minfl	calc1	free-stream Mach number
mu	calc1	coefficient of viscosity
mu1	calc1	coefficient of viscosity
mul	calc1	coefficient of viscosity
mul1	calc1	coefficient of viscosity
n1l	calc2	
n1pcl	calc2	
n1pcr	calc2	
n1pctr	calc2	
n1r	calc2	
n1sr	40.0c1f1s1	RIGHT FAN ROTOR SPEED
n2l	calc2	
n2pcl	calc2	
n2pcr	calc2	
n2pctr	calc2	
n2r	calc2	
n2sr	40.0c1f1s1	RIGHT COMPRESSOR ROTOR SPEED
nbadl	calc4	
nbadr	calc4	
nd5l	calc4	
nd5r	calc4	
nd6l	calc4	
nd6r	calc4	
nd7l	calc4	
nd7r	calc4	
nmon	40.0c1f1s1	NEG FIVE VOLT MONITOR
npst	40.0c1f1s1	NOSE PS SONIX TEMP
ocbbap	40.0c2f1s2	APC BIT
ocbbbc	40.0c2f1s2	CLEAR BLIN CODES SIGNAL
ocbbif	40.0c2f1s2	INFLIGHT
ocbbmn	40.0c2f1s2	MAINT TEST FUNCTIONS
ocbbnw	40.0c2f1s2	NOSE WHEEL STEERING BIT
ocbbsf	40.0c2f1s2	STOP ON MUX FAIL-LAB ONLY
ocbbut	40.0c2f1s2	BIT UNIQUE TESTS
ocbegi	40.0c2f1s2	ENGS AT GND IDLE OR ABOVE
ocbh1a	40.0c2f1s2	BRANCH 1A HYD PRES NORMAL
ocbh1b	40.0c2f1s2	BRANCH 1B HYD PRES NORMAL

ocbh2a	40.0c2f1s2	BRANCH 2A HYD PRES NORMAL
ocbh2b	40.0c2f1s2	BRANCH 2B HYD PRES NORMAL
ocbpac	40.0c2f1s2	A/C CONFIGURATION IDENT
ocbtsi	40.0c2f1s2	THROTTLE MOD INSTALLED
ocibbis	40.0c2f1s2	BIT INITIATE/TEST STOP
p7qambl	calc4	
p7qambr	calc4	
pcc	160.0c1f1s1	ROLL RATE A/C (C)
pdot	calc1	roll acceleration
phic	160.0c1f1s1	ROLL ATTITUDE (C)
plal	calc2	
plar	calc2	
pmon	40.0c1f1s1	POS FIVE VOLT MONITOR
prbay1c	10.0c1f1s1	ESP REF PRESSURE (COARSE)
prbay1i	calc2	
ps6al	calc4	
ps6ar	calc4	
ps7al	calc4	
ps7ar	calc4	
psfa	40.0c2f1s2	POWER SUPPLY A FAILURE
psfb	40.0c2f1s2	POWER SUPPLY B FAILURE
psiangc	160.0c1f1s1	AZIMUTH HEADING ANGLE (C)
psilc	40.0c1f1s1	LT BOOM STATIC PRESSURE (C)
psinbc	40.0c1f1s1	NOSE STATIC PRESS (C)
psinf	calc1	free-stream static pressure
psinfl	calc1	free-stream static pressure
psinfli	calc2	
pt56al	calc4	
pt56ar	calc4	
pt6l	calc4	
pt6r	calc4	
pt7l	calc4	
pt7r	calc4	
ptilc	40.0c1f1s1	LT BOOM TOTAL PRESSURE (C)
ptinf	calc1	free-stream total pressure
ptinfl	calc1	free-stream total pressure
ptinfli	calc2	
ptora	40.0c2f1s2	POWER SUPPLY A POWER ON RES
ptorb	40.0c2f1s2	POWER SUPPLY B POWER ON RES
qbar	calc1	dynamic pressure
qbarl	calc1	dynamic pressure
qc	160.0c1f1s1	PITCH RATE A/C (C)
qcc	calc1	impact pressure
qccl	calc1	impact pressure
qdot	calc1	pitch acceleration
r800tmp	40.0c1f1s1	SYS1 REMOTE TEMPERATURE
rat5a_1l	calc4	
rat5a_1r	calc4	
rat5a_2l	calc4	
rat5a_2r	calc4	
rat5a_3l	calc4	
rat5a_3r	calc4	
rat5a_4l	calc4	
rat5a_4r	calc4	
rat5a_5l	calc4	
rat5a_5r	calc4	
rat6_1l	calc4	
rat6_1r	calc4	

rat6_2l	calc4	
rat6_2r	calc4	
rat6_3l	calc4	
rat6_3r	calc4	
rat6_4l	calc4	
rat6_4r	calc4	
rat7_1l	calc4	
rat7_1r	calc4	
rat7_2l	calc4	
rat7_2r	calc4	
rat7_3l	calc4	
rat7_3r	calc4	
rat7_4l	calc4	
rat7_4r	calc4	
rdot	calc1	yaw acceleration
rho	calc1	free-stream density
rho1	calc1	free-stream density
rhol	calc1	free-stream density
rhol1	calc1	free-stream density
rlng1	40.0c1f1s1	RADOME RIGHT LONGERON STRAIN
rlng2	40.0c1f1s1	RADOME CENTER LONGERON STRAIN
rlng3	40.0c1f1s1	RADOME LEFT LONGERON STRAIN
rmc	160.0c1f1s1	YAW RATE A/C (C)
rnpu	calc1	Reynolds number per foot
rnpu1	calc1	Reynolds number per foot
rnpul	calc1	Reynolds number per foot
rnpul1	calc1	Reynolds number per foot
rsca	40.0c1f1s1	R STRAKE COMMAND CH2
rscb	40.0c1f1s1	R STRAKE COMMAND CH3
rscfa	40.0c2f1s2	R.SERVOAMP FAIL CH.2
rscfb	40.0c2f1s2	R. SERVOAMP FAIL CH.3
rshm	40.0c1f1s1	RIGHT STAKE HINGE MOMMENT
rshm5	calc8	
rshpfa	40.0c2f1s2	R.HYDRO PRESSURE FAIL CH.2
rshpfb	40.0c2f1s2	R.HYDRO PRESSURE FAIL CH.3
rslfa	40.0c2f1s2	R.LOGIC FAIL CH.2
rslfb	40.0c2f1s2	R.LOGIC FAIL CH.3
rspofa	40.0c2f1s2	R.HYDRO PRESSURE OFF CH.2
rspofb	40.0c2f1s2	R.HYDRO PRESSURE OFF CH.3
rsrla	40.0c1f1s1	R STRAKE RAM POS. CH2
rsrlb	40.0c1f1s1	R STRAKE RAM POS. CH3
rssila	40.0c1f1s1	R STR LOCAL SERVO CUR CH2
rssilb	40.0c1f1s1	R STR LOCAL SERVO CUR CH3
rssira	40.0c1f1s1	R STR REMOTE SERVO CUR CH2
rssirb	40.0c1f1s1	R STR REMOTE SERVO CUR CH3
rssla	40.0c1f1s1	R STRAKE SPOOL POS. CH2
rsslb	40.0c1f1s1	R STRAKE SPOOL POS. CH3
rssofla	40.0c2f1s2	R.LOCAL SERVOAMP OFF CH.2
rssoflb	40.0c2f1s2	R.LOCAL SERVOAMP OFF CH.3
rssuma	40.0c1f1s1	R STRAKE RAM LVDT SUM CH2
rssumb	40.0c1f1s1	R STRAKE RAM LVDT SUM CH3
rssumfa	40.0c2f1s2	R.LVDT SUM MONITOR FAIL CH.2
rssumfb	40.0c2f1s2	R.LVDT SUM MONITOR FAIL CH.3
rssvona	40.0c2f1s2	R.SHUTOFF VALVE ON CH.2
rssvonb	40.0c2f1s2	R.SHUTOFF VALVE ON CH.3
rsvvfa	40.0c2f1s2	R.SERVO POS/CURRENT FAIL CH.2
rsvvfb	40.0c2f1s2	R.SERVO POS/CURRENT FAIL CH.3
rwpst	40.0c1f1s1	RT WING PS SONIX TEMP

rwptt	40.0c1f1s1	RT WING PT SONIX TEMP
sbit1a	40.0c2f1s2	STRAKE A BIT 1
sbit1b	40.0c2f1s2	STRAKE B BIT 1
sbit2a	40.0c2f1s2	STRAKE A BIT 2
sbit2b	40.0c2f1s2	STRAKE B BIT 2
sbit4a	40.0c2f1s2	STRAKE A BIT 4
sbit4b	40.0c2f1s2	STRAKE B BIT 4
sbit8a	40.0c2f1s2	STRAKE A BIT 8
sbit8b	40.0c2f1s2	STRAKE B BIT 8
sbitia	40.0c2f1s2	STRAKE A BIT INITIATE
sbitib	40.0c2f1s2	STRAKE B BIT INITIATE
sd16	calc5	
sd3a6	calc5	
ses101	25.0c1f1s2	LSTRAKE PRES FS70 207 DEG
ses102	25.0c1f1s2	LSTRAKE PRES FS70 220.5 DEG
ses103	25.0c1f1s2	LSTRAKE PRES FS70 234 DEG
ses104	25.0c1f1s2	LSTRAKE PRES FS70 247 DEG
ses105	25.0c1f1s2	LSTRAKE PRES FS85 205 DEG
ses106	25.0c1f1s2	LSTRAKE PRES FS85 214.5 DEG
ses107	25.0c1f1s2	LSTRAKE PRES FS85 223 DEG
ses108	25.0c1f1s2	LSTRAKE PRES FS85 231 DEG
ses109	25.0c1f1s2	LSTRAKE PRES FS85 238 DEG
ses110	25.0c1f1s2	LSTRAKE PRES FS85 248 DEG
ses111	25.0c1f1s2	LSTRAKE PRES FS85 X/C=.847
ses112	25.0c1f1s2	LSTRAKE PRES FS85 X/C=.654
ses113	25.0c1f1s2	LSTRAKE PRES FS85 X/C=.461
ses114	25.0c1f1s2	LSTRAKE PRES FS85 X/C=.269
ses115	25.0c1f1s2	LSTRAKE PRES FS85 X/C=.075
ses116	25.0c1f1s2	LSTRAKE PRES FS107 217.5 DEG
ses117	25.0c1f1s2	LSTRAKE PRES FS107 221 DEG
ses118	25.0c1f1s2	LSTRAKE PRES FS107 223 DEG
ses119	25.0c1f1s2	LSTRAKE PRES FS107 226 DEG
ses120	25.0c1f1s2	LSTRAKE PRES FS107 229 DEG
ses121	25.0c1f1s2	LSTRAKE PRES FS107 231.5 DEG
ses122	25.0c1f1s2	LSTRAKE PRES FS107 234 DEG
ses123	25.0c1f1s2	LSTRAKE PRES FL107 237.5 DEG
ses124	25.0c1f1s2	LSTRAKE PRES FS107 239.5 DEG
ses125	25.0c1f1s2	LSTRAKE PRES FS107 245 DEG
ses126	25.0c1f1s2	LSTRAKE PRES FS107 X/C=.823
ses127	25.0c1f1s2	LSTRAKE PRES FS107 X/C=.697
ses128	25.0c1f1s2	LSTRAKE PRES FS107 X/C=.571
ses129	25.0c1f1s2	LSTRAKE PRES FS107 X/C=.446
ses130	25.0c1f1s2	LSTRAKE PRES FS107 X/C=.321
ses131	25.0c1f1s2	LSTRAKE PRES FS107 X/C=.195
ses132	25.0c1f1s2	LSTRAKE PRES FS107 X/C=.070
ses1tmp	40.0c2f1s2	LEFT STRAKE ESP TEMP
ses201	25.0c1f1s2	RSTRAKE PRES FS70 153 DEG
ses202	25.0c1f1s2	RSTRAKE PRES FS70 139.5 DEG
ses203	25.0c1f1s2	RSTRAKE PRES FS70 126 DEG
ses204	25.0c1f1s2	RSTRAKE PRES FS70 113 DEG
ses205	25.0c1f1s2	RSTRAKE PRES FS85 155 DEG
ses206	25.0c1f1s2	RSTRAKE PRES FS85 145.5 DEG
ses207	25.0c1f1s2	RSTRAKE PRES FS85 137.5 DEG
ses208	25.0c1f1s2	RSTRAKE PRES FS85 129 DEG
ses209	25.0c1f1s2	RSTRAKE PRES FS85 121 DEG
ses210	25.0c1f1s2	RSTRAKE PRES FS85 111.5 DEG
ses211	25.0c1f1s2	RSTRAKE PRES FS85 X/C=.847
ses212	25.0c1f1s2	RSTRAKE PRES FS85 X/C=.654

ses213	25.0c1f1s2	RSTRAKE PRES FS85 X/C=.461
ses214	25.0c1f1s2	RSTRAKE PRES FS85 X/C=.269
ses215	25.0c1f1s2	RSTRAKE PRES FS85 X/C=.075
ses216	25.0c1f1s2	RSTRAKE PRES FS107 142.5 DEG
ses217	25.0c1f1s2	RSTRAKE PRES FS107 139 DEG
ses218	25.0c1f1s2	RSTRAKE PRES FS107 137 DEG
ses219	25.0c1f1s2	RSTRAKE PRES FS107 134 DEG
ses220	25.0c1f1s2	RSTRAKE PRES FS107 131 DEG
ses221	25.0c1f1s2	RSTRAKE PRES FS107 128 DEG
ses222	25.0c1f1s2	RSTRAKE PRES FS107 125.5 DEG
ses223	25.0c1f1s2	RSTRAKE PRES FS107 122.5 DEG
ses224	25.0c1f1s2	RSTRAKE PRES FS107 120 DEG
ses225	25.0c1f1s2	RSTRAKE PRES FS107 115 DEG
ses226	25.0c1f1s2	RSTRAKE PRES FS107 X/C=.823
ses227	25.0c1f1s2	RSTRAKE PRES FS107 X/C=.697
ses228	25.0c1f1s2	RSTRAKE PRES FS107 X/C=.571
ses229	25.0c1f1s2	RSTRAKE PRES FS107 X/C=.446
ses230	25.0c1f1s2	RSTRAKE PRES FS107 X/C=.321
ses231	25.0c1f1s2	RSTRAKE PRES FS107 X/C=.195
ses232	25.0c1f1s2	RSTRAKE PRES FS107 X/C=.070
ses2tmp	40.0c2f1s2	RIGHT STRAKE ESP TEMP
sgsevnt	40.0c1f1s1	PILOT EVENT
srtract	40.0c1f1s1	STRAKE RETRACT
stkxll	800.0c0f1s2	STRAKE ACCEL LEFT
stkxlr	800.0c0f1s2	STRAKE ACCEL RIGHT
stpl	80.0c2f1s2	LEFT STRAKE POSITION
stpr	80.0c2f1s2	RIGHT STRAKE POSITION
sttmp	40.0c2f1s2	SWIVEL PROBE TOTAL TEMP
syncfl	40.0c1f1s1	UPLINK SYNC FAIL
t1lr	calc2	
t1lrb	calc2	
t1rr	calc2	
t1rrb	calc2	
t56high	40.0c1f1s1	T5.6 BIAS SWITCH HIGH
t56hlr	calc2	
t56hrr	calc2	
t56med	40.0c1f1s1	T5.6 BIAS SWITCH MEDIUM
ta20	40.0c2f1s2	UPPER PUSH/PULL ROD TEMP
ta23	40.0c2f1s2	LOWER POS/PULL ROD TEMP
ta24	40.0c2f1s2	OUTBD PUSH/PULL ROD TEMP
tb01	80.0c2f1s2	BELLCRANK TEMP - UPPER #1
tb06	40.0c2f1s2	BELLCRANK TEMP - UPPER #6
te05	40.0c2f1s2	L/H ENG BAY TEMP AT CL KEEL UP
te06	40.0c2f1s2	L/H ENG BAY TEMP AT CL KEEL LO
te07	40.0c2f1s2	ENG HANGAR LINK TEMP
tf05	40.0c2f1s2	UP FRNG LOWER SKIN TEMP #1
tf06	40.0c2f1s2	UP FRNG LOWER SKIN TEMP #2
tf41	40.0c2f1s2	LWR FRNG AFT TOP TEMP
tf42	40.0c2f1s2	LWR FRNG BELLCRANK HINGE TEMP
thetac	160.0c1f1s1	PITCH ATTITUDE (C)
time1	calc5	
time1hm	calc5	
time1mic	calc5	
time1sm	calc5	
time2	calc5	
time2hm	calc5	
time2mic	calc5	
time2sm	calc5	

tinf	calc1	ambient temperature
tinf1	calc1	ambient temperature
tinfl	calc1	ambient temperature
tinfl1	calc1	ambient temperature
tn01	40.0c2f1s2	UPPER FAIRING AFT T/C #1
tn02	40.0c2f1s2	UPPER FAIRING AFT T/C #2
tq128	40.0c1f1s1	TORQUE, FS128.5
tq160	40.0c1f1s1	TORQUE, FS160.0
tq190	40.0c1f1s1	TORQUE, FS190.0
ts21f	80.0c2f1s2	SPIN CHUTE D LINK TEMP
ts22f	80.0c2f1s2	SPIN CHUTE L LINK TEMP
ts28	80.0c2f1s2	5/8" SEP NUT SURFACE TEMP
tstnd	calc1	ambient temperature using standard atmosphere
tstndl	calc1	ambient temperature using standard atmosphere
ttmpr	calc1	free-stream total temperature
ttmpr_inletl	calc1	Total temperature from the left engine inlet
ttmpr_inletr	calc1	Total temperature from the right engine inlet
tv03	80.0c2f1s2	UPPER VANE TEMP #3
tv04f	80.0c2f1s2	UPPER VANE TEMP #4 FLIGHT
tv06	80.0c2f1s2	LOWER VANE TEMP #1
tv07f	80.0c2f1s2	LOWER VANE TEMP #2 FLIGHT
tv08f	80.0c2f1s2	OUTBOARD VANE TEMP #1 FLIGHT
tv09f	80.0c2f1s2	OUTBOARD VANE TEMP #2 FLIGHT
udot	calc1	longitudinal component of kinematic acceleration
udot_ins	calc1	INS kinematic acceleration corrected to the cg (x component)
vb128	40.0c1f1s1	VERTICAL BENDING, FS128.5
vb160	40.0c1f1s1	VERTICAL BENDING, FS160.0
vb190	40.0c1f1s1	VERTICAL BENDING, FS190.0
vbnd128	calc8	
vd	calc1	corrected INS inertial velocity (Down component)
vdot	calc1	lateral component of kinematic acceleration
vdot_ins	calc1	INS kinematic acceleration corrected to the cg (y component)
ve	calc1	corrected INS inertial velocity (East component)
vi	calc1	inertial velocity
vinf	calc1	free-stream airspeed [uses standard day temp]
vinfl	calc1	free-stream airspeed [uses standard day temp]
vn	calc1	corrected INS inertial velocity (North component)
vs128	40.0c1f1s1	VERTICAL SHEAR, FS128.5
vs160	40.0c1f1s1	VERTICAL SHEAR, FS160.0
vs190	40.0c1f1s1	VERTICAL SHEAR, FS190.0
vshr128	calc8	
vtrue	calc1	free-stream airspeed [uses measured ambient temp]

vtrue1	calc1	free-stream airspeed [uses measured ambient temp]
vtrue_inletl	calc1	True airspeed using Ttmpr_inletL and MinfL
vtrue_inletr	calc1	True airspeed using Ttmpr_inletR and MinfL
vtruel	calc1	free-stream airspeed [uses measured ambient temp]
vtruell	calc1	free-stream airspeed [uses measured ambient temp]
vx	calc1	corrected INS inertial velocity (body-axis x component)
vy	calc1	corrected INS inertial velocity (body-axis y component)
vz	calc1	corrected INS inertial velocity (body-axis z component)
w1cl	calc4	
w1cr	calc4	
w1rttml	calc4	
w1rttmr	calc4	
w6l	calc4	
w6r	calc4	
w6rttml	calc4	
w6rttmr	calc4	
w8l	calc4	
w8r	calc4	
wd	calc1	wind component in the Down earth-axis direction
wdir	calc1	dirction wind is blowing
wdot	calc1	vertical component of kinematic acceleration
wdot_ins	calc1	INS kinematic acceleration corrected to the cg (z component)
we	calc1	wind component in the East earth-axis direction
wfab	calc2	
wfabcl	calc4	
wfabcr	calc4	
wfabmp	calc2	
wfabmtc	calc2	
wfabpp	calc2	
wfep	calc2	
wfetc	calc2	
wft	calc2	
whoriz	calc1	magnitude of the horizontal wind component
wmag	calc1	wind magnitude
wn	calc1	wind component in the North earth-axis direction
wt	calc3	
wx	calc1	wind component in the x body-axis direction
wy	calc1	wind component in the y body-axis direction
wz	calc1	wind component in the z body-axis direction
xcg	calc3	

xferok	40.0c1f1s1	UPLINK TRANSFER OK
ycg	calc3	
z1750m	40.0c2f1s2	1750A PROCESSOR FAILURE
zaadfm	40.0c2f1s2	AOA/AIR DATA FAIL
zaarv	80.0c2f1s2	FCS ANGLE OF ATTACK RATE VAL
zactfm	40.0c2f1s2	ACTUATOR FAILURE
zactrm	40.0c2f1s2	ACTUATOR FAILURE
zaltv	80.0c2f1s2	RFCS ALTITUDE VALID
zammsm	40.0c2f1s2	RFCS ARM SWITCH FAILURE
zaoav	80.0c2f1s2	RFCS ANGLE OF ATTACK VALID
zassv	80.0c2f1s2	RFCS ANGLE OF SIDESLIP VALID
zcfram	40.0c2f1s2	CMD COMP/FD RT/ARM LIM EXCEED
zcg	calc3	
zchnlm	40.0c2f1s2	CHANNEL OFF
zcoffm	40.0c2f1s2	CHANNEL OFF
zdammm	40.0c2f1s2	DEL/AUTOPILOT/MECH MODE
zdasmm	40.0c2f1s2	DEL/AUTOPILOT/MECH/SPIN MODE
zddfm	40.0c2f1s2	DUAL DISCRETE FAIL
zdpnvm	40.0c2f1s2	DUAL PORT RAM INVALID
zdprm	40.0c2f1s2	DUAL PORT RAM INVALID
zdualm	40.0c2f1s2	DUAL DISCRETE FAIL
zegs1	80.0c2f1s2	ENABLE GAIN SET #1
zegs1m	40.0c2f1s2	RFCS GAIN SET NO 1 ENGAGED
zegs2	80.0c2f1s2	ENABLE GAIN SET #2
zegs2m	40.0c2f1s2	RFCS GAIN SET NO 2 ENGAGED
zegs3	80.0c2f1s2	ENABLE GAIN SET #3
zegs3m	40.0c2f1s2	RFCS GAIN SET NO 3 ENGAGED
zegs4	80.0c2f1s2	ENABLE GAIN SET #4
zegs4m	40.0c2f1s2	RFCS GAIN SET NO 4 ENGAGED
zegs5	80.0c2f1s2	ENABLE GAIN SET #5
zegs5m	40.0c2f1s2	RFCS GAIN SET NO 5 ENGAGED
zerav	80.0c2f1s2	ENGAGE RAV COUPLE
zeravm	40.0c2f1s2	RAV COUPLE ENGAGE
zlecv	80.0c2f1s2	LEFT ENG COMP DISCH PRES VALID
zlenv	80.0c2f1s2	LEFT ENG NOZ POSITION VALID
zletv	80.0c2f1s2	L ENG TURB DISCH PRES VALID
zlisvm	40.0c2f1s2	LIV ACT SHUT OFF VALVE OPEN
zlosvm	40.0c2f1s2	LOV ACT SHUT OFF VALVE OPEN
zltsvm	40.0c2f1s2	LTV ACT SHUT OFF VALVE OPEN
zmcaum	40.0c2f1s2	MASTER CAUTION
zmcrdm	40.0c2f1s2	MC SUPPLIED RFCS DATA INVALID
zmstcm	40.0c2f1s2	MASTER CAUTION
zmxbsm	40.0c2f1s2	MUX BUS INVALID
zmxnvm	40.0c2f1s2	MUX BUS INVALID
znogom	40.0c2f1s2	RFCS 'NO GO' INDICATION
zplam	40.0c2f1s2	PLA EXCEEDS 20 DEG ON GND
zpsiv	80.0c2f1s2	RFCS IND STAT PRESS VALID
zqciv	80.0c2f1s2	RFCS IND IMPACT PRESS VALID
zqd1fm	40.0c2f1s2	QUAD DISCRETE 1 FAIL
zqs2fm	40.0c2f1s2	QUAD SENSOR 2 FAIL
zqslfm	40.0c2f1s2	QUAD SENSOR LOCAL FAIL
zrarmm	40.0c2f1s2	RFCS MODE ARMED
zravr	80.0c2f1s2	RAV OPERATION READY
zrcmdm	40.0c2f1s2	RFCS COMMAND NOT VALID
zrdnrm	40.0c2f1s2	RFCS DATA NOT READY
zrdnvm	40.0c2f1s2	MC SUPPLIED RFCS DATA INVALID
zrdv	80.0c2f1s2	MC SUP RFCS DATA VALID
zrecv	80.0c2f1s2	RT ENG COMP DISCH PRES VALID

zrengm	40.0c2f1s2	RFCS MODE ENGAGED
zrenv	80.0c2f1s2	RIGHT ENG NOZ POSITION VALID
zretv	80.0c2f1s2	R ENG TURB DISCH PRES VALID
zrfcsm	40.0c2f1s2	1750A PROCESSOR FAILURE
zrisvm	40.0c2f1s2	RIV ACT SHUT OFF VALVE OPEN
zrngom	40.0c2f1s2	RFCS 'NO GO' INDICATION
zrosvm	40.0c2f1s2	ROV ACT SHUT OFF VALVE OPEN
zrqstm	40.0c2f1s2	DISENGAGE REQUEST
zrtsvm	40.0c2f1s2	RTV ACT SHUT OFF VALVE OPEN
zssrv	80.0c2f1s2	RFCS ANG OF SIDESLIP RATE VALID
zvv	80.0c2f1s2	RFCS AIRSPEED VALID
zvvofm	40.0c2f1s2	TVV ACT NOT AT RFCS MODE 'OFF'
zwndv	80.0c2f1s2	RFCS WIND PROFILE VALID

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Appendix B
Parameter Lists Used to Retrieve Raw Data Files (Rxxxy.cmp3)

Contents

Table B1.- Differences in parameter lists used to retrieve raw data.

Parameter File (raw GetFdas)	ANSER Control Law	Used for Flights	Changes	Number of parameters
raw_295	V151.0	F295 first ANSER test flight	Baseline list AAP, ICA1314C - ICA1319C not available IAALRTC, BETA_JOE, IY omitted from raw lists	262
raw_296	V151.0	F296	raw_295 list with STPL, STPR, DSTKL, DSTKR added AAP, ICA1314C - ICA1319C not available	266
raw_297	V151.0	F297 - F299	raw_296 list except ICARXYC replaces ICARXVC AAP, ICA1314C - ICA1319C not available	266
raw_300	V151.1	F300 - F313 except F304	raw_297 list except ICA1314C - ICA1319C replaced with AV78C - AV83C AAP not available	266
raw_314	V151.1	F314 - F328 except F318	raw_300 list with LSRLA, LSRLB, RSRLA, RSRLB added AAP not available	270
raw_329	V151.1	F314 - F328 except F318	raw_314 list with VTRUE1, RHO, DRFL, DRFR added AAP not available	274
raw_332	V151.1 V152	F329 - F361 except F338 - F340, F343, F360	raw_329 list with IAALRTC, BETA_JOE, IY added AAP not available	277
raw_362	V151.1 V152 V153 V154	F362 - F383	raw_329 list with AYVTR added AAP not available	278

Parameter files used to retrieve raw data files (Rxxxy.cmp3).

```
--
-- file raw_295  - to form processed ANSER files
--
parameter aap      &
aar     &
aay     &
axcgc   &
aycgc   &
azcgc   &
axckpt  &
ayckpt  &
azckpt  &
dlfli   &
dlfri   &
dlflo   &
dlfro   &
dtfl    &
dtfr    &
dal     &
dar     &
dhl     &
dhr     &
drl     &
drr     &
dsb     &
icailfc &
icairfc &
icalloc &
icarloc &
icaltpc &
icartpc &
icalspc &
icarspc &
icalapc &
icarapc &
icalrpc &
icarrpc &
icallc  &
icatlc  &
icacsc  &
icarcmc &
icadlc  &
icadtc  &
icadsc  &
icaacmc &
pcc     &
phic    &
psiangc &
qc      &
rmc     &
thetac  &
dep     &
icapsfc &
dap     &
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icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
av01c    &
av02c    &
av03c    &
av04c    &
av05c    &
av06c    &
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av54c  &
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av72c  &
av73c  &
av74c  &
av75c  &
av76c  &
av77c  &
ax01c  &
ax02c  &
ax03c  &
ax04c  &
ax05c  &
ax06c  &
ax07c  &
ax08c  &
ax09c  &
ax10c  &
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ax12c  &
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ax20c  &
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ax32c    &
bv07c    &
bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
alpha    &
beta     &
hp       &
mi       &
psinf    &
ptinf    &
qbar     &
qcc      &
vinf     &
vtrue    &
axc      &
ayc      &
azc      &
fpai     &
fphi     &
pdot     &
qdot     &
rdot     &
vi       &
alpharc  &
alphalc  &
invvelc  &
inyrnbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix     &
iz     &
ixz     &
wt     &
cg     &
xcg     &
ycg     &
zcg     &
alphaL   &
betaL   &
iexnllc  &
iexnlrc  &
iexnhlc  &
iexnhrc  &
Wx     &
Wy     &
Wz     &
WN     &
WE     &
WD     &
Wmag    &
Wdir    &
Whoriz   &
adot    &
bdot    &
inplonc  &
inplatc  &
inxvelc  &
inyvelc  &
inzvelc  &
betailc  &
betairc  &
betaavg  &
icapllc  &
icaplrc  &
alphad   &
icarxpc  &
icarxvc  &
ica1314c &
ica1315c &
ica1316c &
ica1317c &
ica1318c &
ica1319c
```

```
--
-- file raw_296  - to form processed ANSER files
--
parameter aap      &
aar     &
aay     &
axcgc    &
aycgc    &
azcgc    &
axckpt   &
ayckpt   &
azckpt   &
dlfli    &
dlfri    &
dlflo    &
dlfro    &
dtfl     &
dtfr     &
dal      &
dar      &
dhl      &
dhr      &
drl      &
drr      &
dsb      &
icailfc  &
icairfc  &
icalloc  &
icarloc  &
icaltpc  &
icartpc  &
icalspc  &
icarspc  &
icalapc  &
icarapc  &
icalrpc  &
icarrpc  &
icallc   &
icatlc   &
icacsc   &
icarcmc  &
icadlc   &
icadtc   &
icadsc   &
icaacmc  &
pcc      &
phic     &
psiangc  &
qc       &
rmc      &
thetac   &
dep      &
icapsfc  &
dap      &
```

```
icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
av01c    &
av02c    &
av03c    &
av04c    &
av05c    &
av06c    &
av07c    &
av08c    &
av09c    &
av10c    &
av11c    &
av12c    &
av13c    &
av14c    &
av15c    &
av16c    &
av17c    &
av18c    &
av19c    &
av20c    &
av21c    &
av22c    &
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av25c    &
av26c    &
av27c    &
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av28c   &
av29c   &
av30c   &
av31c   &
av32c   &
av39c   &
av40c   &
av41c   &
av42c   &
av43c   &
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av46c   &
av50c   &
av51c   &
av52c   &
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av59c   &
av60c   &
av69c   &
av70c   &
av71c   &
av72c   &
av73c   &
av74c   &
av75c   &
av76c   &
av77c   &
ax01c   &
ax02c   &
ax03c   &
ax04c   &
ax05c   &
ax06c   &
ax07c   &
ax08c   &
ax09c   &
ax10c   &
ax11c   &
ax12c   &
ax13c   &
ax14c   &
ax15c   &
ax16c   &
ax17c   &
ax18c   &
ax19c   &
ax20c   &
ax21c   &
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ax22c    &
ax23c    &
ax24c    &
ax25c    &
ax26c    &
ax27c    &
ax28c    &
ax29c    &
ax30c    &
ax31c    &
ax32c    &
bv07c    &
bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
alpha    &
beta     &
hp       &
mi       &
psinf    &
ptinf    &
qbar     &
qcc      &
vinf     &
vtrue    &
axc      &
ayc      &
azc      &
fpai     &
fphi     &
pdot     &
qdot     &
rdot     &
vi       &
alpharc  &
alphalc  &
invvelc  &
inyrnbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix     &
iz     &
ixz    &
wt     &
cg     &
xcg    &
ycg    &
zcg    &
alphaL  &
betaL   &
iexnllc  &
iexnlrc  &
iexnhlc  &
iexnhrc  &
Wx     &
Wy     &
Wz     &
WN     &
WE     &
WD     &
Wmag    &
Wdir    &
Whoriz  &
adot    &
bdot    &
inplonc  &
inplatc  &
inxvelc  &
inyvelc  &
inzvelc  &
betailc  &
betairc  &
betaavg  &
icapllc  &
icaplrc  &
alphad  &
icarxpc  &
icarxvc  &
ica1314c &
ica1315c &
ica1316c &
ica1317c &
ica1318c &
ica1319c &
stpl    &
stpr    &
dstkl   &
dstkr
```

```
--
-- file raw_297  - to form processed ANSER files
--
parameter aap      &
aar     &
aay     &
axcgc   &
aycgc   &
azcgc   &
axckpt  &
ayckpt  &
azckpt  &
dlfli   &
dlfri   &
dlflo   &
dlfro   &
dtfl    &
dtfr    &
dal     &
dar     &
dhl     &
dhr     &
drl     &
drr     &
dsb     &
icailfc &
icairfc &
icalloc &
icarloc &
icaltpc &
icartpc &
icalspc &
icarspc &
icalapc &
icarapc &
icalrpc &
icarrpc &
icallc  &
icatlc  &
icacsc  &
icarcmc &
icadlc  &
icadtc  &
icadsc  &
icaacmc &
pcc     &
phic    &
psiangc &
qc      &
rmc     &
thetac  &
dep     &
icapsfc &
dap     &
```

```
icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
av01c    &
av02c    &
av03c    &
av04c    &
av05c    &
av06c    &
av07c    &
av08c    &
av09c    &
av10c    &
av11c    &
av12c    &
av13c    &
av14c    &
av15c    &
av16c    &
av17c    &
av18c    &
av19c    &
av20c    &
av21c    &
av22c    &
av23c    &
av24c    &
av25c    &
av26c    &
av27c    &
```

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av28c &
av29c &
av30c &
av31c &
av32c &
av39c &
av40c &
av41c &
av42c &
av43c &
av44c &
av45c &
av46c &
av50c &
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av56c &
av57c &
av58c &
av59c &
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av69c &
av70c &
av71c &
av72c &
av73c &
av74c &
av75c &
av76c &
av77c &
ax01c &
ax02c &
ax03c &
ax04c &
ax05c &
ax06c &
ax07c &
ax08c &
ax09c &
ax10c &
ax11c &
ax12c &
ax13c &
ax14c &
ax15c &
ax16c &
ax17c &
ax18c &
ax19c &
ax20c &
ax21c &
```

```
ax22c    &
ax23c    &
ax24c    &
ax25c    &
ax26c    &
ax27c    &
ax28c    &
ax29c    &
ax30c    &
ax31c    &
ax32c    &
bv07c    &
bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
alpha    &
beta     &
hp       &
mi       &
psinf    &
ptinf    &
qbar     &
qcc      &
vinf     &
vtrue    &
axc      &
ayc      &
azc      &
fpai     &
fphi     &
pdot     &
qdot     &
rdot     &
vi       &
alpharc  &
alphalc  &
invvelc  &
inyrnbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix      &
iz      &
ixz     &
wt      &
cg      &
xcg     &
ycg     &
zcg     &
alphaL  &
betaL   &
iexnllc  &
iexnlrc  &
iexnhlc  &
iexnhrc  &
Wx      &
Wy      &
Wz      &
WN      &
WE      &
WD      &
Wmag    &
Wdir    &
Whoriz  &
adot    &
bdot    &
inplonc  &
inplatc  &
inxvelc  &
inyvelc  &
inzvelc  &
betailc  &
betairc  &
betaavg  &
icapllc  &
icaplrc  &
alphad  &
icarxpc  &
icarxyc  &
ica1314c &
ica1315c &
ica1316c &
ica1317c &
ica1318c &
ica1319c &
stpl    &
stpr    &
dstkl   &
dstkr
```

```
--
-- file raw_300  - to form processed ANSER files
--
parameter aap     &
aar     &
aay     &
axcgc    &
aycgc    &
azcgc    &
axckpt   &
ayckpt   &
azckpt   &
dlfli    &
dlfri    &
dlflo    &
dlfro    &
dtfl     &
dtfr     &
dal      &
dar      &
dhl      &
dhr      &
drl      &
drr      &
dsb      &
icailfc  &
icairfc  &
icalloc  &
icarloc  &
icaltpc  &
icartpc  &
icalspc  &
icarspc  &
icalapc  &
icarapc  &
icalrpc  &
icarrpc  &
icallc   &
icatlc   &
icacsc   &
icarcmc  &
icadlc   &
icadtc   &
icadsc   &
icaacmc  &
pcc      &
phic     &
psiangc  &
qc       &
rmc      &
thetac   &
dep      &
icapsfc  &
dap      &
```

```
icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
av01c    &
av02c    &
av03c    &
av04c    &
av05c    &
av06c    &
av07c    &
av08c    &
av09c    &
av10c    &
av11c    &
av12c    &
av13c    &
av14c    &
av15c    &
av16c    &
av17c    &
av18c    &
av19c    &
av20c    &
av21c    &
av22c    &
av23c    &
av24c    &
av25c    &
av26c    &
av27c    &
```

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av28c   &
av29c   &
av30c   &
av31c   &
av32c   &
av39c   &
av40c   &
av41c   &
av42c   &
av43c   &
av44c   &
av45c   &
av46c   &
av50c   &
av51c   &
av52c   &
av53c   &
av54c   &
av55c   &
av56c   &
av57c   &
av58c   &
av59c   &
av60c   &
av69c   &
av70c   &
av71c   &
av72c   &
av73c   &
av74c   &
av75c   &
av76c   &
av77c   &
ax01c   &
ax02c   &
ax03c   &
ax04c   &
ax05c   &
ax06c   &
ax07c   &
ax08c   &
ax09c   &
ax10c   &
ax11c   &
ax12c   &
ax13c   &
ax14c   &
ax15c   &
ax16c   &
ax17c   &
ax18c   &
ax19c   &
ax20c   &
ax21c   &
```

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ax22c    &
ax23c    &
ax24c    &
ax25c    &
ax26c    &
ax27c    &
ax28c    &
ax29c    &
ax30c    &
ax31c    &
ax32c    &
bv07c    &
bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
alpha    &
beta    &
hp      &
mi      &
psinf    &
ptinf    &
qbar     &
qcc     &
vinf    &
vtrue    &
axc     &
ayc     &
azc     &
fpai    &
fphi    &
pdot     &
qdot     &
rdot    &
vi     &
alpharc  &
alphalc  &
invvelc  &
inymbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix      &
iz      &
ixz     &
wt      &
cg      &
xcg     &
ycg     &
zcg     &
alphaL  &
betaL   &
iexnllc &
iexnlrc &
iexnhlc &
iexnhrc &
Wx      &
Wy      &
Wz      &
WN      &
WE      &
WD      &
Wmag    &
Wdir    &
Whoriz  &
adot    &
bdot    &
inplonc &
inplatc &
inxvelc &
inyvelc &
inzvelc &
betailc &
betairc &
betaavg &
icapllc &
icaplrc &
alphad  &
icarxpc &
icarxyc &
av78c &
av79c &
av80c &
av81c &
av82c &
av83c &
stpl    &
stpr    &
dstkl   &
dstkr
```

```
--
-- file raw_314  - to form processed ANSER files
--
parameter aap      &
aar     &
aay     &
axcgc    &
aycgc    &
azcgc    &
axckpt   &
ayckpt   &
azckpt   &
dlfli    &
dlfri    &
dlflo    &
dlfro    &
dtfl     &
dtfr     &
dal      &
dar      &
dhl      &
dhr      &
drl      &
drr      &
dsb      &
icailfc  &
icairfc  &
icalloc  &
icarloc  &
icaltpc  &
icartpc  &
icalspc  &
icarspc  &
icalapc  &
icarapc  &
icalrpc  &
icarrpc  &
icallc   &
icatlc   &
icacsc   &
icarcmc  &
icadlc   &
icadtc   &
icadsc   &
icaacmc  &
pcc      &
phic     &
psiangc  &
qc       &
rmc      &
thetac   &
dep      &
icapsfc  &
dap      &
```

```
icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
av01c    &
av02c    &
av03c    &
av04c    &
av05c    &
av06c    &
av07c    &
av08c    &
av09c    &
av10c    &
av11c    &
av12c    &
av13c    &
av14c    &
av15c    &
av16c    &
av17c    &
av18c    &
av19c    &
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av22c    &
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av27c    &
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av45c    &
av46c    &
av50c    &
av51c    &
av52c    &
av53c    &
av54c    &
av55c    &
av56c    &
av57c    &
av58c    &
av59c    &
av60c    &
av69c    &
av70c    &
av71c    &
av72c    &
av73c    &
av74c    &
av75c    &
av76c    &
av77c    &
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ax02c    &
ax03c    &
ax04c    &
ax05c    &
ax06c    &
ax07c    &
ax08c    &
ax09c    &
ax10c    &
ax11c    &
ax12c    &
ax13c    &
ax14c    &
ax15c    &
ax16c    &
ax17c    &
ax18c    &
ax19c    &
ax20c    &
ax21c    &
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ax22c    &
ax23c    &
ax24c    &
ax25c    &
ax26c    &
ax27c    &
ax28c    &
ax29c    &
ax30c    &
ax31c    &
ax32c    &
bv07c    &
bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
alpha    &
beta     &
hp       &
mi       &
psinf    &
ptinf    &
qbar     &
qcc      &
vinf     &
vtrue    &
axc      &
ayc      &
azc      &
fpai     &
fphi     &
pdot     &
qdot     &
rdot     &
vi       &
alpharc  &
alphalc  &
invvelc  &
inyrnbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix      &
iz      &
ixz     &
wt      &
cg      &
xcg     &
ycg     &
zcg     &
alphaL   &
betaL   &
iexnllc  &
iexnlrc  &
iexnhlc  &
iexnhrc  &
Wx      &
Wy      &
Wz      &
WN      &
WE      &
WD      &
Wmag     &
Wdir    &
Whoriz   &
adot    &
bdot    &
inplonc  &
inplatc  &
inxvelc  &
inyvelc  &
inzvelc  &
betailc  &
betairc  &
betaavg  &
icapllc  &
icaplrc  &
alphad   &
icarxpc  &
icarxyc  &
av78c  &
av79c  &
av80c  &
av81c  &
av82c  &
av83c  &
stpl    &
stpr    &
dstkl   &
dstkr   &
lsrla   &
```

lsrlb &
rsrla &
rsrlb

```
--
-- file raw_329  - to form processed ANSER files
-- 10-16-95
parameter aap      &
aar      &
aay      &
axcgc    &
aycgc    &
azcgc    &
axckpt   &
ayckpt   &
azckpt   &
dlfli    &
dlfri    &
dlflo    &
dlfro    &
dtfl     &
dtfr     &
dal      &
dar      &
dhl      &
dhr      &
drl      &
drr      &
dsb      &
icailfc  &
icairfc  &
icalloc  &
icarloc  &
icaltpc  &
icartpc  &
icalspc  &
icarspc  &
icalapc  &
icarapc  &
icalrpc  &
icarrpc  &
icallc   &
icatlc   &
icacsc   &
icarcmc  &
icadlc   &
icadtc   &
icadsc   &
icaacmc  &
pcc      &
phic     &
psiangc  &
qc       &
rmc      &
thetac   &
dep      &
icapsfc  &
dap      &
```

```
icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
av01c    &
av02c    &
av03c    &
av04c    &
av05c    &
av06c    &
av07c    &
av08c    &
av09c    &
av10c    &
av11c    &
av12c    &
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av19c    &
av20c    &
av21c    &
av22c    &
av23c    &
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av25c    &
av26c    &
av27c    &
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av28c &
av29c &
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av31c &
av32c &
av39c &
av40c &
av41c &
av42c &
av43c &
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av45c &
av46c &
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ax07c &
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ax12c &
ax13c &
ax14c &
ax15c &
ax16c &
ax17c &
ax18c &
ax19c &
ax20c &
ax21c &

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ax22c    &
ax23c    &
ax24c    &
ax25c    &
ax26c    &
ax27c    &
ax28c    &
ax29c    &
ax30c    &
ax31c    &
ax32c    &
bv07c    &
bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
alpha    &
beta     &
hp       &
mi       &
psinf    &
ptinf    &
qbar     &
qcc      &
vinf     &
vtrue    &
axc      &
ayc      &
azc      &
fpai     &
fphi     &
pdot     &
qdot     &
rdot     &
vi       &
alpharc  &
alphalc  &
invvelc  &
inyrnbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix      &
iz      &
ixz     &
wt      &
cg      &
xcg     &
ycg     &
zcg     &
alphaL  &
betaL   &
iexnllc  &
iexnlrc  &
iexnhlc  &
iexnhrc  &
Wx      &
Wy      &
Wz      &
WN      &
WE      &
WD      &
Wmag    &
Wdir    &
Whoriz  &
adot    &
bdot    &
inplonc  &
inplatc  &
inxvelc  &
inyvelc  &
inzvelc  &
betailc  &
betairc  &
betaavg  &
icapllc  &
icaplrc  &
alphad   &
icarxpc  &
icarxyc  &
av78c  &
av79c  &
av80c  &
av81c  &
av82c  &
av83c  &
stpl    &
stpr    &
dstkl    &
dstkr    &
lsrla    &
```

```
lsrlb   &
rsrla   &
rsrlb   &
vtrue1  &
rho     &
drfl    &
drfr
```

```
--
-- file raw_332  - to form processed ANSER files
-- 10-31-95
parameter aap      &
aar     &
aay     &
axcgc   &
aycgc   &
azcgc   &
axckpt  &
ayckpt  &
azckpt  &
dlfli   &
dlfri   &
dlflo   &
dlfro   &
dtfl    &
dtfr    &
dal     &
dar     &
dhl     &
dhr     &
drl     &
drr     &
dsb     &
icailfc &
icairfc &
icalloc &
icarloc &
icaltpc &
icartpc &
icalspc &
icarspc &
icalapc &
icarapc &
icalrpc &
icarrpc &
icallc  &
icatlc  &
icacsc  &
icarcmc &
icadlc  &
icadtc  &
icadsc  &
icaacmc &
pcc     &
phic    &
psiangc &
qc      &
rmc     &
thetac  &
dep     &
icapsfc &
dap     &
```

```
icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
av01c    &
av02c    &
av03c    &
av04c    &
av05c    &
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av19c    &
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av21c    &
av22c    &
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av28c &
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av55c &
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av73c &
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av76c &
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ax02c &
ax03c &
ax04c &
ax05c &
ax06c &
ax07c &
ax08c &
ax09c &
ax10c &
ax11c &
ax12c &
ax13c &
ax14c &
ax15c &
ax16c &
ax17c &
ax18c &
ax19c &
ax20c &
ax21c &

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ax22c    &
ax23c    &
ax24c    &
ax25c    &
ax26c    &
ax27c    &
ax28c    &
ax29c    &
ax30c    &
ax31c    &
ax32c    &
bv07c    &
bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
alpha    &
beta     &
hp       &
mi       &
psinf    &
ptinf    &
qbar     &
qcc      &
vinf     &
vtrue    &
axc      &
ayc      &
azc      &
fpai     &
fphi     &
pdot     &
qdot     &
rdot     &
vi       &
alpharc  &
alphalc  &
invvelc  &
inyrnbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix       &
iz       &
ixz      &
wt       &
cg       &
xcg      &
ycg      &
zcg      &
alphaL   &
betaL    &
iexnllc  &
iexnlrc  &
iexnhlc  &
iexnhrc  &
Wx       &
Wy       &
Wz       &
WN       &
WE       &
WD       &
Wmag     &
Wdir     &
Whoriz   &
adot     &
bdot     &
inplonc  &
inplatc  &
inxvelc  &
inyvelc  &
inzvelc  &
betailc  &
betairc  &
betaavg  &
icapllc  &
icaplrc  &
alphad   &
icarxpc  &
icarxyc  &
av78c  &
av79c  &
av80c  &
av81c  &
av82c  &
av83c  &
stpl     &
stpr     &
dstkl    &
dstkr    &
lsrla    &
```

```
lsrlb   &
rsrla   &
rsrlb   &
vtrue1   &
rho     &
drfl    &
drfr    &
iaalrtc  &
beta_joe &
iy
```

```
--
-- file raw_362 from raw_332  - to form processed ANSER files
-- 4-19-96 add ayvtr
parameter aap      &
aar     &
aay     &
axcgc   &
aycgc   &
azcgc   &
axckpt  &
ayckpt  &
azckpt  &
dlfli   &
dlfri   &
dlflo   &
dlfro   &
dtfl    &
dtfr    &
dal     &
dar     &
dhl     &
dhr     &
drl     &
drr     &
dsb     &
icailfc &
icairfc &
icalloc &
icarloc &
icaltpc &
icartpc &
icalspc &
icarspc &
icalapc &
icarapc &
icalrpc &
icarrpc &
icallc  &
icatlc  &
icacsc  &
icarcmc &
icadlc  &
icadtc  &
icadsc  &
icaacmc &
pcc     &
phic    &
psiangc &
qc      &
rmc     &
thetac  &
dep     &
icapsfc &
dap     &
```

```
icarsfc  &
drp      &
icarpfc  &
zrengm   &
zrarmm   &
icaspn   &
icasps   &
icassa   &
ienozlc  &
ienozrc  &
ietdplc  &
ietdprc  &
icarrc   &
icarric  &
icartic  &
icaptic  &
icaprtc  &
icarrtc  &
icayrtc  &
icanacc  &
icalacc  &
icaatrc  &
icaiipc  &
icaispc  &
iaimprc  &
iamachc  &
iataspc  &
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av19c    &
av20c    &
av21c    &
av22c    &
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av24c    &
av25c    &
av26c    &
av27c    &
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av28c &
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ax14c &
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ax16c &
ax17c &
ax18c &
ax19c &
ax20c &
ax21c &

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ax22c    &
ax23c    &
ax24c    &
ax25c    &
ax26c    &
ax27c    &
ax28c    &
ax29c    &
ax30c    &
ax31c    &
ax32c    &
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bv08c    &
bv09c    &
bv10c    &
bv11c    &
bx10c    &
bx11c    &
bx12c    &
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beta     &
hp       &
mi       &
psinf    &
ptinf    &
qbar     &
qcc      &
vinf     &
vtrue    &
axc      &
ayc      &
azc      &
fpai     &
fphi     &
pdot     &
qdot     &
rdot     &
vi       &
alpharc  &
alphalc  &
invvelc  &
inyrnbc  &
inyrwbc  &
inirolc  &
inlatac  &
inlonac  &
innaccc  &
innrmac  &
innvelc  &
inorolc  &
inprnbc  &
inprwbc  &
inptchc  &
inrrnbc  &
```

```
inrrwbc  &
inthdgc  &
invaccc  &
inevelc  &
iaatmpc  &
ix     &
iz     &
ixz    &
wt     &
cg     &
xcg    &
ycg    &
zcg    &
alphaL   &
betaL   &
iexnllc  &
iexnlrc  &
iexnhlc  &
iexnhrc  &
Wx     &
Wy     &
Wz     &
WN     &
WE     &
WD     &
Wmag    &
Wdir    &
Whoriz   &
adot    &
bdot    &
inplonc  &
inplatc  &
inxvelc  &
inyvelc  &
inzvelc  &
betailc  &
betairc  &
betaavg  &
icapllc  &
icaplrc  &
alphad   &
icarxpc  &
icarxyc  &
av78c  &
av79c  &
av80c  &
av81c  &
av82c  &
av83c  &
stpl    &
stpr    &
dstkl   &
dstkr   &
lsrla   &
```

```
lsrlb    &
rsrla    &
rsrlb    &
vtrue1   &
rho      &
drfl     &
drfr     &
iaalrtc  &
beta_joe &
iy       &
ayvtr
```

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Appendix C
LaRC Signal Files, or Parameter Lists, for Processed Data

Contents

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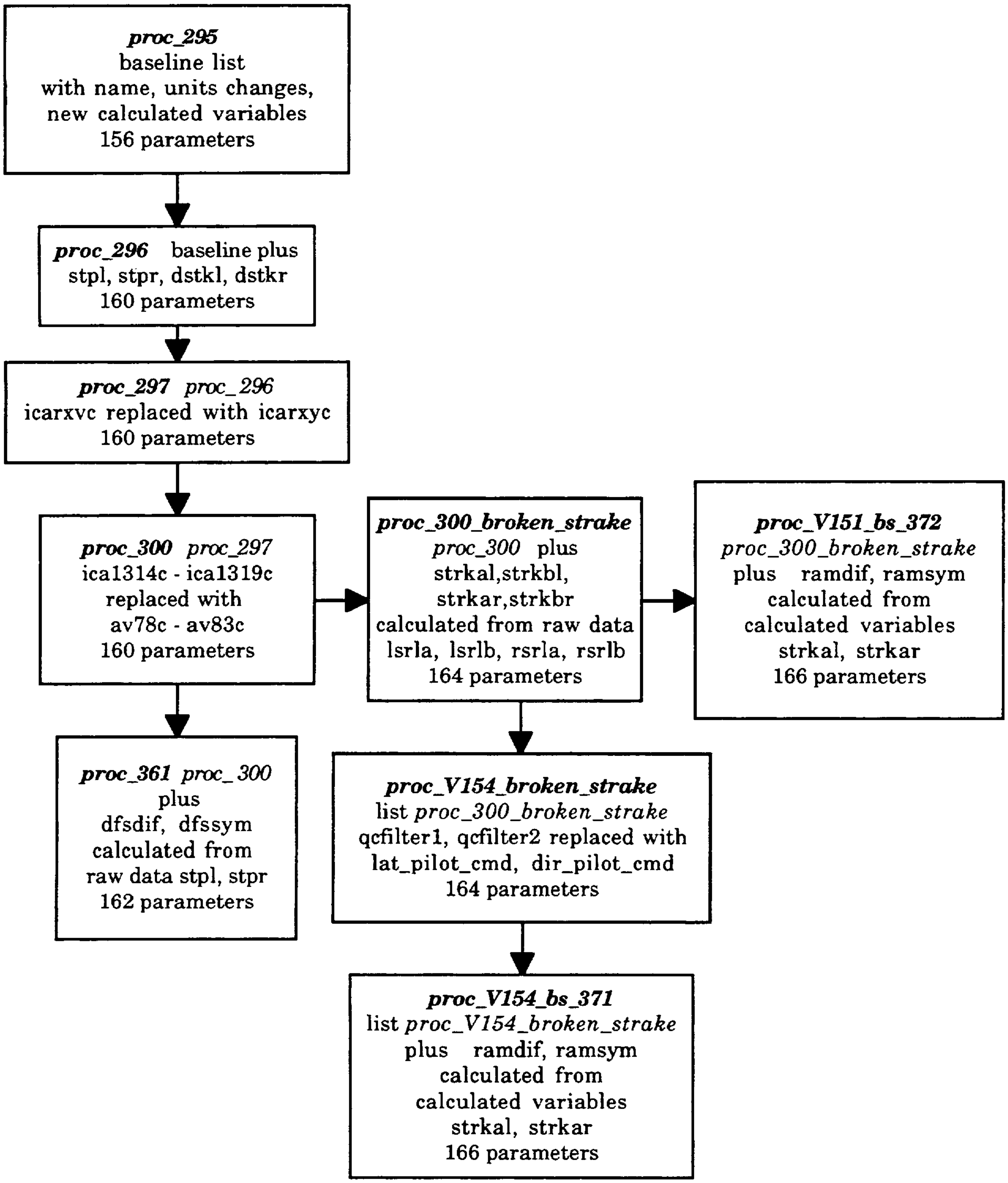

Figure C1.- Differences in signal files, or parameter lists, for processed data.

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Signal files used to process data files (Pxxxy.cmp3).

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```
--
-- file proc_295 - to form processed ANSER files
--
sigs &
DEP &
PSTICK = AX21C &
ICAPSFC &
PSGTOT = AX09C &
DAP &
LAT_STICK_IN = AX22C &
LATST_CMD = AV10C &
DRP &
RUDPED_CMD = AX16C &
RUDPED_LBS = AX23C &
OBES_FNCTION = AV21C &
OBES_FNCTION_2 = AV16C &
PLAL = ICAPLLC &
PLAR = ICAPLRC &
DHL &
ICALSPC &
DHR &
ICARSPC &
ICADSC &
DLFLI &
DLFLO &
DLFRI &
DLFRO &
ICADLC &
DTFL &
DTFR &
ICADTC &
DAL &
ICALAPC &
DAR &
ICARAPC &
ICAACMC &
DRL &
ICALRPC &
DRR &
ICARRPC &
ICARCMC &
DSB &
PJETAC = AV01C &
YJETAC = -AV02C &
VANECDG1 &
VANECDG2 &
VANECDG3 &
VANECDG4 &
VANECDG5 &
VANECDG6 &
VANEPDG1 &
VANEPDG2 &
VANEPDG3 &
VANEPDG4 &
VANEPDG5 &
VANEPDG6 &
FslcLim_deg = AV14C &
FsrcLim_deg = AV15C &
```

```
 HP  &
 RFCS_ALT = AV50C  &
 IAALRTC  &
 RFCS_PSI = 70.726912*"AV56C"  &
 PS = ICA1319C &
 RFCS_QCI = 70.726912*"AV57C"  &
 QCI_SS = AV32C &
 QCFILTER1 = AX05C  &
 QCFILTER2 = AX06C  &
 RFCS_RI = AV58C  &
 IAMACHC  &
 RFCS_MACH = AV30C  &
 VTRUE  &
 VINF  &
 RFCS_AIRSPD = 2.535*"AV51C"  &
 ALPHA  &
 AOA_SS = AV27C  &
 RFCS_AOA = AV52C  &
 GAUGE_ALPHA = ALPHAD   &
 AOAINS = AV22C  &
 RFCS_AOA_RATE = AV53C  &
 BETA  &
 BETA_JOE  &
 RFCS_BETA = AV54C  &
 GAUGE_BETA = BETAAVG   &
 RFCS_BETA_DOT = AV55C  &
 QC  &
 RFCS_Q = AV23C  &
 PCC  &
 RMC  &
 RFCS_R = AV24C  &
 THETAC  &
 PHIC  &
 PHIWND &
 PSIANGC  &
     AXCFT   =  32.174*"axc" &
     AYCFT   =  32.174*"ayc" &
     AZCFT   =  32.174*"azc" &
     AXCGCFT  =  32.174*"axcgc" &
     AYCGCFT  =  32.174*"aycgc" &
     AZCGCFT  =  -32.174*"azcgc" &
 AXCKPT = AXCKPT  &
 AYCKPT = AYCKPT  &
 AZCKPT = AZCKPT  &
 RFCS_NZ = AX17C  &
 NY_G = AX18C  &
 PDOT  &
 QDOT  &
 RDOT  &
 ZRARMM  &
 ZRENGM  &
 FPAI  &
 INPLONC  &
 INPLATC  &
 LGTHR = ICARRIC  &
 RGTHR = ICARRC  &
 LNPR = ICARXPC  &
 RNPR = ICARXVC  &
```

```
P56L = ietdplc  &
P56R = ietdprc  &
A8L  &
A8R  &
R8INL &
R8INR &
IX  &
IY  &
IZ  &
IXZ  &
WT  &
XCG  &
YCG  &
ZCG  &
AOATR = AV25C  &
YCMD = AX30C  &
PSGTERM = AV19C  &
QCOMP = AV26C  &
DY = AV28C  &
UME11 = AV29C  &
VBRK1 = AX27C  &
UK1 = AV31C &
SBPAC1 = AX01C  &
GTILY1 = ICA1314C &
GTILY2 = ICA1315C &
GTILY3 = ICA1316C &
GTILU1 = ICA1317C &
GTILZ1 = ICA1318C &
SFSyaw = AV13C  &
LABYLTV = AX24C  &
PSTAB_RPS = AX25C  &
DD_LIM_DEG = AX04C  &
VROLL = AV03C  &
VYAW = AV04C  &
NYADJ_G = AV11C  &
RSTABCOMP_RPS = AV12C  &
VLAT_FILT_RPS2 = AV05C  &
VDIR_FILT_RPS2 = AV06C  &
NABYNTV = AX19C  &
AYCORR_G = AX28C  &
PDSMAX = AX29C  &
STVYAW = AX31C  &
Bdotint_rps = AX14C  &
Bdot_inert_dps = AV17C
```

```
--
-- file proc_296  - to form processed ANSER files
--
sigs &
DEP  &
PSTICK = AX21C  &
ICAPSFC  &
PSGTOT = AX09C  &
DAP  &
LAT_STICK_IN = AX22C  &
LATST_CMD = AV10C  &
DRP  &
RUDPED_CMD = AX16C  &
RUDPED_LBS = AX23C  &
OBES_FNCTION = AV21C  &
OBES_FNCTION_2 = AV16C  &
PLAL = ICAPLLC  &
PLAR = ICAPLRC  &
DHL  &
ICALSPC  &
DHR  &
ICARSPC  &
ICADSC  &
DLFLI  &
DLFLO  &
DLFRI  &
DLFRO  &
ICADLC  &
DTFL  &
DTFR  &
ICADTC  &
DAL  &
ICALAPC  &
DAR  &
ICARAPC  &
ICAACMC  &
DRL  &
ICALRPC  &
DRR  &
ICARRPC  &
ICARCMC  &
DSB  &
PJETAC = AV01C  &
YJETAC =  -AV02C  &
VANECDG1  &
VANECDG2  &
VANECDG3  &
VANECDG4  &
VANECDG5  &
VANECDG6  &
VANEPDG1  &
VANEPDG2  &
VANEPDG3  &
VANEPDG4  &
VANEPDG5  &
VANEPDG6  &
FslcLim_deg = AV14C  &
FsrcLim_deg = AV15C  &
```

```
DSTKL &
DSTKR &
STPL &
STPR &
HP  &
RFCS_ALT = AV50C  &
IAALRTC  &
RFCS_PSI = 70.726912*"AV56C" &
PS = ICA1319C &
RFCS_QCI = 70.726912*"AV57C" &
QCI_SS = AV32C &
QCFILTER1 = AX05C  &
QCFILTER2 = AX06C  &
RFCS_RI = AV58C  &
IAMACHC  &
RFCS_MACH = AV30C  &
VTRUE  &
VINF  &
RFCS_AIRSPD = 2.535*"AV51C" &
ALPHA  &
AOA_SS = AV27C  &
RFCS_AOA = AV52C  &
GAUGE_ALPHA = ALPHAD   &
AOAINS = AV22C  &
RFCS_AOA_RATE = AV53C  &
BETA  &
BETA_JOE  &
RFCS_BETA = AV54C  &
GAUGE_BETA = BETAAVG   &
RFCS_BETA_DOT = AV55C  &
QC  &
RFCS_Q = AV23C  &
PCC  &
RMC  &
RFCS_R = AV24C  &
THETAC  &
PHIC  &
PHIWND &
PSIANGC  &
    AXCFT    =  32.174*"axc" &
    AYCFT    =  32.174*"ayc" &
    AZCFT    =  32.174*"azc" &
    AXCGCFT  =  32.174*"axcgc" &
    AYCGCFT  =  32.174*"aycgc" &
    AZCGCFT  =  -32.174*"azcgc" &
AXCKPT = AXCKPT  &
AYCKPT = AYCKPT  &
AZCKPT = AZCKPT  &
RFCS_NZ = AX17C  &
NY_G = AX18C  &
PDOT  &
QDOT  &
RDOT  &
ZRARMM  &
ZRENGM  &
FPAI  &
INPLONC  &
INPLATC  &
```

```
LGTHR = ICARRIC  &
RGTHR = ICARRC  &
LNPR = ICARXPC  &
RNPR = ICARXVC  &
P56L = ietdplc  &
P56R = ietdprc  &
A8L  &
A8R  &
R8INL &
R8INR &
IX  &
IY  &
IZ  &
IXZ  &
WT  &
XCG  &
YCG  &
ZCG  &
AOATR = AV25C  &
YCMD = AX30C  &
PSGTERM = AV19C  &
QCOMP = AV26C  &
DY = AV28C  &
UME11 = AV29C  &
VBRK1 = AX27C  &
UK1 = AV31C &
SBPAC1 = AX01C  &
GTILY1 = ICA1314C &
GTILY2 = ICA1315C &
GTILY3 = ICA1316C &
GTILU1 = ICA1317C &
GTILZ1 = ICA1318C &
SFSyaw = AV13C  &
LABYLTV = AX24C  &
PSTAB_RPS = AX25C  &
DD_LIM_DEG = AX04C  &
VROLL = AV03C  &
VYAW = AV04C  &
NYADJ_G = AV11C  &
RSTABCOMP_RPS = AV12C  &
VLAT_FILT_RPS2 = AV05C  &
VDIR_FILT_RPS2 = AV06C  &
NABYNTV = AX19C  &
AYCORR_G = AX28C  &
PDSMAX = AX29C  &
STVYAW = AX31C  &
Bdotint_rps = AX14C  &
Bdot_inert_dps = AV17C
```

```
--
-- file proc_297, 298, 299 - to form processed ANSER files
--
sigs &
DEP &
PSTICK = AX21C &
ICAPSFC &
PSGTOT = AX09C &
DAP &
LAT_STICK_IN = AX22C &
LATST_CMD = AV10C &
DRP &
RUDPED_CMD = AX16C &
RUDPED_LBS = AX23C &
OBES_FNCTION = AV21C &
OBES_FNCTION_2 = AV16C &
PLAL = ICAPLLC &
PLAR = ICAPLRC &
DHL &
ICALSPC &
DHR &
ICARSPC &
ICADSC &
DLFLI &
DLFLO &
DLFRI &
DLFRO &
ICADLC &
DTFL &
DTFR &
ICADTC &
DAL &
ICALAPC &
DAR &
ICARAPC &
ICAACMC &
DRL &
ICALRPC &
DRR &
ICARRPC &
ICARCMC &
DSB &
PJETAC = AV01C &
YJETAC = -AV02C &
VANECDG1 &
VANECDG2 &
VANECDG3 &
VANECDG4 &
VANECDG5 &
VANECDG6 &
VANEPDG1 &
VANEPDG2 &
VANEPDG3 &
VANEPDG4 &
VANEPDG5 &
VANEPDG6 &
FslcLim_deg = AV14C &
FsrcLim_deg = AV15C &
```

```
DSTKL &
DSTKR &
STPL &
STPR &
HP &
RFCS_ALT = AV50C &
IAALRTC &
RFCS_PSI = 70.726912*"AV56C" &
PS = ICA1319C &
RFCS_QCI = 70.726912*"AV57C" &
QCI_SS = AV32C &
QCFILTER1 = AX05C &
QCFILTER2 = AX06C &
RFCS_RI = AV58C &
IAMACHC &
RFCS_MACH = AV30C &
VTRUE &
VINF &
RFCS_AIRSPD = 2.535*"AV51C" &
ALPHA &
AOA_SS = AV27C &
RFCS_AOA = AV52C &
GAUGE_ALPHA = ALPHAD &
AOAINS = AV22C &
RFCS_AOA_RATE = AV53C &
BETA &
BETA_JOE &
RFCS_BETA = AV54C &
GAUGE_BETA = BETAAVG &
RFCS_BETA_DOT = AV55C &
QC &
RFCS_Q = AV23C &
PCC &
RMC &
RFCS_R = AV24C &
THETAC &
PHIC &
PHIWND &
PSIANGC &
    AXCFT   = 32.174*"axc" &
    AYCFT   = 32.174*"ayc" &
    AZCFT   = 32.174*"azc" &
    AXCGCFT  = 32.174*"axcgc" &
    AYCGCFT  = 32.174*"aycgc" &
    AZCGCFT  = -32.174*"azcgc" &
AXCKPT = AXCKPT &
AYCKPT = AYCKPT &
AZCKPT = AZCKPT &
RFCS_NZ = AX17C &
NY_G = AX18C &
PDOT &
QDOT &
RDOT &
ZRARMM &
ZRENGM &
FPAI &
INPLONC &
INPLATC &
```

```
LGTHR = ICARRIC  &
RGTHR = ICARRC  &
LNPR = ICARXPC  &
RNPR = ICARXYC  &
P56L = ietdplc  &
P56R = ietdprc  &
A8L  &
A8R  &
R8INL &
R8INR &
IX  &
IY  &
IZ  &
IXZ  &
WT  &
XCG  &
YCG  &
ZCG  &
AOATR = AV25C  &
YCMD = AX30C  &
PSGTERM = AV19C  &
QCOMP = AV26C  &
DY = AV28C  &
UME11 = AV29C  &
VBRK1 = AX27C  &
UK1 = AV31C &
SBPAC1 = AX01C  &
GTILY1 = ICA1314C &
GTILY2 = ICA1315C &
GTILY3 = ICA1316C &
GTILU1 = ICA1317C &
GTILZ1 = ICA1318C &
SFSyaw = AV13C  &
LABYLTV = AX24C  &
PSTAB_RPS = AX25C  &
DD_LIM_DEG = AX04C  &
VROLL = AV03C  &
VYAW = AV04C  &
NYADJ_G = AV11C  &
RSTABCOMP_RPS = AV12C  &
VLAT_FILT_RPS2 = AV05C  &
VDIR_FILT_RPS2 = AV06C  &
NABYNTV = AX19C  &
AYCORR_G = AX28C  &
PDSMAX = AX29C  &
STVYAW = AX31C  &
Bdotint_rps = AX14C  &
Bdot_inert_dps = AV17C
```

```
--
-- file proc_300 - to form processed ANSER files
--
sigs &
DEP &
PSTICK = AX21C &
ICAPSFC &
PSGTOT = AX09C &
DAP &
LAT_STICK_IN = AX22C &
LATST_CMD = AV10C &
DRP &
RUDPED_CMD = AX16C &
RUDPED_LBS = AX23C &
OBES_FNCTION = AV21C &
OBES_FNCTION_2 = AV16C &
PLAL = ICAPLLC &
PLAR = ICAPLRC &
DHL &
ICALSPC &
DHR &
ICARSPC &
ICADSC &
DLFLI &
DLFLO &
DLFRI &
DLFRO &
ICADLC &
DTFL &
DTFR &
ICADTC &
DAL &
ICALAPC &
DAR &
ICARAPC &
ICAACMC &
DRL &
ICALRPC &
DRR &
ICARRPC &
ICARCMC &
DSB &
PJETAC = AV01C &
YJETAC = -AV02C &
VANECDG1 &
VANECDG2 &
VANECDG3 &
VANECDG4 &
VANECDG5 &
VANECDG6 &
VANEPDG1 &
VANEPDG2 &
VANEPDG3 &
VANEPDG4 &
VANEPDG5 &
VANEPDG6 &
FslcLim_deg = AV14C &
FsrcLim_deg = AV15C &
```

```
DSTKL &
DSTKR &
STPL &
STPR &
HP  &
RFCS_ALT = AV50C  &
IAALRTC  &
RFCS_PSI = 70.726912*"AV56C" &
PS = AV83C &
RFCS_QCI = 70.726912*"AV57C" &
QCI_SS = AV32C &
QCFILTER1 = AX05C  &
QCFILTER2 = AX06C  &
RFCS_RI = AV58C  &
IAMACHC  &
RFCS_MACH = AV30C  &
VTRUE  &
VINF  &
RFCS_AIRSPD = 2.535*"AV51C" &
ALPHA  &
AOA_SS = AV27C  &
RFCS_AOA = AV52C  &
GAUGE_ALPHA = ALPHAD   &
AOAINS = AV22C  &
RFCS_AOA_RATE = AV53C  &
BETA  &
BETA_JOE  &
RFCS_BETA = AV54C  &
GAUGE_BETA = BETAAVG   &
RFCS_BETA_DOT = AV55C  &
QC  &
RFCS_Q = AV23C  &
PCC  &
RMC  &
RFCS_R = AV24C  &
THETAC  &
PHIC  &
PHIWND &
PSIANGC  &
    AXCFT   =  32.174*"axc" &
    AYCFT   =  32.174*"ayc" &
    AZCFT   =  32.174*"azc" &
    AXCGCFT  =  32.174*"axcgc" &
    AYCGCFT  =  32.174*"aycgc" &
    AZCGCFT  =  -32.174*"azcgc" &
AXCKPT = AXCKPT  &
AYCKPT = AYCKPT  &
AZCKPT = AZCKPT  &
RFCS_NZ = AX17C  &
NY_G = AX18C  &
PDOT  &
QDOT  &
RDOT  &
ZRARMM  &
ZRENGM  &
FPAI  &
INPLONC  &
INPLATC  &
```

```
LGTHR = ICARRIC &
RGTHR = ICARRC &
LNPR = ICARXPC &
RNPR = ICARXYC &
P56L = ietdplc &
P56R = ietdprc &
A8L &
A8R &
R8INL &
R8INR &
IX &
IY &
IZ &
IXZ &
WT &
XCG &
YCG &
ZCG &
AOATR = AV25C &
YCMD = AX30C &
PSGTERM = AV19C &
QCOMP = AV26C &
DY = AV28C &
UME11 = AV29C &
VBRK1 = AX27C &
UK1 = AV31C &
SBPAC1 = AX01C &
GTILY1 = AV78C &
GTILY2 = AV79C &
GTILY3 = AV80C &
GTILU1 = AV81C &
GTILZ1 = AV82C &
SFSyaw = AV13C &
LABYLTV = AX24C &
PSTAB_RPS = AX25C &
DD_LIM_DEG = AX04C &
VROLL = AV03C &
VYAW = AV04C &
NYADJ_G = AV11C &
RSTABCOMP_RPS = AV12C &
VLAT_FILT_RPS2 = AV05C &
VDIR_FILT_RPS2 = AV06C &
NABYNTV = AX19C &
AYCORR_G = AX28C &
PDSMAX = AX29C &
STVYAW = AX31C &
Bdotint_rps = AX14C &
Bdot_inert_dps = AV17C
```

```
--
-- file proc_300_broken_strake - to form processed ANSER files
--  to fix broken strakes (when stpl or stpr is unavailable)
--
sigs &
DEP &
PSTICK = AX21C &
ICAPSFC &
PSGTOT = AX09C &
DAP &
LAT_STICK_IN = AX22C &
LATST_CMD = AV10C &
DRP &
RUDPED_CMD = AX16C &
RUDPED_LBS = AX23C &
OBES_FNCTION = AV21C &
OBES_FNCTION_2 = AV16C &
PLAL = ICAPLLC &
PLAR = ICAPLRC &
DHL &
ICALSPC &
DHR &
ICARSPC &
ICADSC &
DLFLI &
DLFLO &
DLFRI &
DLFRO &
ICADLC &
DTFL &
DTFR &
ICADTC &
DAL &
ICALAPC &
DAR &
ICARAPC &
ICAACMC &
DRL &
ICALRPC &
DRR &
ICARRPC &
ICARCMC &
DSB &
PJETAC = AV01C &
YJETAC = -AV02C &
VANECDG1 &
VANECDG2 &
VANECDG3 &
VANECDG4 &
VANECDG5 &
VANECDG6 &
VANEPDG1 &
VANEPDG2 &
VANEPDG3 &
VANEPDG4 &
VANEPDG5 &
VANEPDG6 &
FslcLim_deg = AV14C &
```

```
FsrcLim_deg = AV15C &
DSTKL &
DSTKR &
STPL &
STPR &
HP &
RFCS_ALT = AV50C &
IAALRTC &
RFCS_PSI = 70.726912*"AV56C" &
PS = AV83C &
RFCS_QCI = 70.726912*"AV57C" &
QCI_SS = AV32C &
QCFILTER1 = AX05C &
QCFILTER2 = AX06C &
RFCS_RI = AV58C &
IAMACHC &
RFCS_MACH = AV30C &
VTRUE &
VINF &
RFCS_AIRSPD = 2.535*"AV51C" &
ALPHA &
AOA_SS = AV27C &
RFCS_AOA = AV52C &
GAUGE_ALPHA = ALPHAD &
AOAINS = AV22C &
RFCS_AOA_RATE = AV53C &
BETA &
BETA_JOE &
RFCS_BETA = AV54C &
GAUGE_BETA = BETAAVG &
RFCS_BETA_DOT = AV55C &
QC &
RFCS_Q = AV23C &
PCC &
RMC &
RFCS_R = AV24C &
THETAC &
PHIC &
PHIWND &
PSIANGC &
    AXCFT   = 32.174*"axc" &
    AYCFT   = 32.174*"ayc" &
    AZCFT   = 32.174*"azc" &
    AXCGCFT  = 32.174*"axcgc" &
    AYCGCFT  = 32.174*"aycgc" &
    AZCGCFT  = -32.174*"azcgc" &
AXCKPT = AXCKPT &
AYCKPT = AYCKPT &
AZCKPT = AZCKPT &
RFCS_NZ = AX17C &
NY_G = AX18C &
PDOT &
QDOT &
RDOT &
ZRARMM &
ZRENGM &
FPAI &
INPLONC &
```

```
INPLATC &
LGTHR = ICARRIC &
RGTHR = ICARRC &
LNPR = ICARXPC &
RNPR = ICARXYC &
P56L = ietdplc &
P56R = ietdprc &
A8L &
A8R &
R8INL &
R8INR &
IX &
IY &
IZ &
IXZ &
WT &
XCG &
YCG &
ZCG &
AOATR = AV25C &
YCMD = AX30C &
PSGTERM = AV19C &
QCOMP = AV26C &
DY = AV28C &
UME11 = AV29C &
VBRK1 = AX27C &
UK1 = AV31C &
SBPAC1 = AX01C &
GTILY1 = AV78C &
GTILY2 = AV79C &
GTILY3 = AV80C &
GTILU1 = AV81C &
GTILZ1 = AV82C &
SFSyaw = AV13C &
LABYLTV = AX24C &
PSTAB_RPS = AX25C &
DD_LIM_DEG = AX04C &
VROLL = AV03C &
VYAW = AV04C &
NYADJ_G = AV11C &
RSTABCOMP_RPS = AV12C &
VLAT_FILT_RPS2 = AV05C &
VDIR_FILT_RPS2 = AV06C &
NABYNTV = AX19C &
AYCORR_G = AX28C &
PDSMAX = AX29C &
STVYAW = AX31C &
Bdotint_rps = AX14C &
Bdot_inert_dps = AV17C &
strkal &
strkbl &
strkar &
strkbr
```

```
--
-- file proc_361 from proc_300  - to form processed ANSER files
--
sigs &
DEP  &
PSTICK = AX21C  &
ICAPSFC  &
PSGTOT = AX09C  &
DAP  &
LAT_STICK_IN = AX22C  &
LATST_CMD = AV10C  &
DRP  &
RUDPED_CMD = AX16C  &
RUDPED_LBS = AX23C  &
OBES_FNCTION = AV21C  &
OBES_FNCTION_2 = AV16C  &
PLAL = ICAPLLC  &
PLAR = ICAPLRC  &
DHL  &
ICALSPC  &
DHR  &
ICARSPC  &
ICADSC  &
DLFLI  &
DLFLO  &
DLFRI  &
DLFRO  &
ICADLC  &
DTFL  &
DTFR  &
ICADTC  &
DAL  &
ICALAPC  &
DAR  &
ICARAPC  &
ICAACMC  &
DRL  &
ICALRPC  &
DRR  &
ICARRPC  &
ICARCMC  &
DSB  &
PJETAC = AV01C  &
YJETAC =  -AV02C  &
VANECDG1  &
VANECDG2  &
VANECDG3  &
VANECDG4  &
VANECDG5  &
VANECDG6  &
VANEPDG1  &
VANEPDG2  &
VANEPDG3  &
VANEPDG4  &
VANEPDG5  &
VANEPDG6  &
FslcLim_deg = AV14C  &
FsrcLim_deg = AV15C  &
```

```
DSTKL &
DSTKR &
STPL &
STPR &
HP  &
RFCS_ALT = AV50C  &
IAALRTC  &
RFCS_PSI = 70.726912*"AV56C" &
PS = AV83C &
RFCS_QCI = 70.726912*"AV57C" &
QCI_SS = AV32C &
QCFILTER1 = AX05C  &
QCFILTER2 = AX06C  &
RFCS_RI = AV58C  &
IAMACHC  &
RFCS_MACH = AV30C  &
VTRUE  &
VINF  &
RFCS_AIRSPD = 2.535*"AV51C" &
ALPHA  &
AOA_SS = AV27C  &
RFCS_AOA = AV52C  &
GAUGE_ALPHA = ALPHAD   &
AOAINS = AV22C  &
RFCS_AOA_RATE = AV53C  &
BETA  &
BETA_JOE  &
RFCS_BETA = AV54C  &
GAUGE_BETA = BETAAVG   &
RFCS_BETA_DOT = AV55C  &
QC  &
RFCS_Q = AV23C  &
PCC  &
RMC  &
RFCS_R = AV24C  &
THETAC  &
PHIC  &
PHIWND &
PSIANGC  &
    AXCFT   =  32.174*"axc" &
    AYCFT   =  32.174*"ayc" &
    AZCFT   =  32.174*"azc" &
    AXCGCFT  =  32.174*"axcgc" &
    AYCGCFT  =  32.174*"aycgc" &
    AZCGCFT  =  -32.174*"azcgc" &
AXCKPT = AXCKPT  &
AYCKPT = AYCKPT  &
AZCKPT = AZCKPT  &
RFCS_NZ = AX17C  &
NY_G = AX18C  &
PDOT  &
QDOT  &
RDOT  &
ZRARMM  &
ZRENGM  &
FPAI  &
INPLONC  &
INPLATC  &
```

```
LGTHR = ICARRIC  &
RGTHR = ICARRC  &
LNPR = ICARXPC  &
RNPR = ICARXYC  &
P56L = ietdplc  &
P56R = ietdprc  &
A8L  &
A8R  &
R8INL &
R8INR &
IX  &
IY  &
IZ  &
IXZ  &
WT  &
XCG  &
YCG  &
ZCG  &
AOATR = AV25C  &
YCMD = AX30C  &
PSGTERM = AV19C  &
QCOMP = AV26C  &
DY = AV28C  &
UME11 = AV29C  &
VBRK1 = AX27C  &
UK1 = AV31C &
SBPAC1 = AX01C  &
GTILY1 = AV78C &
GTILY2 = AV79C &
GTILY3 = AV80C &
GTILU1 = AV81C &
GTILZ1 = AV82C &
SFSyaw = AV13C  &
LABYLTV = AX24C  &
PSTAB_RPS = AX25C  &
DD_LIM_DEG = AX04C  &
VROLL = AV03C  &
VYAW = AV04C  &
NYADJ_G = AV11C  &
RSTABCOMP_RPS = AV12C  &
VLAT_FILT_RPS2 = AV05C  &
VDIR_FILT_RPS2 = AV06C  &
NABYNTV = AX19C  &
AYCORR_G = AX28C  &
PDSMAX = AX29C  &
STVYAW = AX31C  &
Bdotint_rps = AX14C  &
Bdot_inert_dps = AV17C &
DFSDIF &
DFSSYM
```

```
--
-- use when V154 flights begin _broken_strake
--
-- file proc_V154_broken_strake
--      from proc_300_broken_strake  - to form processed ANSER files
--       to fix broken strakes (when stpl or stpr is unavailable)
--       qcfilter1, qcfilter2 replaced by LAT_PILOT_CMD, DIR_PILOT_CMD
--
sigs &
DEP &
PSTICK = AX21C &
ICAPSFC &
PSGTOT = AX09C &
DAP &
LAT_STICK_IN = AX22C &
LATST_CMD = AV10C &
DRP &
RUDPED_CMD = AX16C &
RUDPED_LBS = AX23C &
OBES_FNCTION = AV21C &
OBES_FNCTION_2 = AV16C &
PLAL = ICAPLLC &
PLAR = ICAPLRC &
DHL &
ICALSPC &
DHR &
ICARSPC &
ICADSC &
DLFLI &
DLFLO &
DLFRI &
DLFRO &
ICADLC &
DTFL &
DTFR &
ICADTC &
DAL &
ICALAPC &
DAR &
ICARAPC &
ICAACMC &
DRL &
ICALRPC &
DRR &
ICARRPC &
ICARCMC &
DSB &
PJETAC = AV01C &
YJETAC = -AV02C &
VANECDG1 &
VANECDG2 &
VANECDG3 &
VANECDG4 &
VANECDG5 &
VANECDG6 &
VANEPDG1 &
VANEPDG2 &
VANEPDG3 &
```

```
 VANEPDG4 &
 VANEPDG5 &
 VANEPDG6 &
 FslcLim_deg = AV14C &
 FsrcLim_deg = AV15C &
 DSTKL &
 DSTKR &
 STPL &
 STPR &
 HP &
 RFCS_ALT = AV50C &
 IAALRTC &
 RFCS_PSI = 70.726912*"AV56C" &
 PS = AV83C &
 RFCS_QCI = 70.726912*"AV57C" &
 QCI_SS = AV32C &
 LAT_PILOT_CMD = AX05C &
 DIR_PILOT_CMD = AX06C &
 RFCS_RI = AV58C &
 IAMACHC &
 RFCS_MACH = AV30C &
 VTRUE &
 VINF &
 RFCS_AIRSPD = 2.535*"AV51C" &
 ALPHA &
 AOA_SS = AV27C &
 RFCS_AOA = AV52C &
 GAUGE_ALPHA = ALPHAD &
 AOAINS = AV22C &
 RFCS_AOA_RATE = AV53C &
 BETA &
 BETA_JOE &
 RFCS_BETA = AV54C &
 GAUGE_BETA = BETAAVG &
 RFCS_BETA_DOT = AV55C &
 QC &
 RFCS_Q = AV23C &
 PCC &
 RMC &
 RFCS_R = AV24C &
 THETAC &
 PHIC &
 PHIWND &
 PSIANGC &
     AXCFT   = 32.174*"axc" &
     AYCFT   = 32.174*"ayc" &
     AZCFT   = 32.174*"azc" &
     AXCGCFT  = 32.174*"axcgc" &
     AYCGCFT  = 32.174*"aycgc" &
     AZCGCFT  = -32.174*"azcgc" &
 AXCKPT = AXCKPT &
 AYCKPT = AYCKPT &
 AZCKPT = AZCKPT &
 RFCS_NZ = AX17C &
 NY_G = AX18C &
 PDOT &
 QDOT &
 RDOT &
```

```
ZRARMM &
ZRENGM &
FPAI &
INPLONC &
INPLATC &
LGTHR = ICARRIC &
RGTHR = ICARRC &
LNPR = ICARXPC &
RNPR = ICARXYC &
P56L = ietdplc &
P56R = ietdprc &
A8L &
A8R &
R8INL &
R8INR &
IX &
IY &
IZ &
IXZ &
WT &
XCG &
YCG &
ZCG &
AOATR = AV25C &
YCMD = AX30C &
PSGTERM = AV19C &
QCOMP = AV26C &
DY = AV28C &
UME11 = AV29C &
VBRK1 = AX27C &
UK1 = AV31C &
SBPAC1 = AX01C &
GTILY1 = AV78C &
GTILY2 = AV79C &
GTILY3 = AV80C &
GTILU1 = AV81C &
GTILZ1 = AV82C &
SFSyaw = AV13C &
LABYLTV = AX24C &
PSTAB_RPS = AX25C &
DD_LIM_DEG = AX04C &
VROLL = AV03C &
VYAW = AV04C &
NYADJ_G = AV11C &
RSTABCOMP_RPS = AV12C &
VLAT_FILT_RPS2 = AV05C &
VDIR_FILT_RPS2 = AV06C &
NABYNTV = AX19C &
AYCORR_G = AX28C &
PDSMAX = AX29C &
STVYAW = AX31C &
Bdotint_rps = AX14C &
Bdot_inert_dps = AV17C &
strkal   &
strkbl   &
strkar   &
strkbr
```

```
-- use when V154 flights begin     5-9-96
--
-- file proc_V154_bs_371
--      from proc_V154_broken_strake  - to form processed ANSER files
--       to fix broken strakes (when stpl or stpr is unavailable)
--      added ramdif, ramsym calculated from strkal, strkar
--
sigs &
DEP &
PSTICK = AX21C &
ICAPSFC &
PSGTOT = AX09C &
DAP &
LAT_STICK_IN = AX22C &
LATST_CMD = AV10C &
DRP &
RUDPED_CMD = AX16C &
RUDPED_LBS = AX23C &
OBES_FNCTION = AV21C &
OBES_FNCTION_2 = AV16C &
PLAL = ICAPLLC &
PLAR = ICAPLRC &
DHL &
ICALSPC &
DHR &
ICARSPC &
ICADSC &
DLFLI &
DLFLO &
DLFRI &
DLFRO &
ICADLC &
DTFL &
DTFR &
ICADTC &
DAL &
ICALAPC &
DAR &
ICARAPC &
ICAACMC &
DRL &
ICALRPC &
DRR &
ICARRPC &
ICARCMC &
DSB &
PJETAC = AV01C &
YJETAC =  -AV02C &
VANECDG1 &
VANECDG2 &
VANECDG3 &
VANECDG4 &
VANECDG5 &
VANECDG6 &
VANEPDG1 &
VANEPDG2 &
VANEPDG3 &
VANEPDG4 &
```

```
VANEPDG5 &
VANEPDG6 &
FslcLim_deg = AV14C &
FsrcLim_deg = AV15C &
DSTKL &
DSTKR &
STPL &
STPR &
HP &
RFCS_ALT = AV50C &
IAALRTC &
RFCS_PSI = 70.726912*"AV56C" &
PS = AV83C &
RFCS_QCI = 70.726912*"AV57C" &
QCI_SS = AV32C &
LAT_PILOT_CMD = AX05C &
DIR_PILOT_CMD = AX06C &
RFCS_RI = AV58C &
IAMACHC &
RFCS_MACH = AV30C &
VTRUE &
VINF &
RFCS_AIRSPD = 2.535*"AV51C" &
ALPHA &
AOA_SS = AV27C &
RFCS_AOA = AV52C &
GAUGE_ALPHA = ALPHAD &
AOAINS = AV22C &
RFCS_AOA_RATE = AV53C &
BETA &
BETA_JOE &
RFCS_BETA = AV54C &
GAUGE_BETA = BETAAVG &
RFCS_BETA_DOT = AV55C &
QC &
RFCS_Q = AV23C &
PCC &
RMC &
RFCS_R = AV24C &
THETAC &
PHIC &
PHIWND &
PSIANGC &
    AXCFT   = 32.174*"axc" &
    AYCFT   = 32.174*"ayc" &
    AZCFT   = 32.174*"azc" &
    AXCGCFT = 32.174*"axcgc" &
    AYCGCFT = 32.174*"aycgc" &
    AZCGCFT = -32.174*"azcgc" &
AXCKPT = AXCKPT &
AYCKPT = AYCKPT &
AZCKPT = AZCKPT &
RFCS_NZ = AX17C &
NY_G = AX18C &
PDOT &
QDOT &
RDOT &
ZRARMM &
```

```
ZRENGM &
FPAI &
INPLONC &
INPLATC &
LGTHR = ICARRIC &
RGTHR = ICARRC &
LNPR = ICARXPC &
RNPR = ICARXYC &
P56L = ietdplc &
P56R = ietdprc &
A8L &
A8R &
R8INL &
R8INR &
IX &
IY &
IZ &
IXZ &
WT &
XCG &
YCG &
ZCG &
AOATR = AV25C &
YCMD = AX30C &
PSGTERM = AV19C &
QCOMP = AV26C &
DY = AV28C &
UME11 = AV29C &
VBRK1 = AX27C &
UK1 = AV31C &
SBPAC1 = AX01C &
GTILY1 = AV78C &
GTILY2 = AV79C &
GTILY3 = AV80C &
GTILU1 = AV81C &
GTILZ1 = AV82C &
SFSyaw = AV13C &
LABYLTV = AX24C &
PSTAB_RPS = AX25C &
DD_LIM_DEG = AX04C &
VROLL = AV03C &
VYAW = AV04C &
NYADJ_G = AV11C &
RSTABCOMP_RPS = AV12C &
VLAT_FILT_RPS2 = AV05C &
VDIR_FILT_RPS2 = AV06C &
NABYNTV = AX19C &
AYCORR_G = AX28C &
PDSMAX = AX29C &
STVYAW = AX31C &
Bdotint_rps = AX14C &
Bdot_inert_dps = AV17C &
strkal &
strkbl &
strkar &
strkbr &
ramdif &
ramsym
```

```
--
-- file proc_V151_bs_372 - process ANSER files          5-13-96
--          for V151.1,152,153 but add ramdif, ramsym
-- from proc_300_broken_strake  - to form processed ANSER files
--  to fix broken strakes (when stpl or stpr is unavailable)
--
sigs &
DEP &
PSTICK = AX21C &
ICAPSFC &
PSGTOT = AX09C &
DAP &
LAT_STICK_IN = AX22C &
LATST_CMD = AV10C &
DRP &
RUDPED_CMD = AX16C &
RUDPED_LBS = AX23C &
OBES_FNCTION = AV21C &
OBES_FNCTION_2 = AV16C &
PLAL = ICAPLLC &
PLAR = ICAPLRC &
DHL &
ICALSPC &
DHR &
ICARSPC &
ICADSC &
DLFLI &
DLFLO &
DLFRI &
DLFRO &
ICADLC &
DTFL &
DTFR &
ICADTC &
DAL &
ICALAPC &
DAR &
ICARAPC &
ICAACMC &
DRL &
ICALRPC &
DRR &
ICARRPC &
ICARCMC &
DSB &
PJETAC = AV01C &
YJETAC = -AV02C &
VANECDG1 &
VANECDG2 &
VANECDG3 &
VANECDG4 &
VANECDG5 &
VANECDG6 &
VANEPDG1 &
VANEPDG2 &
VANEPDG3 &
VANEPDG4 &
VANEPDG5 &
```

```
VANEPDG6 &
FslcLim_deg = AV14C &
FsrcLim_deg = AV15C &
DSTKL &
DSTKR &
STPL &
STPR &
HP &
RFCS_ALT = AV50C &
IAALRTC &
RFCS_PSI = 70.726912*"AV56C" &
PS = AV83C &
RFCS_QCI = 70.726912*"AV57C" &
QCI_SS = AV32C &
QCFILTER1 = AX05C &
QCFILTER2 = AX06C &
RFCS_RI = AV58C &
IAMACHC &
RFCS_MACH = AV30C &
VTRUE &
VINF &
RFCS_AIRSPD = 2.535*"AV51C" &
ALPHA &
AOA_SS = AV27C &
RFCS_AOA = AV52C &
GAUGE_ALPHA = ALPHAD &
AOAINS = AV22C &
RFCS_AOA_RATE = AV53C &
BETA &
BETA_JOE &
RFCS_BETA = AV54C &
GAUGE_BETA = BETAAVG &
RFCS_BETA_DOT = AV55C &
QC &
RFCS_Q = AV23C &
PCC &
RMC &
RFCS_R = AV24C &
THETAC &
PHIC &
PHIWND &
PSIANGC &
    AXCFT   = 32.174*"axc" &
    AYCFT   = 32.174*"ayc" &
    AZCFT   = 32.174*"azc" &
    AXCGCFT  = 32.174*"axcgc" &
    AYCGCFT  = 32.174*"aycgc" &
    AZCGCFT  = -32.174*"azcgc" &
AXCKPT = AXCKPT &
AYCKPT = AYCKPT &
AZCKPT = AZCKPT &
RFCS_NZ = AX17C &
NY_G = AX18C &
PDOT &
QDOT &
RDOT &
ZRARMM &
ZRENGM &
```

```
FPAI &
INPLONC &
INPLATC &
LGTHR = ICARRIC &
RGTHR = ICARRC &
LNPR = ICARXPC &
RNPR = ICARXYC &
P56L = ietdplc &
P56R = ietdprc &
A8L &
A8R &
R8INL &
R8INR &
IX &
IY &
IZ &
IXZ &
WT &
XCG &
YCG &
ZCG &
AOATR = AV25C &
YCMD = AX30C &
PSGTERM = AV19C &
QCOMP = AV26C &
DY = AV28C &
UME11 = AV29C &
VBRK1 = AX27C &
UK1 = AV31C &
SBPAC1 = AX01C &
GTILY1 = AV78C &
GTILY2 = AV79C &
GTILY3 = AV80C &
GTILU1 = AV81C &
GTILZ1 = AV82C &
SFSyaw = AV13C &
LABYLTV = AX24C &
PSTAB_RPS = AX25C &
DD_LIM_DEG = AX04C &
VROLL = AV03C &
VYAW = AV04C &
NYADJ_G = AV11C &
RSTABCOMP_RPS = AV12C &
VLAT_FILT_RPS2 = AV05C &
VDIR_FILT_RPS2 = AV06C &
NABYNTV = AX19C &
AYCORR_G = AX28C &
PDSMAX = AX29C &
STVYAW = AX31C &
Bdotint_rps = AX14C &
Bdot_inert_dps = AV17C &
strkal    &
strkbl    &
strkar    &
strkbr    &
ramdif    &
ramsym
```

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Variable Definition Lists for processed data, including units of measurements.

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No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command	deg	deg
54	AV15C	FsrcLim_deg	Right strake command	deg	deg
55	HP	HP	pressure altitude	ft	ft
56	AV50C	RFCS_ALT	RFCS altitude	feet	feet
57	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
58	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
59	ICA1319C	PS	RFCS static pressure	psf	psf
60	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
61	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
62	AX05C	QCFILTER1	Filtered impact pressure (2.5 rad/sec)	psf	psf
63	AX06C	QCFILTER2	Filtered impact pressure (10 rad/sec)	psf	psf
64	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
65	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
66	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
67	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
68	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
69	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
70	ALPHA	ALPHA	angle of attack	deg	deg
71	AV27C	AOA_SS	RFCS aoa ss	deg	deg
72	AV52C	RFCS_AOA	RFCS aoa	deg	deg
73	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
74	AV22C	AOAINS	INS angle of attack	deg	deg
75	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
76	BETA	BETA	angle of sideslip	deg	deg
77	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
78	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
79	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
80	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
81	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
82	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
83	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
84	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
85	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
86	THETAC	THETAC	pitch attitude (>40)	deg	deg
87	PHIC	PHIC	roll attitude (>40)	deg	deg
88		PHIWND	Wind-axis bank angle		deg
89	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
90	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
91	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
92	AZC	AZCFT	normal acceleration A/C C.G.	g $\Downarrow$	ft/sec^2 $\Downarrow$
93	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2
94	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
95	AZCGC	AZCGCFT	normal acceleration at sensor	g $\Uparrow$	ft/sec^2 $\Downarrow$
96	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
97	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
98	AZCKPT	AZCKPT	normal acceleration at cockpit	g $\Uparrow$	g $\Uparrow$

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
99	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
100	AX18C	NY_G	eny_lateral_accel	g	g
101	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
102	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
103	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
104	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
105	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
106	FPAI	FPAI	Flight path angle (gamma)	deg	deg
107	INPLONC	INPLONC	Longitude (position)	deg/min/sec	deg/min/sec
108	INPLATC	INPLATC	Latiitude (position)	deg/min/sec	deg/min/sec
109	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
110	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
111	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
112	ICARXVC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
113	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
114	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
115	AV59C	A8L	Left nozzle area	percent	in^2
116	AV60C	A8R	Right nozzle area	percent	in^2
117	-	R8INL	Left nozzle radius	-	in
118	-	R8INR	Right nozzle radius	-	in
119	IX	IX	IXX	slugs-ft^2	slugs-ft^2
120	IY	IY	IYY	slugs-ft^2	slugs-ft^2
121	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
122	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
123	WT	WT	Weight	lbs	lbs
124	XCG	XCG	Long. c.g.	inches	inches
125	YCG	YCG	Lat. c.g.	inches	inches
126	ZCG	ZCG	Vert. c.g.	inches	inches
127	AV25C	AOATR	estimated AOA trim	deg	deg
128	AX30C	YCMD	pitch_command	deg	deg
129	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
130	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
131	AV28C	DY	error in regulated variable	n.d.	n.d.
132	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
133	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
134	AV31C	UK1	Control variable for stabilator command	deg	deg
135	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
136	ICA1314C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
137	ICA1315C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
138	ICA1316C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
139	ICA1317C	GTILU1	feedback gain for filter	1./sec	1./sec
140	ICA1318C	GTILZ1	feedback gain for integrator	n.d.	n.d.
141	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
142	AX24C	LABYLTV	roll moment available	n.d.	n.d.
143	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
144	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
145	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
146	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
147	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
148	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
149	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
150	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
151	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
152	AX28C	AYCORR_G	lateral acceleration correction	g	g
153	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
154	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
155	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
156	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec

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No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command	deg	deg
54	AV15C	FsrcLim_deg	Right strake command	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	ICA1319C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	QCFILTER1	Filtered impact pressure (2.5 rad/sec)	psf	psf
67	AX06C	QCFILTER2	Filtered impact pressure (10 rad/sec)	psf	psf
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g ⇓	ft/sec^2 ⇓
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
99	AZCGC	AZCGCFT	normal acceleration at sensor	g ⇑	ft/sec^2 ⇓
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g ⇑	g ⇑
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXVC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	ICA1314C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	ICA1315C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	ICA1316C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	ICA1317C	GTILU1	feedback gain for filter	1./sec	1./sec
144	ICA1318C	GTILZ1	feedback gain for integrator	n.d.	n.d.
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec

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No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command (post-lin)	deg	deg
54	AV15C	FsrcLim_deg	Right strake command (post-lin)	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	ICA1319C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	QCFILTER1	Filtered impact pressure (2.5 rad/sec)	psf	psf
67	AX06C	QCFILTER2	Filtered impact pressure (10 rad/sec)	psf	psf
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g ⇓	ft/sec^2 ⇓
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
99	AZCGC	AZCGCFT	normal acceleration at sensor	g ⇑	ft/sec^2 ⇓
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g ⇑	g ⇑
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXYC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	ICA1314C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	ICA1315C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	ICA1316C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	ICA1317C	GTILU1	feedback gain for filter	1./sec	1./sec
144	ICA1318C	GTILZ1	feedback gain for integrator	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec

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No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command (post-lin)	deg	deg
54	AV15C	FsrcLim_deg	Right strake command (post-lin)	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	AV83C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	QCFILTER1	Filtered impact pressure (2.5 rad/sec)	psf	psf
67	AX06C	QCFILTER2	Filtered impact pressure (10 rad/sec)	psf	psf
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g ⇓	ft/sec^2 ⇓
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
99	AZCGC	AZCGCFT	normal acceleration at sensor	g ⇑	ft/sec^2 ⇓
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g ⇑	g ⇑
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXYC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	AV78C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	AV79C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	AV80C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	AV81C	GTILU1	feedback gain for filter	1./sec	1./sec
144	AV82C	GTILZ1	feedback gain for integrator	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec

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Dec. 1, 1995

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command (post-lin)	deg	deg
54	AV15C	FsrcLim_deg	Right strake command (post-lin)	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	AV83C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	QCFILTER1	Filtered impact pressure (2.5 rad/sec)	psf	psf
67	AX06C	QCFILTER2	Filtered impact pressure (10 rad/sec)	psf	psf
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g ⇓	ft/sec^2 ⇓
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
99	AZCGC	AZCGCFT	normal acceleration at sensor	g ⇑	ft/sec^2 ⇓
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g ⇑	g ⇑
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXYC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	AV78C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	AV79C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	AV80C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	AV81C	GTILU1	feedback gain for filter	1./sec	1./sec
144	AV82C	GTILZ1	feedback gain for integrator	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec
161	LSRLA	STRKAL	calculated from raw left strake RAM position CH1	deg	deg
162	LSRLB	STRKBL	calculated from raw left strake RAM position CH4	deg	deg
163	RSRLA	STRKAR	calculated from raw right strake RAM position CH2	deg	deg
164	RSRLB	STRKBL	calculated from raw right strake RAM position CH3	deg	deg

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Apr. 17, 1996

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command (post-lin)	deg	deg
54	AV15C	FsrcLim_deg	Right strake command (post-lin)	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	AV83C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	QCFILTER1	Filtered impact pressure (2.5 rad/sec)	psf	psf
67	AX06C	QCFILTER2	Filtered impact pressure (10 rad/sec)	psf	psf
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g ⇓	ft/sec^2 ⇓
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
99	AZCGC	AZCGCFT	normal acceleration at sensor	g ⇑	ft/sec^2 ⇓
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g ⇑	g ⇑
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXYC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	AV78C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	AV79C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	AV80C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	AV81C	GTILU1	feedback gain for filter	1./sec	1./sec
144	AV82C	GTILZ1	feedback gain for integrator	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec
161	-	DFSDIF	differential calculated from DFRC raw variables STPL, STPR	deg	deg
162	-	DFSSYM	symmetric calculated from DFRC raw variables STPL, STPR	deg	deg

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No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command (post-lin)	deg	deg
54	AV15C	FsrcLim_deg	Right strake command (post-lin)	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	AV83C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	LAT_PILOT_CMD			
67	AX06C	DIR_PILOT_CMD			
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g fl	ft/sec^2 fl
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
99	AZCGC	AZCGCFT	normal acceleration at sensor	g	ft/sec^2
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g	g
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXYC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	AV78C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	AV79C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	AV80C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	AV81C	GTILU1	feedback gain for filter	1./sec	1./sec
144	AV82C	GTILZ1	feedback gain for integrator	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec
161	LSRLA	STRKAL	calculated from raw left strake RAM position CH1	deg	deg
162	LSRLB	STRKBL	calculated from raw left strake RAM position CH4	deg	deg
163	RSRLA	STRKAR	calculated from raw right strake RAM position CH2	deg	deg
164	RSRLB	STRKBL	calculated from raw right strake RAM position CH3	deg	deg

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No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command (post-lin)	deg	deg
54	AV15C	FsrcLim_deg	Right strake command (post-lin)	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	AV83C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	LAT_PILOT_CMD			
67	AX06C	DIR_PILOT_CMD			
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g fl	ft/sec^2 fl
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
99	AZCGC	AZCGCFT	normal acceleration at sensor	g ›	ft/sec^2 fl
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g ›	g ›
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXYC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	AV78C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	AV79C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	AV80C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	AV81C	GTILU1	feedback gain for filter	1./sec	1./sec
144	AV82C	GTILZ1	feedback gain for integrator	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec
161	LSRLA	STRKAL	calculated from raw left strake RAM position CH1	deg	deg
162	LSRLB	STRKBL	calculated from raw left strake RAM position CH4	deg	deg
163	RSRLA	STRKAR	calculated from raw right strake RAM position CH2	deg	deg
164	RSRLB	STRKBL	calculated from raw right strake RAM position CH3	deg	deg
165	-	RAMDIF	differential calculated from LaRC calculated variables STRKAL, STRKAR	deg	deg
166	-	RAMSYM	symmetric calculated from LaRC calculated variables STRKAL, STRKAR	deg	deg

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No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
1	DEP	DEP	longitudinal stick position (cpt)	in	in
2	AX21C	PSTICK	pstick	inch	inch
3	ICAPSFC	ICAPSFC	pitch stick (NASA instrumentation)	inch	inch
4	AX09C	PSGTOT	total stick command	inch	inch
5	DAP	DAP	lateral stick position (cpt)	in	in
6	AX22C	LAT_STICK_IN	lateral stick input	inches	inches
7	AV10C	LATST_CMD	roll_yaw_variables.latst_cmd	n.d.	n.d.
8	DRP	DRP	rudder pedal position (cpt)	in	in
9	AX16C	RUDPED_CMD	RFCS rudder pedal cmd	n.d.	n.d.
10	AX23C	RUDPED_LBS	rudder pedal input	lbs	lbs
11	AV21C	OBES_FNCTION	OBES function generator 2	n.d.	n.d.
12	AV16C	OBES_FNCTION_2	OBES function generator 2	n.d.	n.d.
13	ICAPLLC	PLAL	Left power lever angle	deg	deg
14	ICAPLRC	PLAR	Right power lever angle	deg	deg
15	DHL	DHL	left stabilator position	deg	deg
16	ICALSPC	ICALSPC	left stabilator position	deg	deg
17	DHR	DHR	right stabilator position	deg	deg
18	ICARSPC	ICARSPC	right stabilator position	deg	deg
19	ICADSC	ICADSC	RFCS diff stab cmd	deg	deg
20	DLFLI	DLFLI	left inboard LEF position	deg	deg
21	DLFLO	DLFLO	left outboard LEF position	deg	deg
22	DLFRI	DLFRI	right inboard LEF position	deg	deg
23	DLFRO	DLFRO	right outboard LEF position	deg	deg
24	ICADLC	ICADLC	RFCS diff lef cmd	deg	deg
25	DTFL	DTFL	left TEF position	deg	deg
26	DTFR	DTFR	right TEF position	deg	deg
27	ICADTC	ICADTC	RFCS diff tef cmd	deg	deg
28	DAL	DAL	left aileron position	deg	deg
29	ICALAPC	ICALAPC	left aileron position	deg	deg
30	DAR	DAR	right aileron position	deg	deg
31	ICARAPC	ICARAPC	right aileron position	deg	deg
32	ICAACMC	ICAACMC	RFCS aileron cmd	deg	deg
33	DRL	DRL	left rudder position	deg	deg
34	ICALRPC	ICALRPC	left rudder position	deg	deg
35	DRR	DRR	right rudder position	deg	deg
36	ICARRPC	ICARRPC	right rudder position	deg	deg
37	ICARCMC	ICARCMC	RFCS rudder cmd	deg	deg
38	DSB	DSB	speedbrake position	deg	deg
39	AV01C	PJETAC	RFCS pitch vectoring cmd	deg	deg
40	AV02C	YJETAC	RFCS yaw vectoring cmd	deg	deg
41	AV07C	VANECDG1	RFCS CLAW L-top tvv cmd	inches	deg
42	AV09C	VANECDG2	RFCS CLAW L-outboard tvv cmd	inches	deg
43	AV08C	VANECDG3	RFCS CLAW L-inboard tvv cmd	inches	deg
44	BV07C	VANECDG4	RFCS CLAW R-top tvv cmd	inches	deg
45	BV09C	VANECDG5	RFCS CLAW R-outboard tvv cmd	inches	deg
46	BV08C	VANECDG6	RFCS CLAW R-inboard tvv cmd	inches	deg
47	AX10C	VANEPDG1	L-top tvv pos	inches	deg
48	AX11C	VANEPDG2	L-outboard tvv pos	inches	deg
49	AX12C	VANEPDG3	L-inboard tvv pos	inches	deg

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
50	BX10C	VANEPDG4	R-top tvv pos	inches	deg
51	BX11C	VANEPDG5	R-outboard tvv pos	inches	deg
52	BX12C	VANEPDG6	R-inboard tvv pos	inches	deg
53	AV14C	FslcLim_deg	Left strake command (post-lin)	deg	deg
54	AV15C	FsrcLim_deg	Right strake command (post-lin)	deg	deg
55	DSTKL	DSTKL	Left strake command	deg	deg
56	DSTKR	DSTKR	Right strake command	deg	deg
57	STPL	STPL	Left strake position	deg	deg
58	STPR	STPR	Right strake position	deg	deg
59	HP	HP	pressure altitude	ft	ft
60	AV50C	RFCS_ALT	RFCS altitude	feet	feet
61	IAALRTC	IAALRTC	pressure altitude rate	fpm	fpm
62	AV56C	RFCS_PSI	RFCS psi	inch Hg	psf
63	AV83C	PS	RFCS static pressure	psf	psf
64	AV57C	RFCS_QCI	RFCS qci	inch Hg	psf
65	AV32C	QCI_SS	RFCS impact pressure ss	psf	psf
66	AX05C	QCFILTER1	Filtered impact pressure (2.5 rad/sec)	psf	psf
67	AX06C	QCFILTER2	Filtered impact pressure (10 rad/sec)	psf	psf
68	AV58C	RFCS_RI	RFCS qci/psi	n.d.	n.d.
69	IAMACHC	IAMACHC	indicated mach	n.d.	n.d.
70	AV30C	RFCS_MACH	RFCS mach	n.d.	n.d.
71	VTRUE	VTRUE	free-stream airspeed (uses measured temp)	ft/sec	ft/sec
72	VINF	VINF	free-stream airspeed (uses std day temp)	ft/sec	ft/sec
73	AV51C	RFCS_AIRSPD	RFCS airspeed	knots	knots
74	ALPHA	ALPHA	angle of attack	deg	deg
75	AV27C	AOA_SS	RFCS aoa ss	deg	deg
76	AV52C	RFCS_AOA	RFCS aoa	deg	deg
77	ALPHAD	GAUGE_ALPHA	Steam gauge AOA	deg	deg
78	AV22C	AOAINS	INS angle of attack	deg	deg
79	AV53C	RFCS_AOA_RATE	RFCS aoa rate	deg/sec	deg/sec
80	BETA	BETA	angle of sideslip	deg	deg
81	BETA_JOE	BETA_JOE	angle of sideslip	deg	deg
82	AV54C	RFCS_BETA	RFCS sideslip	deg	deg
83	BETAAVG	GAUGE_BETA	Steam gauge sideslip angle	deg	deg
84	AV55C	RFCS_BETA_DOT	RFCS sideslip rate	deg/sec	deg/sec
85	QC	QC	pitch rate A/C (body axis)	deg/sec	deg/sec
86	AV23C	RFCS_Q	RFCS pitch rate	deg/sec	deg/sec
87	PCC	PCC	roll rate A/C (body axis)	deg/sec	deg/sec
88	RMC	RMC	yaw rate A/C (body axis)	deg/sec	deg/sec
89	AV24C	RFCS_R	RFCS yaw rate ss	deg/sec	deg/sec
90	THETAC	THETAC	pitch attitude (>40)	deg	deg
91	PHIC	PHIC	roll attitude (>40)	deg	deg
92		PHIWND	Wind-axis bank angle		deg
93	PSIANGC	PSIANGC	azimuth heading angle (>40)	deg	deg
94	AXC	AXCFT	longitudinal acceleration A/C C.G.	g	ft/sec^2
95	AYC	AYCFT	lateral acceleration A/C C.G.	g	ft/sec^2
96	AZC	AZCFT	normal acceleration A/C C.G.	g fl	ft/sec^2 fl
97	AXCGC	AXCGCFT	longitudinal acceleration at sensor	g	ft/sec^2

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
98	AYCGC	AYCGCFT	lateral acceleration at sensor	g	ft/sec^2
99	AZCGC	AZCGCFT	normal acceleration at sensor	g ›	ft/sec^2 fl
100	AXCKPT	AXCKPT	longitudinal acceleration at cockpit	g	g
101	AYCKPT	AYCKPT	lateral acceleration at cockpit	g	g
102	AZCKPT	AZCKPT	normal acceleration at cockpit	g ›	g ›
103	AX17C	RFCS_NZ	enz_normal_accel (1 g removed)	g	g
104	AX18C	NY_G	eny_lateral_accel	g	g
105	PDOT	PDOT	Roll acceleration	deg/sec^2	deg/sec^2
106	QDOT	QDOT	Pitch acceleration	deg/sec^2	deg/sec^2
107	RDOT	RDOT	Yaw acceleration	deg/sec^2	deg/sec^2
108	ZRARMM	ZRARMM	RFCS arm	n.d.	n.d.
109	ZRENGM	ZRENGM	RFCS engage	n.d.	n.d.
110	FPAI	FPAI	Flight path angle (gamma)	deg	deg
111	INPLONC	INPLONC	Longitude (position)	deg/min/ sec	deg/min/ sec
112	INPLATC	INPLATC	Latiitude (position)	deg/min/ sec	deg/min/ sec
113	ICARRIC	LGTHR	Est. thrust left engine	lbs	lbs
114	ICARRC	RGTHR	Est. thrust right engine	lbs	lbs
115	ICARXPC	LNPR	Left nozzle pressure ratio	n.d.	n.d.
116	ICARXYC	RNPR	Right nozzle pressure ratio	n.d.	n.d.
117	IETDPLC	P56L	Left turbine discharge pressure	psf	psf
118	IETDPRC	P56R	Right turbine discharge pressure	psf	psf
119	AV59C	A8L	Left nozzle area	percent	in^2
120	AV60C	A8R	Right nozzle area	percent	in^2
121	-	R8INL	Left nozzle radius	-	in
122	-	R8INR	Right nozzle radius	-	in
123	IX	IX	IXX	slugs-ft^2	slugs-ft^2
124	IY	IY	IYY	slugs-ft^2	slugs-ft^2
125	IZ	IZ	IZZ	slugs-ft^2	slugs-ft^2
126	IXZ	IXZ	IXZ	slugs-ft^2	slugs-ft^2
127	WT	WT	Weight	lbs	lbs
128	XCG	XCG	Long. c.g.	inches	inches
129	YCG	YCG	Lat. c.g.	inches	inches
130	ZCG	ZCG	Vert. c.g.	inches	inches
131	AV25C	AOATR	estimated AOA trim	deg	deg
132	AX30C	YCMD	pitch_command	deg	deg
133	AV19C	PSGTERM	Stick boost gain output	deg/inch	deg/inch
134	AV26C	QCOMP	compensated pitch rate	deg/sec	deg/sec
135	AV28C	DY	error in regulated variable	n.d.	n.d.
136	AV29C	UME11	feedforward control variable	deg/sec	deg/sec
137	AX27C	VBRK1	rate cmd for stabilator	deg/sec	deg/sec
138	AV31C	UK1	Control variable for stabilator command	deg	deg
139	AX01C	SBPAC1	RFCS symmetric stabilator cmd	deg	deg
140	AV78C	GTILY1	feedback gain for angle-of-attack	1./sec	1./sec
141	AV79C	GTILY2	feedback gain for pitch rate	n.d.	n.d.
142	AV80C	GTILY3	feedback gain for load factor	deg/sec/g	deg/sec/g
143	AV81C	GTILU1	feedback gain for filter	1./sec	1./sec
144	AV82C	GTILZ1	feedback gain for integrator	n.d.	n.d.

No.	DFRC Name	LaRC Name	Definition	DFRC Units	LaRC Units
145	AV13C	SFSyaw	differential strake engage	n.d.	n.d.
146	AX24C	LABYLTV	roll moment available	n.d.	n.d.
147	AX25C	PSTAB_RPS	stability axis roll rate	rad/sec	rad/sec
148	AX04C	DD_LIM_DEG	rsbrc1_roll_cas_cmd	deg	deg
149	AV03C	VROLL	pseudo_controls_io_variables.vroll	n.d.	n.d.
150	AV04C	VYAW	pseudo_controls_io_variables.vyaw	n.d.	n.d.
151	AV11C	NYADJ_G	roll_yaw_variables.nyadj_g	g	g
152	AV12C	RSTABCOMP_RPS	roll_yaw_variables.rstabcomp_rps	rad/sec	rad/sec
153	AV05C	VLAT_FILT_RPS2	virtual lateral cmd	rad/sec^2	rad/sec^2
154	AV06C	VDIR_FILT_RPS2	virtual directional cmd	rad/sec^2	rad/sec^2
155	AX19C	NABYNTV	yaw moment available	n.d.	n.d.
156	AX28C	AYCORR_G	lateral acceleration correction	g	g
157	AX29C	PDSMAX	lateral stick cmd gain	n.d.	n.d.
158	AX31C	STVYAW	yaw thrust vector engage	n.d.	n.d.
159	AX14C	Bdotint_rps	internal sideslip rate	rad/sec	rad/sec
160	AV17C	Bdot_inert_dps	sideslip rate inertial	deg/sec	deg/sec
161	LSRLA	STRKAL	calculated from raw left strake RAM position CH1	deg	deg
162	LSRLB	STRKBL	calculated from raw left strake RAM position CH4	deg	deg
163	RSRLA	STRKAR	calculated from raw right strake RAM position CH2	deg	deg
164	RSRLB	STRKBL	calculated from raw right strake RAM position CH3	deg	deg
165	-	RAMDIF	differential calculated from LaRC calculated variables STRKAL, STRKAR	deg	deg
166	-	RAMSYM	symmetric calculated from LaRC calculated variables STRKAL, STRKAR	deg	deg

Portion of a typical processed data file written in asc2 format for Flight 383.

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format   asc 2   .1
nChans        166
names         DEP           PSTICK        ICAPSFC       PSGTOT        DAP
LAT_STICK_IN LATST_CMD      DRP           RUDPED_CMD    RUDPED_LBS    OBES_FNCTION
OBES_FNCTION_PLAL           PLAR          DHL           ICALSPC       DHR
ICARSPC       ICADSC        DLFLI         DLFLO         DLFRI         DLFRO
ICADLC        DTFL          DTFR          ICADTC        DAL           ICALAPC
DAR           ICARAPC       ICAACMC       DRL           ICALRPC       DRR
ICARRPC       ICARCMC       DSB           PJETAC        YJETAC        VANECDG1
VANECDG2      VANECDG3      VANECDG4      VANECDG5      VANECDG6      VANEPDG1
VANEPDG2      VANEPDG3      VANEPDG4      VANEPDG5      VANEPDG6      FslcLim_deg
FsrcLim_deg   DSTKL         DSTKR         STPL          STPR          HP
RFCS_ALT      IAALRTC       RFCS_PSI      PS            RFCS_QCI      QCI_SS
QCFILTER1     QCFILTER2     RFCS_RI       IAMACHC       RFCS_MACH     VTRUE
VINF          RFCS_AIRSPD   ALPHA         AOA_SS        RFCS_AOA      GAUGE_ALPHA
AOAINS        RFCS_AOA_RATEBETA           BETA_JOE      RFCS_BETA     GAUGE_BETA
RFCS_BETA_DOTQC             RFCS_Q        PCC           RMC           RFCS_R
THETAC        PHIC          PHIWND        PSIANGC       AXCFT         AYCFT
AZCFT         AXCGCFT       AYCGCFT       AZCGCFT       AXCKPT        AYCKPT
AZCKPT        RFCS_NZ       NY_G          PDOT          QDOT          RDOT
ZRARMM        ZRENGM        FPAI          INPLONC       INPLATC       LGTHR
RGTHR         LNPR          RNPR          P56L          P56R          A8L
A8R           R8INL         R8INR         IX            IY            IZ
IXZ           WT            XCG           YCG           ZCG           AOATR
YCMD          PSGTERM       QCOMP         DY            UME11         VBRK1
UK1           SBPAC1        GTILY1        GTILY2        GTILY3        GTILU1
GTILZ1        SFSyaw        LABYLTV       PSTAB_RPS     DD_LIM_DEG    VROLL
VYAW          NYADJ_G       RSTABCOMP_RPSVLAT_FILT_RPSVDIR_FILT_RPSNABYNTV
AYCORR_G      PDSMAX        STVYAW        Bdotint_rps   Bdot_inert_dpstrkal
strkbl        strkar        strkbr        ramdif        ramsym
data001
 40950.000    0.2711945     0.2191391     0.2177696     0.1800270     -.6379547
-.6121521     -.7427788E-01-.2916204E-060.1663953E-020.6114655              0.
       0.      108.2422      108.0664     0.3633270     -.1110764     -.3317337
0.1494479E-010.1500015       14.76733      13.55200      14.94824      12.41089
       0.      18.03320      18.43262            0.     -.4984741     -.7868652
-.5332031      1.091797     -.2197304     0.7019348     -1.236908     -1.937683
-.6811676     -2.548889     -.1636934E-010.4194927E-01         0.      2.711243
 1.027130      1.203857      3.236389      1.311554      1.548279      2.915710
 1.013062      1.378510      3.317322      1.142548      1.513123            0.
       0.     0.8357430E-010.8357430E-01-1.099823     0.7463336E-02 23718.50
 23658.50     -4138.125      832.2969      846.4844      135.1016      140.0664
 137.5078      138.4648     0.1623268     0.4646378     0.4727478      484.4141
 479.8203      498.3750      9.777344      9.870850      9.821777      9.713379
 9.829834     -3.032288     -.1825333     -.2937317     -.4449539     -.1839714
0.3955154     -1.244537     -1.413940     -12.34497     -.8712158     -1.124939
 1.902130      26.35742      26.56543      63.53125      10.96533     -1.514465
-38.75977      10.96484     -1.486267     -38.80566     0.2879639     0.3762627E-01
 1.195221     0.2309227     -.3418028E-02         0.            0.            0.
 1.000000      1.000000     -7.220947     -117.8301      35.03125      6998.500
 6609.375      4.513916      4.268555      27.71436      26.08789      279.8438
 285.1250      9.437988      9.526611      24485.00      180552.0      196672.0
-1755.406      37233.00      457.2344     -.1577606      103.3457      6.998413
 8.814697            0.     -1.963440     -.6794128     0.3685093E-01-1.086548
0.1267242     0.1269302     -10.04199     -33.90137            0.      35.02734
-23.64746            0.      9.559814     -.2616272     -.2939224     -.8887291E-02
0.8569527E-01-.1043296E-01-.8194685E-02-.4510212E-010.3256130E-01 1.313171
       0.      5.198975            0.     0.6039381E-02 1.769928     -.1119957
-.5870819E-01-.5870819E-010.6456375E-010.5328751E-01-.1119957
 40950.012    0.2737122     0.2203751     0.2177696     0.1809921     -.6171417
```

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Appendix D
LaRC-Designed GetData Calculated Function to Process Data Files

Contents

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FORTRAN common *CF1* in file CF1.com

```
      common /CF1/ usevc1,usevc2,usevc3,usevc4,usevc5,usevc6,
     *        usevp1,usevp2,usevp3,usevp4,usevp5,usevp6,
     *        usea8r,usea8l,user8r,user8l,usephwd,
     *        useosla,useoslb,useosra,useosrb,
     *        useodif,useosym,useramdif,useramsym,
     *        ivc1,ivc2,ivc3,ivc4,ivc5,ivc6,
     *        ivp1,ivp2,ivp3,ivp4,ivp5,ivp6,
     *        ia8r,ia8l,
     *        ith, ial, ib, iph,
     *        isla,islb,isra,isrb,
     *        istpl,istpr,
     *        ovc1,ovc2,ovc3,ovc4,ovc5,ovc6,
     *        ovp1,ovp2,ovp3,ovp4,ovp5,ovp6,
     *        oa8r,oa8l,or8r,or8l,ophwd,
     *        osla,oslb,osra,osrb,
     *        ostkdif,ostksym,oramdif,oramsym
      integer
     *        ivc1,ivc2,ivc3,ivc4,ivc5,ivc6,
     *        ivp1,ivp2,ivp3,ivp4,ivp5,ivp6,
     *        ia8r,ia8l,
     *        ith, ial, ib, iph,
     *        isla,islb,isra,isrb,
     *        istpl,istpr,
     *        ovc1,ovc2,ovc3,ovc4,ovc5,ovc6,
     *        ovp1,ovp2,ovp3,ovp4,ovp5,ovp6,
     *        oa8r,oa8l,or8r,or8l,ophwd,
     *        osla,oslb,osra,osrb,
     *        ostkdif,ostksym,oramdif,oramsym

c
      real dumr, duml
      real ra2dg, dg2ra, trad, arad, brad, prad
c
c  strake actuator calcs,  JCY   9-6-95
c
      real dum1, dum2, dum3, xl, r, d
c
      logical usevc1,usevc2,usevc3,usevc4,usevc5,usevc6,
     *     usevp1,usevp2,usevp3,usevp4,usevp5,usevp6,
     *     usea8r,usea8l,user8r,user8l,usephwd,
     *     useosla,useoslb,useosra,useosrb,
     *     useodif,useosym,useramdif,useramsym
c
      save /CF1/
```

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FORTRAN subroutine *allocateCF1*

```
c
c Sample calculated function routines for getData.
c This is a general version for any system.
c Last revision 27 Apr 90. Richard Maine.
c-----------------------------------------------------------------

      subroutine allocateCF1

c Richard Maine. 12 Aug 86.
c Locate input and output signals for calculated function.
c

c******************** common.
      include 'common.com'
      include 'CF1.com'

c******************** externals.
      external labelCalc,sigChan,calcChan,cantCalc
      integer sigChan,calcChan

c-------------------------- executable code -------------------------
c
      call labelCalc(1,
     * 'CF1 J. C. Yeager 5-31-94, 9-6-95, 4-16-96, 5-7-96')

c******************** locate input signals.
      ivc1 = sigChan('av07c')
      ivc2 = sigChan('av09c')
      ivc3 = sigChan('av08c')
      ivc4 = sigChan('bv07c')
      ivc5 = sigChan('bv09c')
      ivc6 = sigChan('bv08c')
      ivp1 = sigChan('ax10c')
      ivp2 = sigChan('ax11c')
      ivp3 = sigChan('ax12c')
      ivp4 = sigChan('bx10c')
      ivp5 = sigChan('bx11c')
      ivp6 = sigChan('bx12c')

      ia8l = sigChan('av59c')
      ia8r = sigChan('av60c')

      ith = sigChan('thetac')
      ial = sigChan('alpha')
      ib = sigChan('beta')
      iph = sigChan('phic')
c
c STRAKE ACTUATOR RAM POSITIONS (inputs) 9-6-95
c
      isla = sigChan('lsrla')
```

```
      islb = sigChan('lsrlb')
      isra = sigChan('rsrla')
      isrb = sigChan('rsrlb')
c
c  STRAKE - differential and symmetric (inputs)  4-16-96
c
      istpr = sigChan('stpr')
      istpl = sigChan('stpl')
c
c******************* allocate calculated signals.
      ovc1 = calcChan('Vanecdg1')
      ovc2 = calcChan('Vanecdg2')
      ovc3 = calcChan('Vanecdg3')
      ovc4 = calcChan('Vanecdg4')
      ovc5 = calcChan('Vanecdg5')
      ovc6 = calcChan('Vanecdg6')
      ovp1 = calcChan('Vanepdg1')
      ovp2 = calcChan('Vanepdg2')
      ovp3 = calcChan('Vanepdg3')
      ovp4 = calcChan('Vanepdg4')
      ovp5 = calcChan('Vanepdg5')
      ovp6 = calcChan('Vanepdg6')

      oa8r = calcChan('a8r')
      oa8l = calcChan('a8l')
      or8r = calcChan('r8inr')
      or8l = calcChan('r8inl')

      ophwd = calcChan('phiwnd')
c
c  STRAKE ACTUATOR RAM POSITIONS (outputs)  9-6-95
c
      osla = calcChan('strkal')
      oslb = calcChan('strkbl')
      osra = calcChan('strkar')
      osrb = calcChan('strkbr')
c
c  STRAKE differential and symmetric based on stpl, stpr (outputs)  4-16-96
c
      ostkdif = calcChan('dfsdif')
      ostksym = calcChan('dfssym')
c
c  STRAKE differential and symmetric based on strkal, strkar (outputs)  5-7-96
c
      oramdif = calcChan('ramdif')
      oramsym = calcChan('ramsym')
c
c******************* disable calculations needing unavailable signals.

c********** convert vane inches to degrees calculations.
      if (ivc1 .eq. 0) call cantCalc(ovc1)
      if (ivc2 .eq. 0) call cantCalc(ovc2)
      if (ivc3 .eq. 0) call cantCalc(ovc3)
      if (ivc4 .eq. 0) call cantCalc(ovc4)
```

```
      if (ivc5 .eq. 0) call cantCalc(ovc5)
      if (ivc6 .eq. 0) call cantCalc(ovc6)
      if (ivp1 .eq. 0) call cantCalc(ovp1)
      if (ivp2 .eq. 0) call cantCalc(ovp2)
      if (ivp3 .eq. 0) call cantCalc(ovp3)
      if (ivp4 .eq. 0) call cantCalc(ovp4)
      if (ivp5 .eq. 0) call cantCalc(ovp5)
      if (ivp6 .eq. 0) call cantCalc(ovp6)
c
      if (ia8r .eq. 0)  then
        call cantCalc(oa8r)
        call cantCalc(or8r)
      endif
      if (ia8l .eq. 0)  then
        call cantCalc(oa8l)
        call cantCalc(or8l)
      endif
c
       if (ith .eq. 0 .or. ial .eq. 0 .or. ib .eq. 0 .or. iph .eq. 0)
     *   call cantCalc(ophwd)
c
c  STRAKE ACTUATOR RAM POSITIONS   9-6-95
c
      if (isla .eq. 0) call cantCalc(osla)
      if (islb .eq. 0) call cantCalc(oslb)
      if (isra .eq. 0) call cantCalc(osra)
      if (isrb .eq. 0) call cantCalc(osrb)
c
c  STRAKE differential and symmetric based on strkal, strkar (outputs)  5-7-96
c
       if (osla .eq. 0 .or. osra .eq. 0)  then
         call cantCalc(oramdif)
         call cantCalc(oramsym)
      endif
c
c  STRAKE differential and symmetric based on stpl, stpr (outputs)  4-16-96
c
       if (istpr .eq. 0 .or. istpl .eq. 0)  then
         call cantCalc(ostkdif)
         call cantCalc(ostksym)
      endif
c
c**********
      return
      end
```

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FORTRAN subroutine *activateCF1*

```
      subroutine activateCF1

c Richard Maine.  12 Aug 86.
c Activate needed calculated functions and their inputs.
c

c******************** common.
      include 'common.com'
      include 'CF1.com'

c******************** externals.
      external isUsed,setUsed
      logical isUsed

c-------------------------- executable code -------------------------

c******************** iv and ov calculations.
      usevc1 = isUsed(ovc1)
      usevc2 = isUsed(ovc2)
      usevc3 = isUsed(ovc3)
      usevc4 = isUsed(ovc4)
      usevc5 = isUsed(ovc5)
      usevc6 = isUsed(ovc6)
      usevp1 = isUsed(ovp1)
      usevp2 = isUsed(ovp2)
      usevp3 = isUsed(ovp3)
      usevp4 = isUsed(ovp4)
      usevp5 = isUsed(ovp5)
      usevp6 = isUsed(ovp6)

      usea8r = isUsed(oa8r)
      usea8l = isUsed(oa8l)
      user8r = isUsed(or8r)
      user8l = isUsed(or8l)

      usephwd = isUsed(ophwd)
c
c  STRAKE differential and symmetric based on strkal, strkar  5-7-96
c
c     if (ostkdif .eq. 0 .or. ostksym .eq. 0)  then
        useramdif = isUsed(oramdif)
        useramsym = isUsed(oramsym)
c     endif
c
      if (useramdif .or. useramsym)  then
        call setUsed(osla)
        call setUsed(osra)
      endif
c
c  STRAKE ACTUATOR RAM POSITIONS   9-6-95
```

```
c
      useosla = isUsed(osla)
      useoslb = isUsed(oslb)
      useosra = isUsed(osra)
      useosrb = isUsed(osrb)
c
c  STRAKE differential and symmetric based on stpl, stpr  4-16-96
c
      useodif = isUsed(ostkdif)
      useosym = isUsed(ostksym)
c
      if (usevc1) call setUsed(ivc1)
      if (usevc2) call setUsed(ivc2)
      if (usevc3) call setUsed(ivc3)
      if (usevc4) call setUsed(ivc4)
      if (usevc5) call setUsed(ivc5)
      if (usevc6) call setUsed(ivc6)
      if (usevp1) call setUsed(ivp1)
      if (usevp2) call setUsed(ivp2)
      if (usevp3) call setUsed(ivp3)
      if (usevp4) call setUsed(ivp4)
      if (usevp5) call setUsed(ivp5)
      if (usevp6) call setUsed(ivp6)

      if (usea8r) call setUsed(ia8r)
      if (usea8l) call setUsed(ia8l)
      if (user8r) call setUsed(ia8r)
      if (user8l) call setUsed(ia8l)

      if (usephwd)  then
         call setUsed(ith)
         call setUsed(ial)
         call setUsed(ib)
         call setUsed(iph)
      endif
c
c  STRAKE ACTUATOR RAM POSITIONS   9-6-95
c
      if (useosla) call setUsed(isla)
      if (useoslb) call setUsed(islb)
      if (useosra) call setUsed(isra)
      if (useosrb) call setUsed(isrb)
c
c
c  STRAKE differential and symmetric based on stpl, stpr   4-16-96
c
      if (useodif) call setUsed(istpr)
      if (useodif) call setUsed(istpl)
      if (useosym) call setUsed(istpr)
      if (useosym) call setUsed(istpl)
c
c*******************
      return
      end
```

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FORTRAN subroutine *doCF1*

```
      subroutine doCF1 (time,data,reset)

c Richard Maine. 12 Aug 86.
c Evaluate calculated functions for getData.
c

c******************** common.
      include 'common.com'
      include 'CF1.com'

c******************** interface.
c time(input): time of this frame.
c data(i/o): data vector for both input and output.
c reset(input): true on the first point of a time segment.

      logical reset
      double precision time,data(0:*)

c******************** external.
      intrinsic asin, sqrt
      intrinsic atan2, sin, cos, acos

c******************** local.
      double precision zero
      parameter (zero=0.)

c-------------------------- executable code -------------------------

c*****  114.59156 = (360./pi)
c
      if (usevc1) data(ovc1) = 114.59156*asin(data(ivc1)/10.) - 10.
      if (usevc2) data(ovc2) = 114.59156*asin(data(ivc2)/10.) - 10.
      if (usevc3) data(ovc3) = 114.59156*asin(data(ivc3)/10.) - 10.
      if (usevc4) data(ovc4) = 114.59156*asin(data(ivc4)/10.) - 10.
      if (usevc5) data(ovc5) = 114.59156*asin(data(ivc5)/10.) - 10.
      if (usevc6) data(ovc6) = 114.59156*asin(data(ivc6)/10.) - 10.

      if (usevp1) data(ovp1) = 114.59156*asin(data(ivp1)/10.) - 10.
      if (usevp2) data(ovp2) = 114.59156*asin(data(ivp2)/10.) - 10.
      if (usevp3) data(ovp3) = 114.59156*asin(data(ivp3)/10.) - 10.
      if (usevp4) data(ovp4) = 114.59156*asin(data(ivp4)/10.) - 10.
      if (usevp5) data(ovp5) = 114.59156*asin(data(ivp5)/10.) - 10.
      if (usevp6) data(ovp6) = 114.59156*asin(data(ivp6)/10.) - 10.
c
c   convert a8r and a8l from per cent to sq inches
c
      if (usea8r .or. user8r) dumr = .0127048*data(ia8r)**2
     *                + 1.545330*data(ia8r) + 220.89400
c
      if (usea8r) data(oa8r) = dumr
c
```

```
      if (usea8l .or. user8l) duml = .0127048*data(ia8l)**2
     *                       + 1.545330*data(ia8l) + 220.89400
c
      if (usea8l) data(oa8l) = duml
c
c
c**** .31831 = 1./pi
c
c  convert A8 sq inches to R8 inches
c
      if (user8l) data(or8l) = sqrt (duml * .31831)
      if (user8r) data(or8r) = sqrt (dumr * .31831)

c*****
      ra2dg = 180./acos(-1.)
      dg2ra = 1./ra2dg
c
      if (usephwd)  then
         trad = data(ith) * dg2ra
         arad = data(ial) * dg2ra
         brad = data(ib)  * dg2ra
         prad = data(iph) * dg2ra
c
         data(ophwd) = (atan2 ((sin(trad)*cos(arad)*sin(brad)
     *              + cos(trad)*sin(prad)*cos(brad)
     *              - cos(trad)*cos(prad)*sin(arad)*sin(brad)),
     *              (sin(trad)*sin(arad)
     *              + cos(trad)*cos(arad)*cos(prad)))) * ra2dg
      endif
c*****
c
c  STRAKE ACTUATOR RAM POSITIONS   9-6-95
c
c*****  meas = L - 15.08
      R = 4.046
      D = 18.48
      DUM1 = D*D + R*R
      DUM2 = -2.*D*R
c
      if (useosla) then
         XL = data(isla) + 15.08
         DUM3 = (XL*XL - DUM1)/DUM2
         data(osla) = ra2dg * acos(DUM3) - 29.308
      endif
c
c
      if (useoslb) then
         XL = data(islb) + 15.08
         DUM3 = (XL*XL - DUM1)/DUM2
         data(oslb) = ra2dg * acos(DUM3) - 29.308
      endif
c
c
      if (useosra) then
```

```
         XL = data(isra) + 15.08
         DUM3 = (XL*XL - DUM1)/DUM2
         data(osra) = ra2dg * acos(DUM3) - 29.308
      endif
c
c
      if (useosrb) then
         XL = data(isrb) + 15.08
         DUM3 = (XL*XL - DUM1)/DUM2
         data(osrb) = ra2dg * acos(DUM3) - 29.308
      endif
c
c*****
c
c  STRAKE differential and symmetric based on strkal, strkar   5-7-96
c
      if (useramdif) then
         data(oramdif) = data(osra) -  data(osla)
      endif
c
      if (useramsym) then
         data(oramsym) = data(osra)
         if (data(osla) .lt. data(osra))
     *       data(oramsym) = data(osla)
      endif
c
c
c  STRAKE differential and symmetric based on stpl, stpr   4-16-96
c
      if (useodif) then
         data(ostkdif) = data(istpr) -  data(istpl)
      endif
c
      if (useosym) then
         data(ostksym) = data(istpr)
         if (data(istpl) .lt. data(istpr))
     *       data(ostksym) = data(istpl)

      endif
c*****
      return
      end
```

Appendix E
Sample LaRC Plots of Data Files

Contents

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Sample LaRC Xplot script to plot processed data files

```
#
#   use when plotting V151,152,153 flights from F372 on
#
# file plt_V151_bs_372                5-13-96
#     no dfsdif, dfssym
#     from proc_300_broken_strake
#     ramdif, ramsym
#
T1 LaRC FLT PARAMS page 1/28
nplots = 4
select 1
PLOT DEP PSTICK ICAPSFC PSGTOT
select 2
PLOT DAP LAT_STICK_IN
select 3
PLOT LATST_CMD
select 4
PLOT DRP
print
T1 LaRC FLT PARAMS page 2/28
nplots = 4
select 1
PLOT RUDPED_CMD
select 2
PLOT RUDPED_LBS
select 3
PLOT PLAL PLAR
select 4
PLOT OBES_FNCTION OBES_FNCTION_2
print
T1 LaRC FLT PARAMS page 3/28
nplots = 4
select 1
PLOT DHL ICALSPC
select 2
PLOT DHR ICARSPC
select 3
PLOT SBPAC1
select 4
PLOT ICADSC
print
T1 LaRC FLT PARAMS page 4/28
nplots = 4
select 1
PLOT DLFLI DLFRI
select 2
PLOT DLFLO DLFRO
select 3
PLOT ICADLC
select 4
PLOT DTFL DTFR
print
T1 LaRC FLT PARAMS page 5/28
```

```
nplots = 4
select 1
PLOT ICADTC
select 2
PLOT DAL ICALAPC
select 3
PLOT DAR ICARAPC
select 4
PLOT ICAACMC
print
T1 LaRC FLT PARAMS page 6/28
nplots = 4
select 1
PLOT DRL ICALRPC
select 2
PLOT DRR ICARRPC
select 3
PLOT ICARCMC
select 4
PLOT DSB
print
T1 LaRC FLT PARAMS page 7/28
nplots = 4
select 1
PLOT PJETAC
select 2
PLOT YJETAC
select 3
PLOT VANECDG1 VANEPDG1
select 4
PLOT VANECDG2 VANEPDG2
print
T1 LaRC FLT PARAMS page 8/28
nplots = 4
select 1
PLOT VANECDG3 VANEPDG3
select 2
PLOT VANECDG4 VANEPDG4
select 3
PLOT VANECDG5 VANEPDG5
select 4
PLOT VANECDG6 VANEPDG6
print
T1 LaRC FLT PARAMS page 9/28
nplots = 2
select 1
PLOT FslcLIM_deg DSTKL STPL
select 2
PLOT FsrcLIM_deg DSTKR STPR
print
T1 LaRC FLT PARAMS page 10/28
nplots = 4
select 1
PLOT HP RFCS_ALT
```

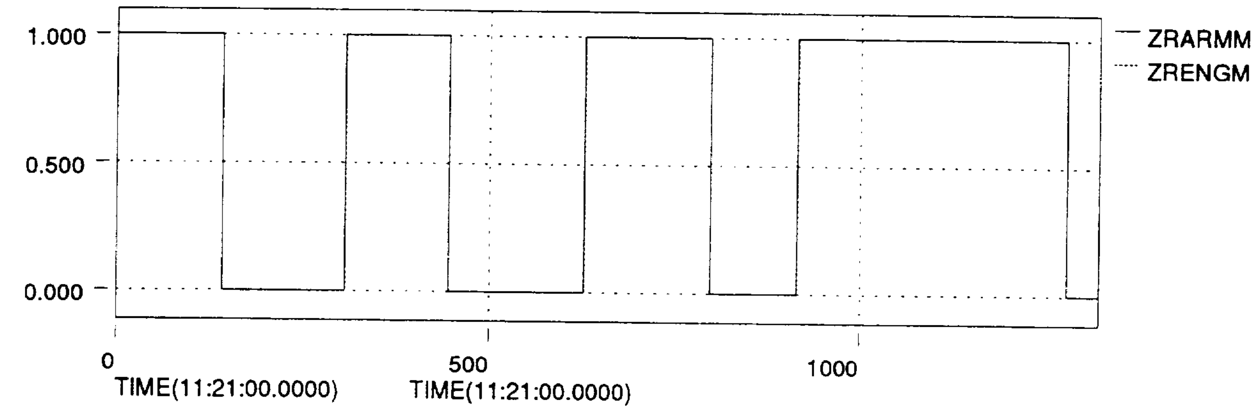
select 2
PLOT IAALRTC
select 3
PLOT RFCS_PSI PS
select 4
PLOT QCI_SS RFCS_QCI QCFILTER1 QCFILTER2
print
T1 LaRC FLT PARAMS page 11/28
nplots = 4
select 1
PLOT RFCS_RI
select 2
PLOT IAMACHC RFCS_MACH
select 3
PLOT VTRUE VINF
select 4
PLOT RFCS_AIRSPD
print
T1 LaRC FLT PARAMS page 12/28
nplots = 4
select 1
PLOT AOA_SS ALPHA RFCS_AOA GAUGE_ALPHA AOAINS
select 2
PLOT RFCS_AOA_RATE
select 3
PLOT BETA BETA_JOE RFCS_BETA GAUGE_BETA
select 4
PLOT RFCS_BETA_DOT
print
T1 LaRC FLT PARAMS page 13/28
nplots = 4
select 1
PLOT QC RFCS_Q
select 2
PLOT PCC
select 3
PLOT RMC RFCS_R
select 4
PLOT THETAC
print
T1 LaRC FLT PARAMS page 14/28
nplots = 4
select 1
PLOT PHIC PHIWND
select 2
PLOT PSIANGC
select 3
PLOT AXCFT AXCGCFT
select 4
PLOT AYCFT AYCGCFT
print
T1 LaRC FLT PARAMS page 15/28
nplots = 4
select 1

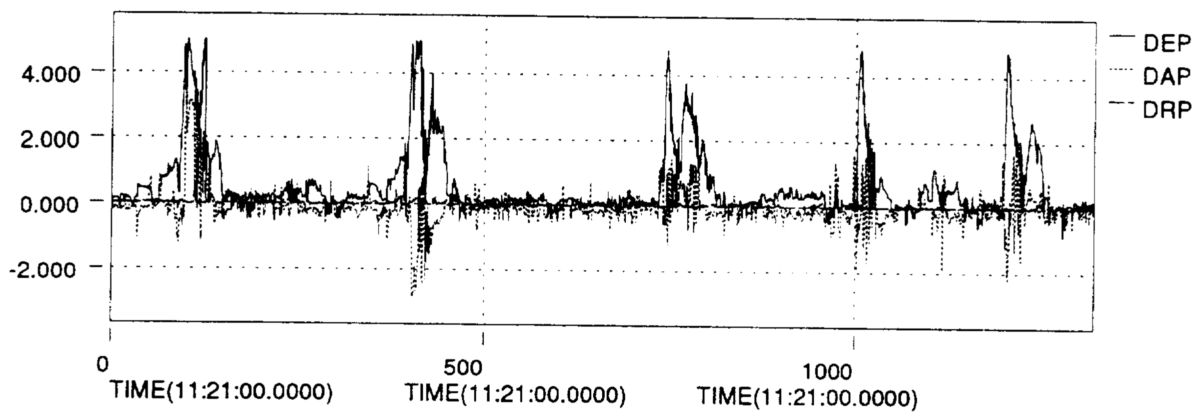
```
PLOT AZCFT AZCGCFT
select 2
PLOT AXCKPT
select 3
PLOT AYCKPT NY_G
select 4
PLOT RFCS_NZ AZCKPT
print
T1 LaRC FLT PARAMS page 16/28
nplots = 4
select 1
PLOT FPAI
select 2
PLOT PDOT
select 3
PLOT QDOT
select 4
PLOT RDOT
print
T1 LaRC FLT PARAMS page 17/28
nplots = 4
select 1
PLOT ZRARMM ZRENGM
select 2
PLOT INPLONC
select 3
PLOT INPLATC
select 4
PLOT LGTHR RGTHR
print
T1 LaRC FLT PARAMS page 18/28
nplots = 4
select 1
PLOT LNPR RNPR
select 2
PLOT P56L P56R
select 3
PLOT A8L A8R
select 4
PLOT R8INL R8INR
print
T1 LaRC FLT PARAMS page 19/28
nplots = 4
select 1
PLOT IXZ
select 2
PLOT IX
select 3
PLOT IY
select 4
PLOT IZ
print
T1 LaRC FLT PARAMS page 20/28
nplots = 4
```

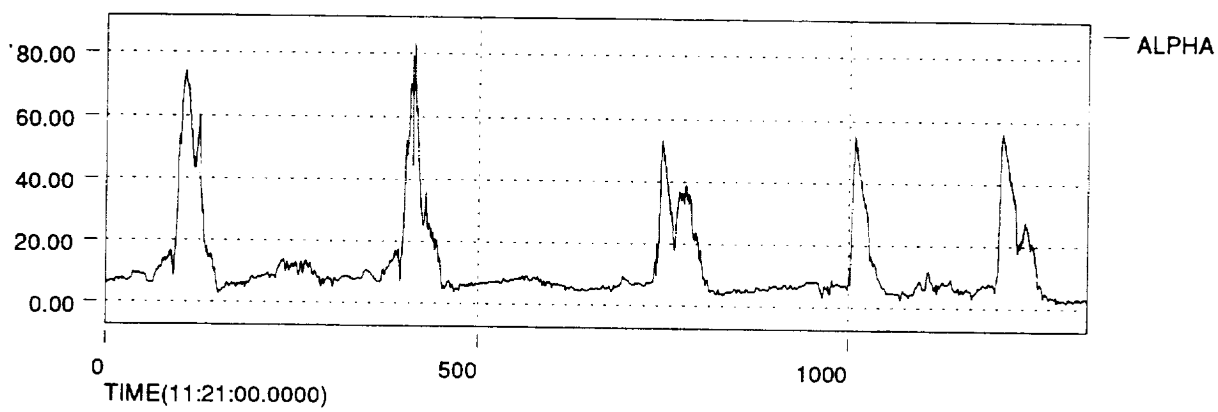
```
select 1
PLOT WT
select 2
PLOT XCG
select 3
PLOT YCG
select 4
PLOT ZCG
print
T1 LaRC FLT PARAMS page 21/28
nplots = 4
select 1
PLOT PSGTERM
select 2
PLOT UK1
select 3
PLOT AOATR
select 4
PLOT YCMD
print
T1 LaRC FLT PARAMS page 22/28
nplots = 4
select 1
PLOT SBPAC1
select 2
PLOT QCOMP
select 3
PLOT DY
select 4
PLOT UME11
print
T1 LaRC FLT PARAMS page 23/28
nplots = 4
select 1
PLOT VBRK1
select 2
PLOT GTILY1
select 3
PLOT GTILY2
select 4
PLOT GTILY3
print
T1 LaRC FLT PARAMS page 24/28
nplots = 4
select 1
PLOT GTILU1
select 2
PLOT GTILZ1
select 3
PLOT SFSyaw
select 4
plot LABYLTV
print
T1 LaRC FLT PARAMS page 25/28
```

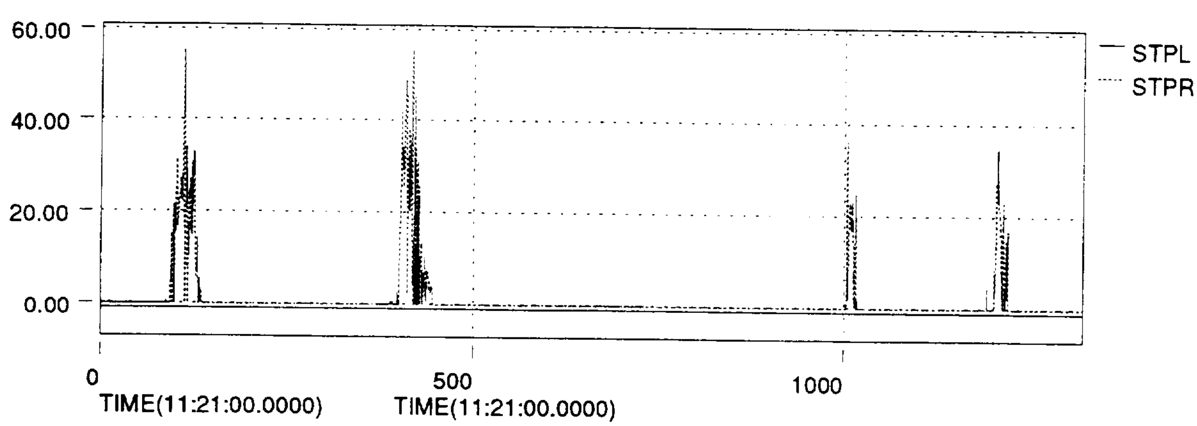
```
nplots = 4
select 1
plot PSTAB_RPS
select 2
plot DD_LIM_DEG
select 3
plot VROLL
select 4
plot VYAW
print
T1 LaRC FLT PARAMS page 26/28
nplots = 4
select 1
plot NYADJ_G
select 2
plot RSTABCOMP_RPS
select 3
PLOT VLAT_FILT_RPS2
select 4
PLOT VDIR_FILT_RPS2
print
T1 LaRC FLT PARAMS page 27/28
nplots = 4
select 1
plot NABYNTV
select 2
plot AYCORR_G
select 3
plot PDSMAX
select 4
plot STVYAW
print
T1 LaRC FLT PARAMS page 28/28
nplots = 4
select 1
PLOT Bdotint_rps
select 2
PLOT Bdot_inert_dps
select 3
PLOT AOA_SS GAUGE_ALPHA
select 4
CLEAR
print
T1 LaRC FLT PARAMS page 29
nplots = 4
select 1
PLOT STRKAL STRKBL STPL
select 2
PLOT STRKAR STRKBR STPR
select 3
PLOT RAMDIF
select 4
PLOT RAMSYM
print
```

Figure E1.- Plot of *arm_383.cmp3* file used to identify maneuvers and determine flight maneuver times for Flight 383.



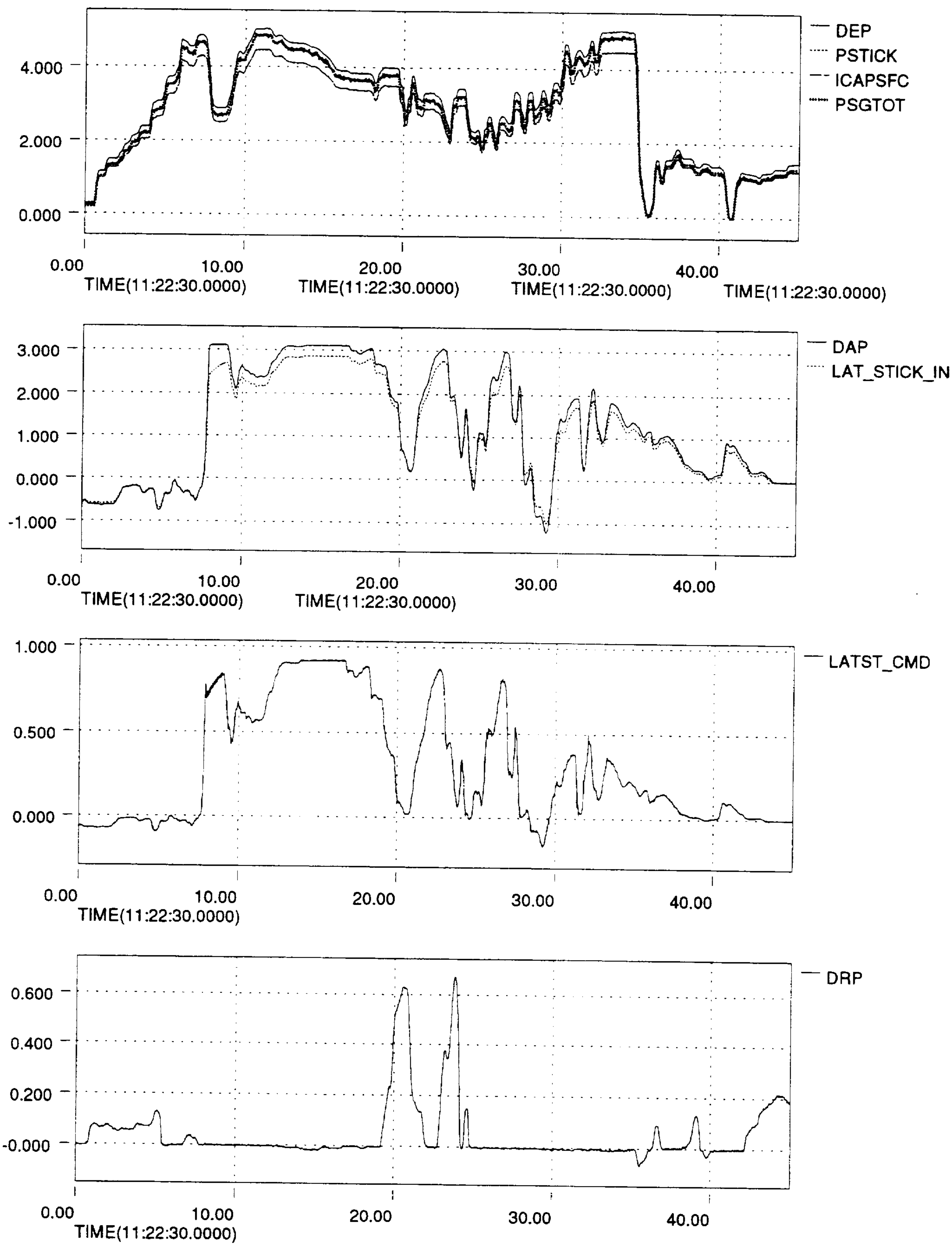




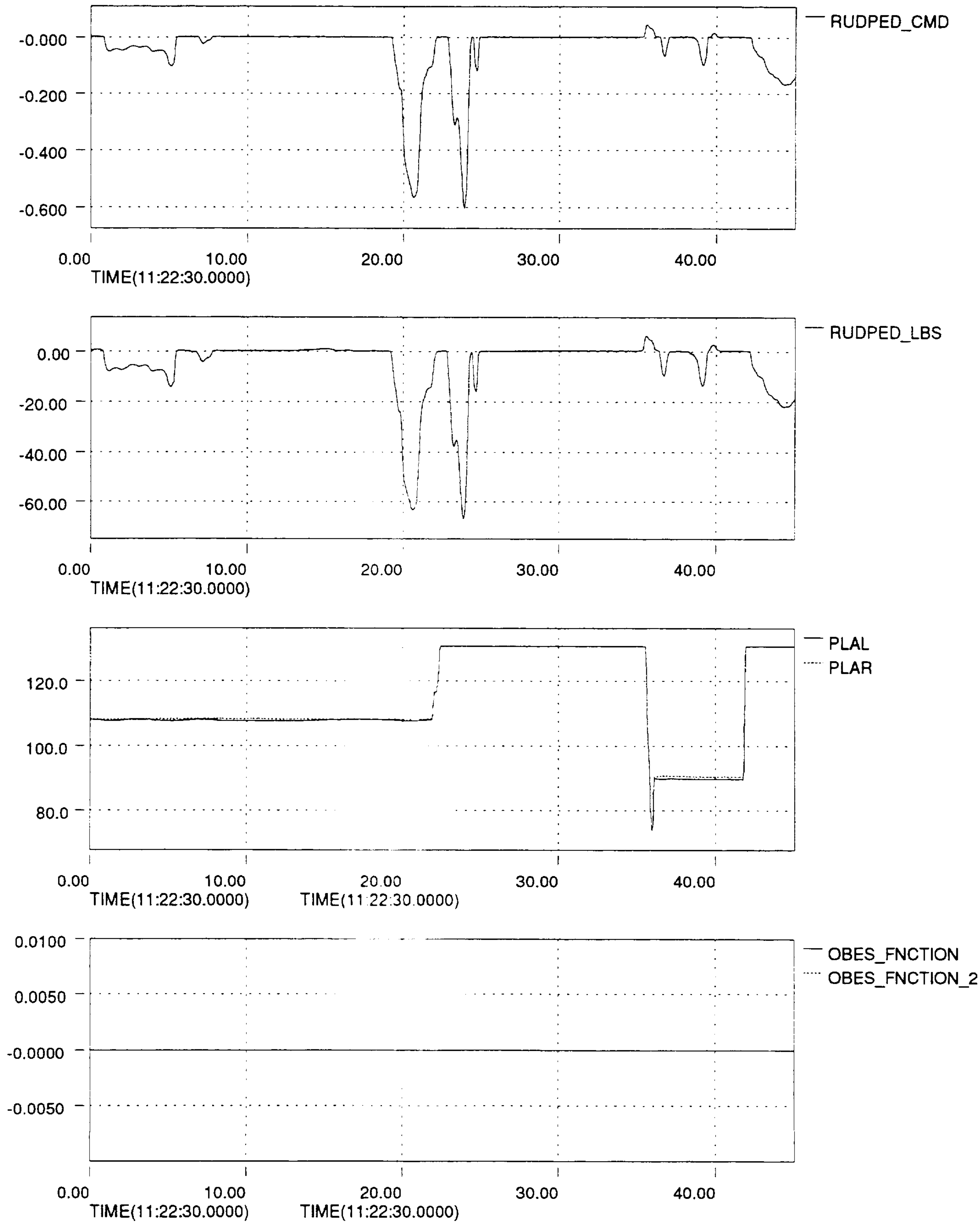


File=arm_383.cmp3; Signal Suffix=[none]; Date=

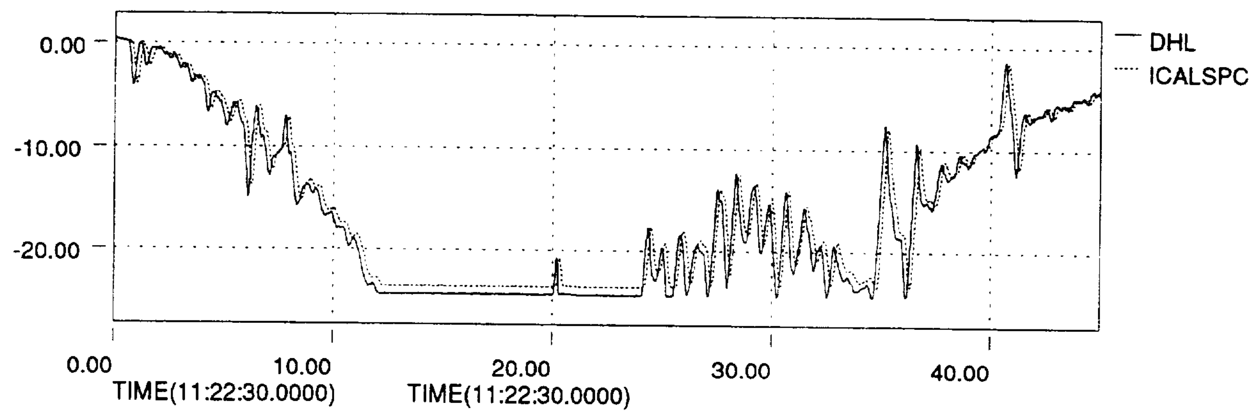
Figure E2.- Plot of *P383a.cmp3* file of processed data for Flight 383.

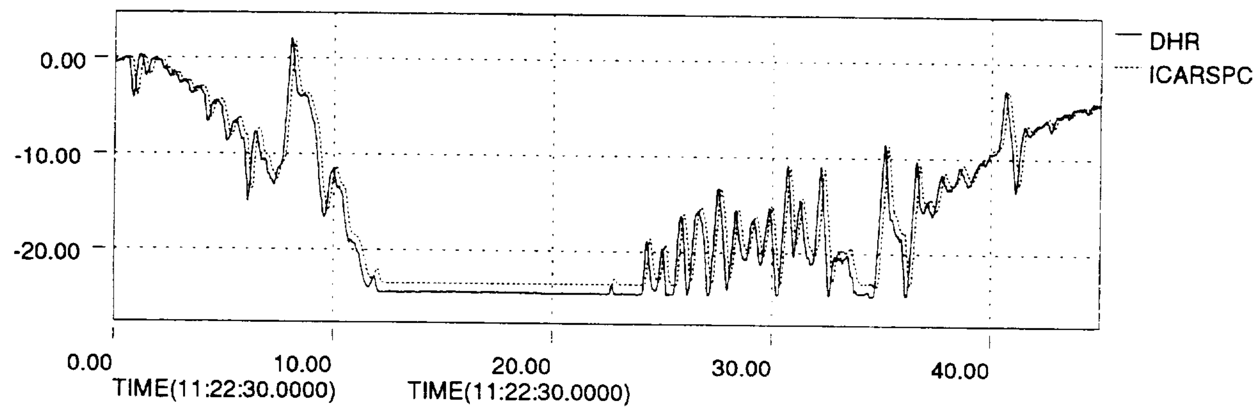


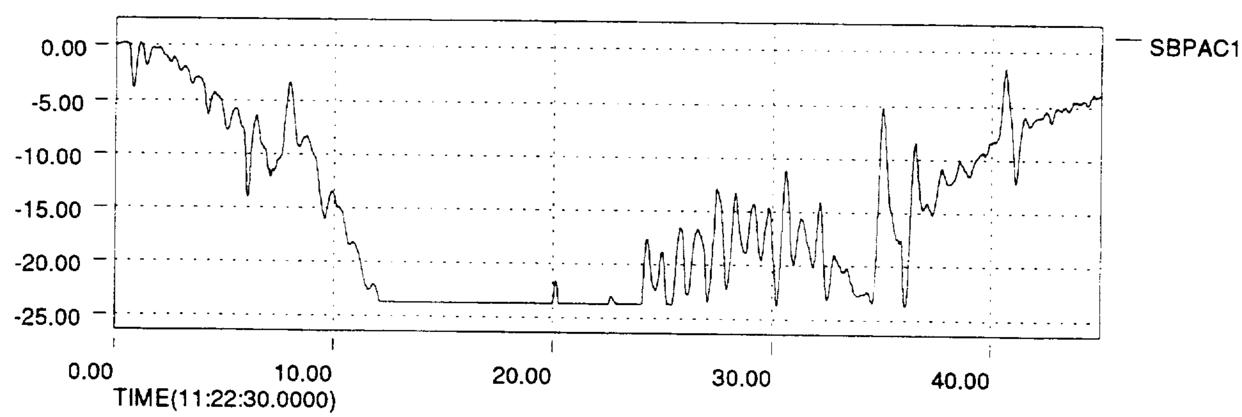
File=P383a.cmp3; Signal Suffix=[none]; Date=

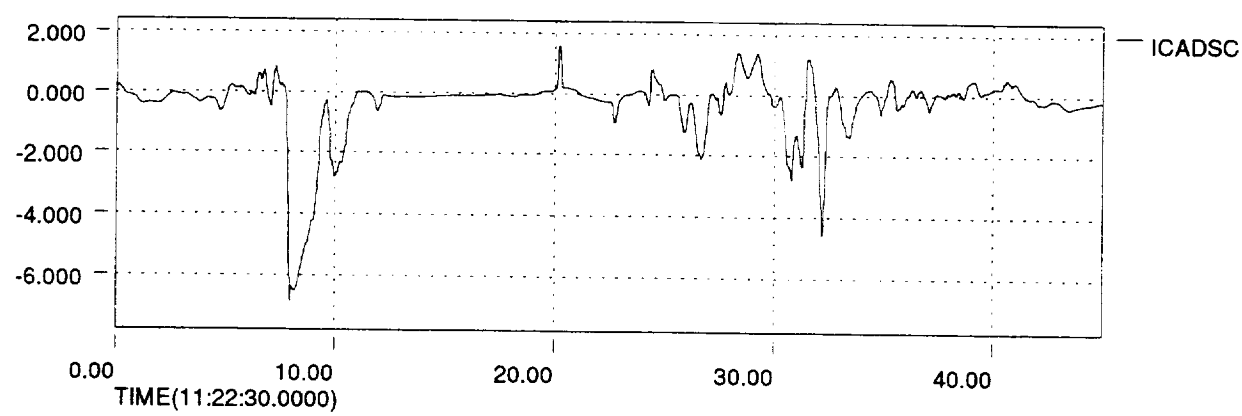


File=P383a.cmp3; Signal Suffix=[none]; Date=

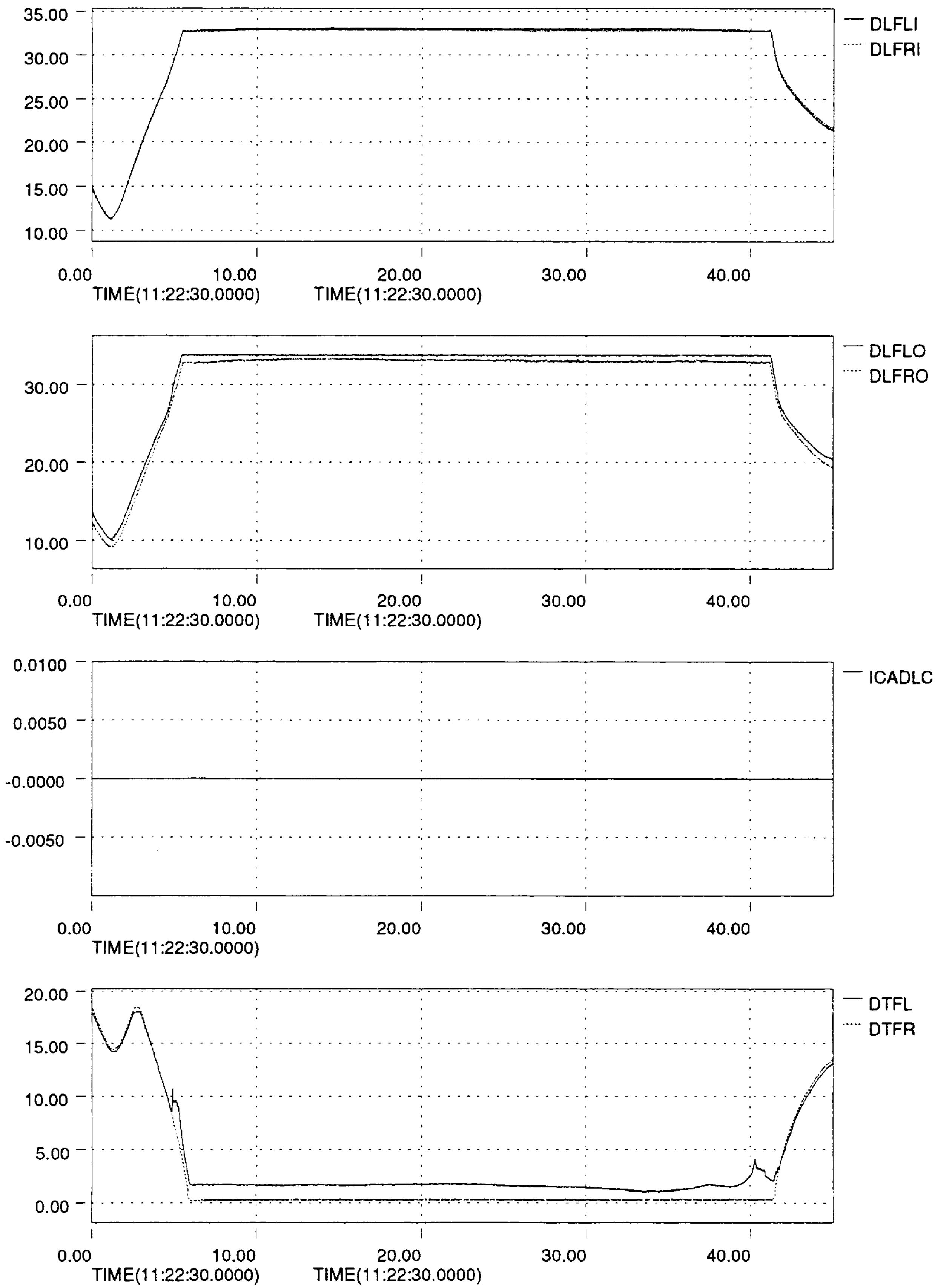




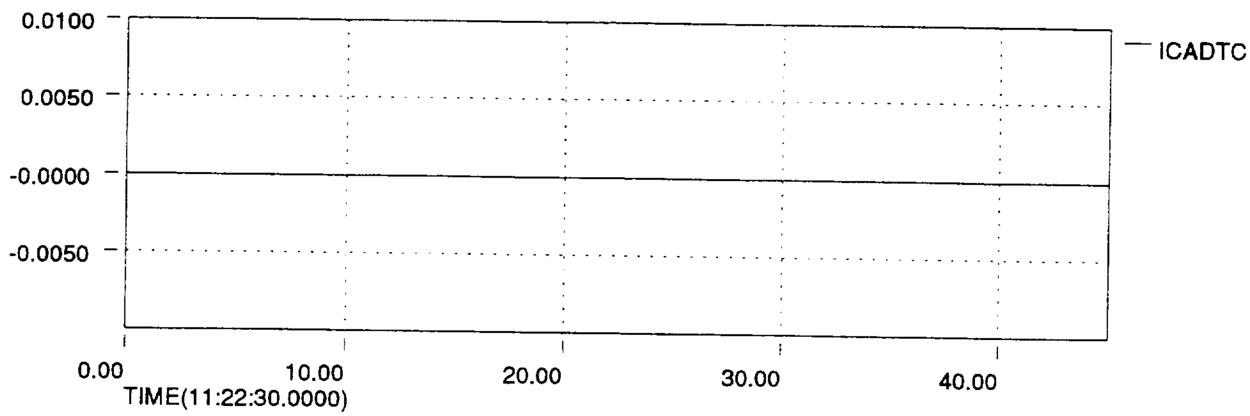


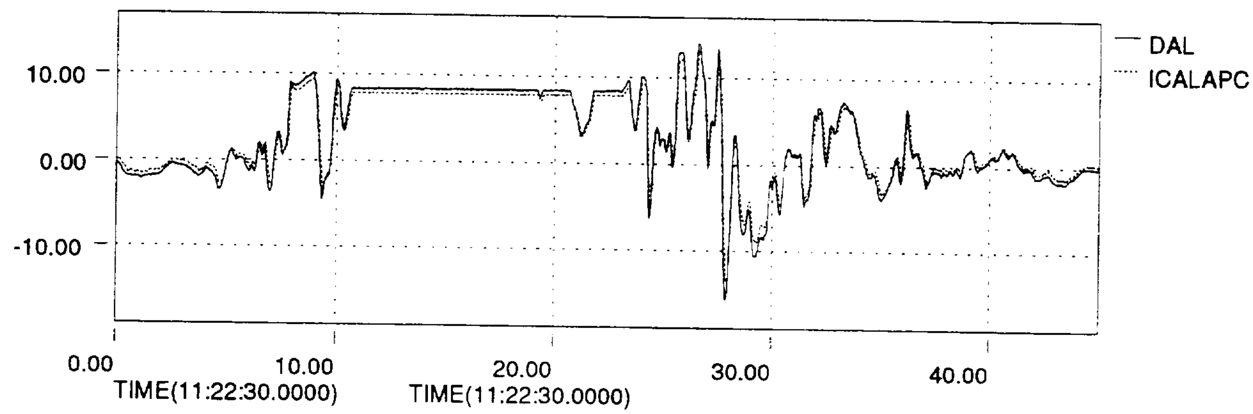


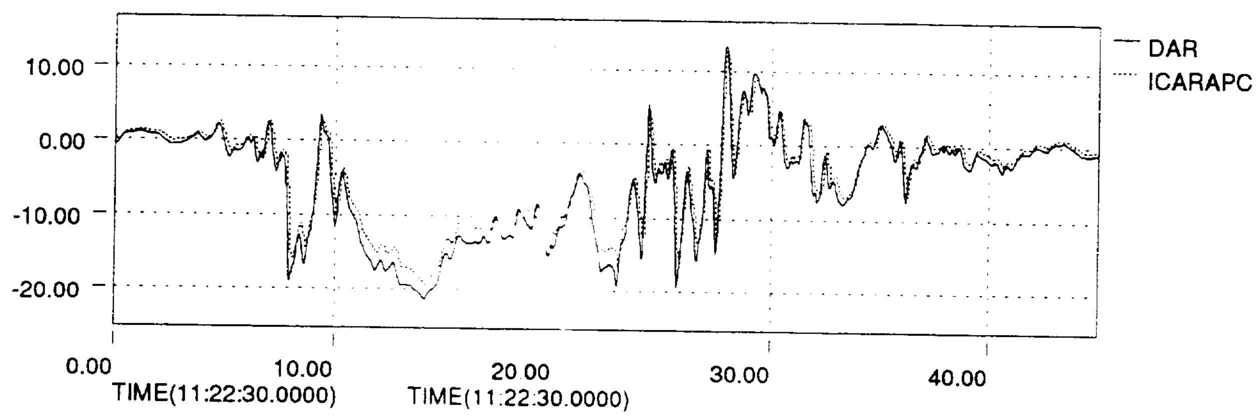
File=P383a.cmp3; Signal Suffix=[none]; Date=

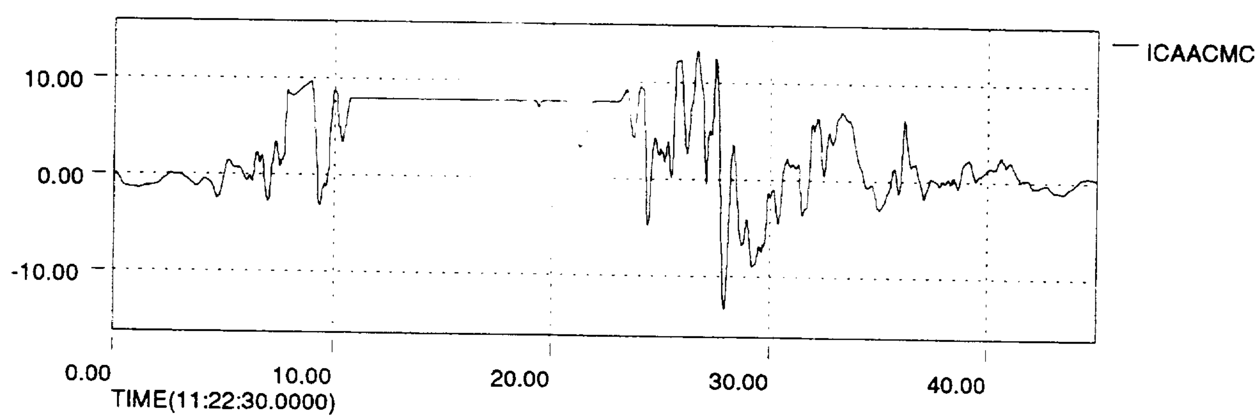


File=P383a.cmp3; Signal Suffix=[none]; Date=

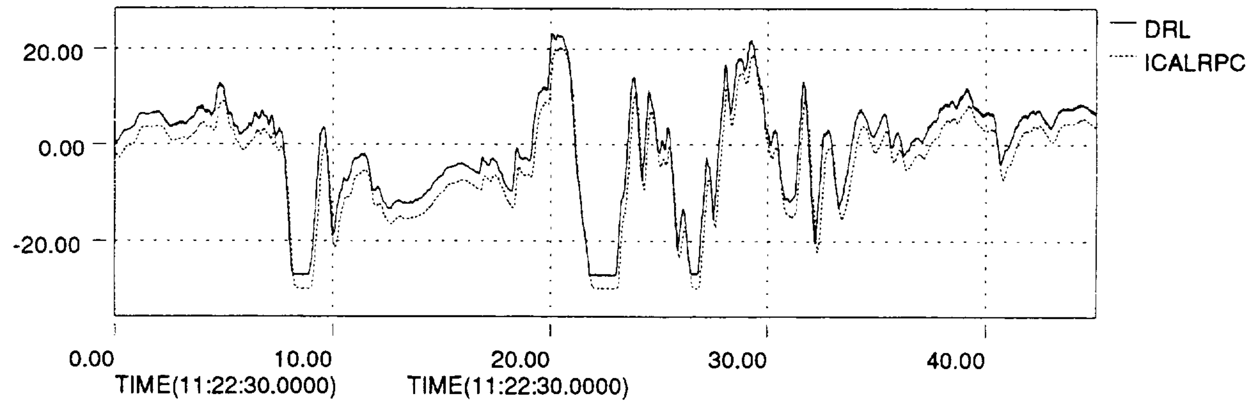


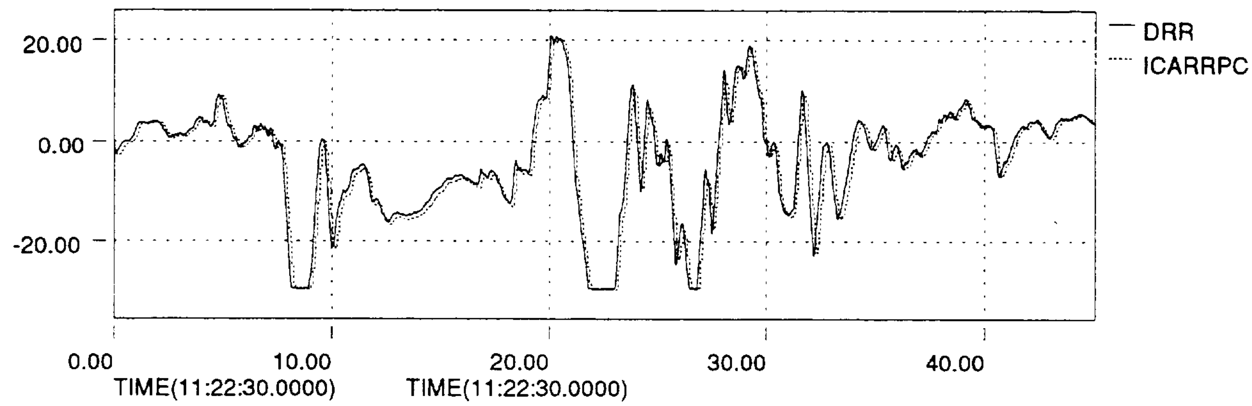


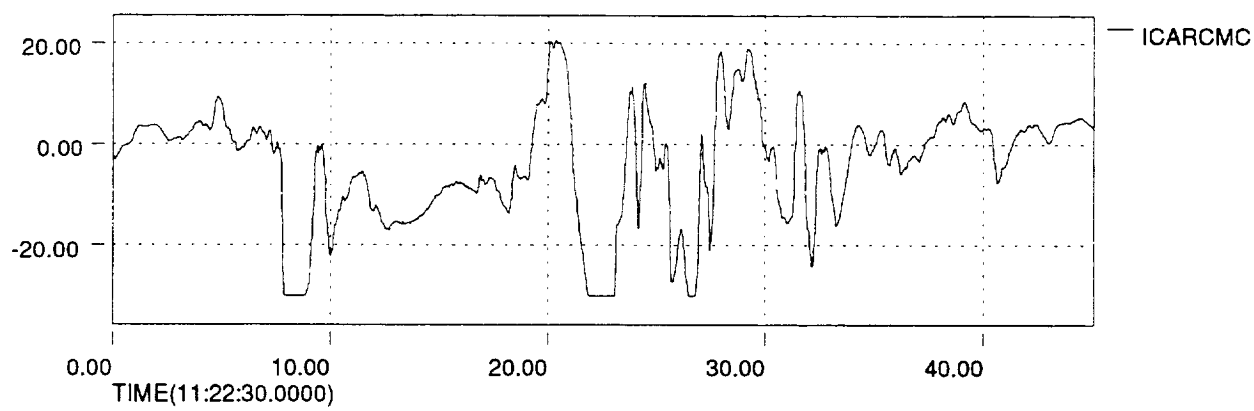


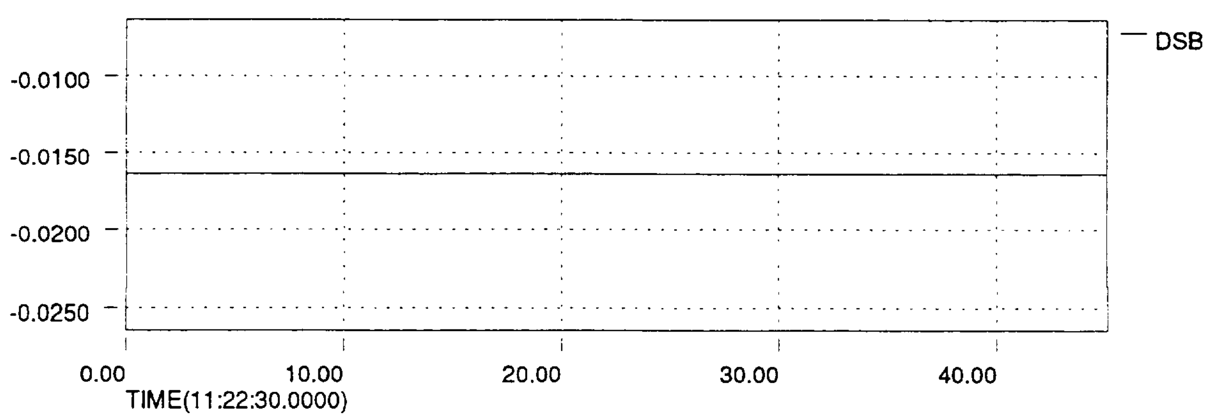


File=P383a.cmp3; Signal Suffix=[none]; Date=

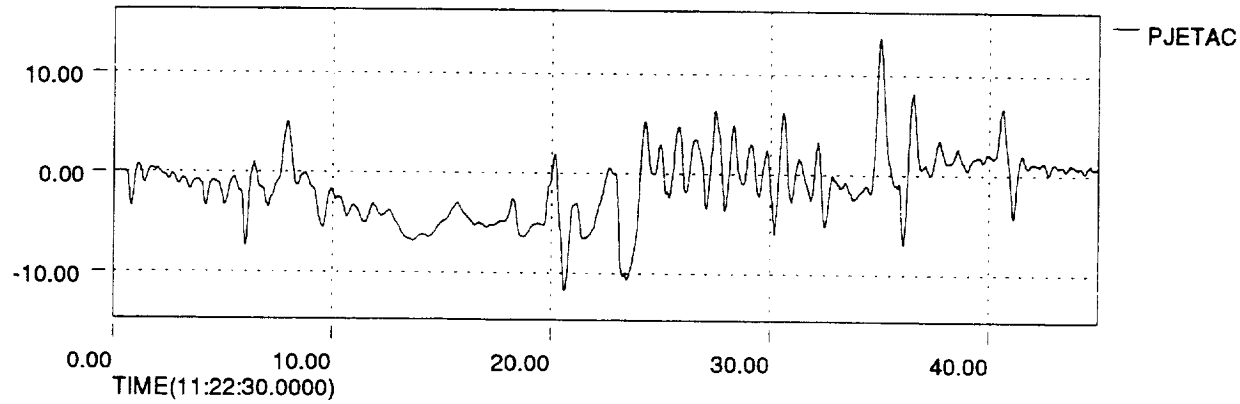


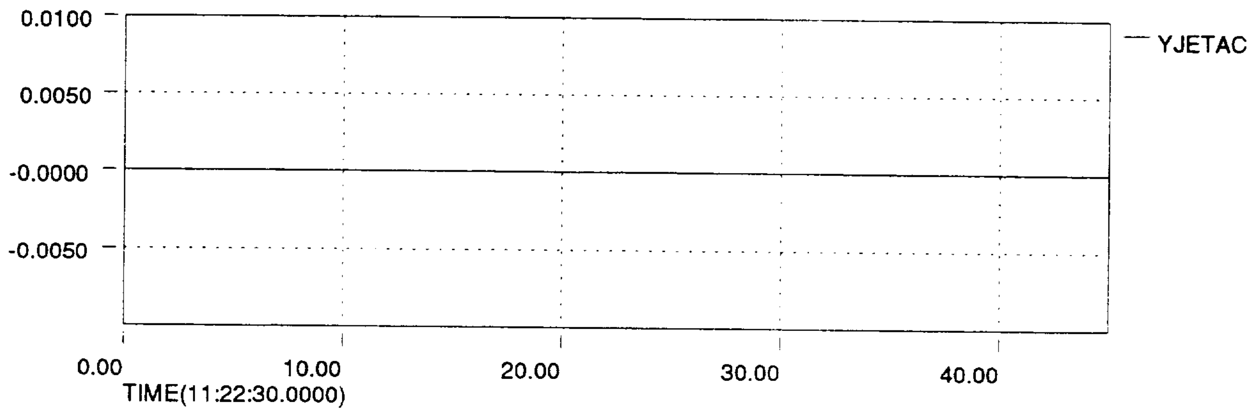


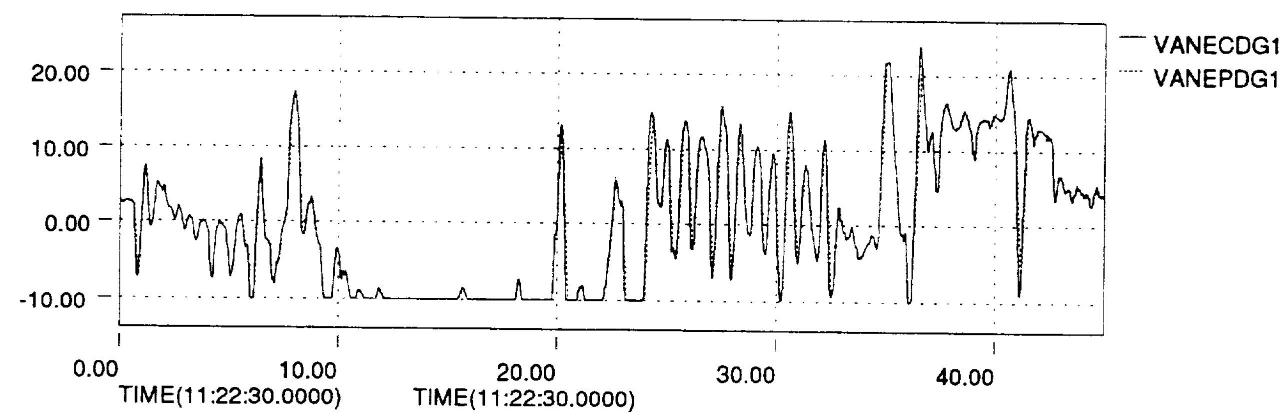


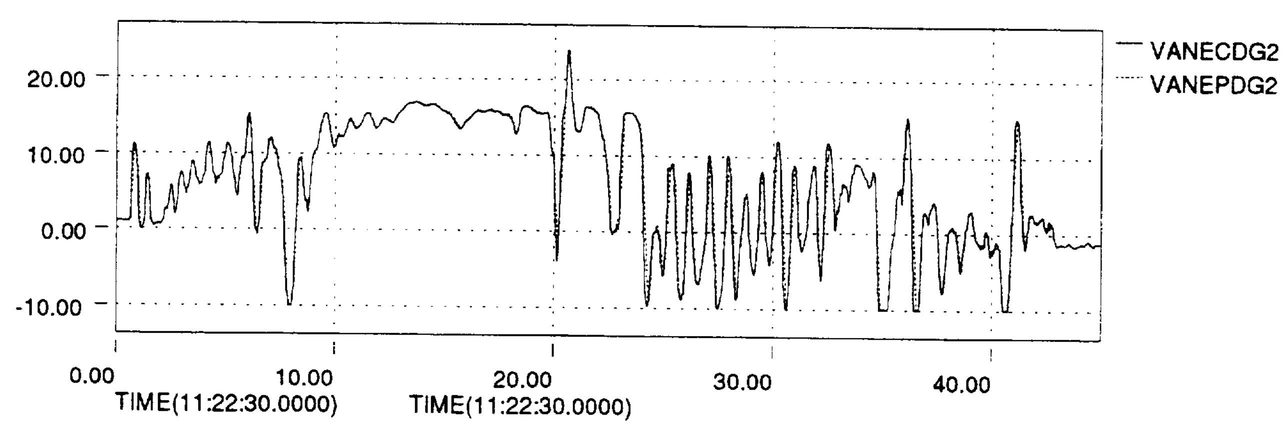


File=P383a.cmp3; Signal Suffix=[none]; Date=









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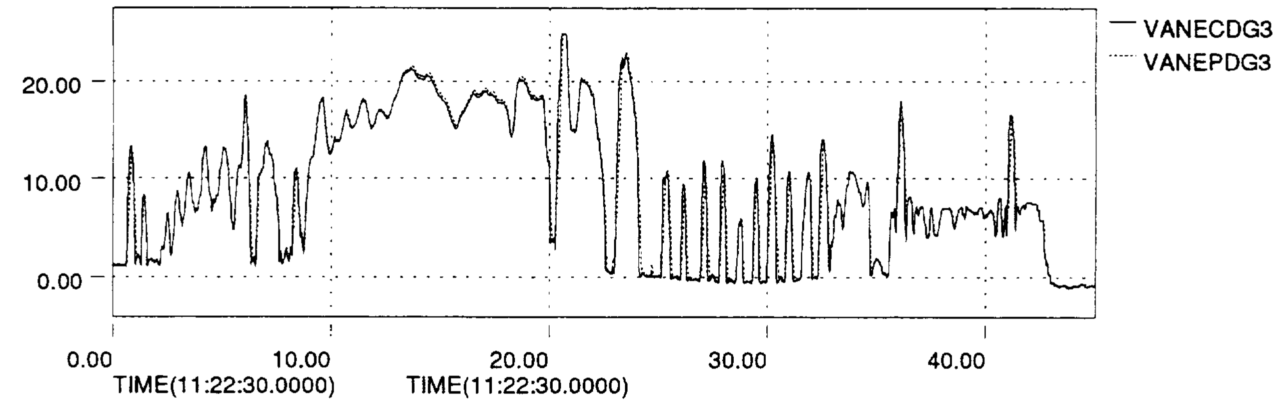

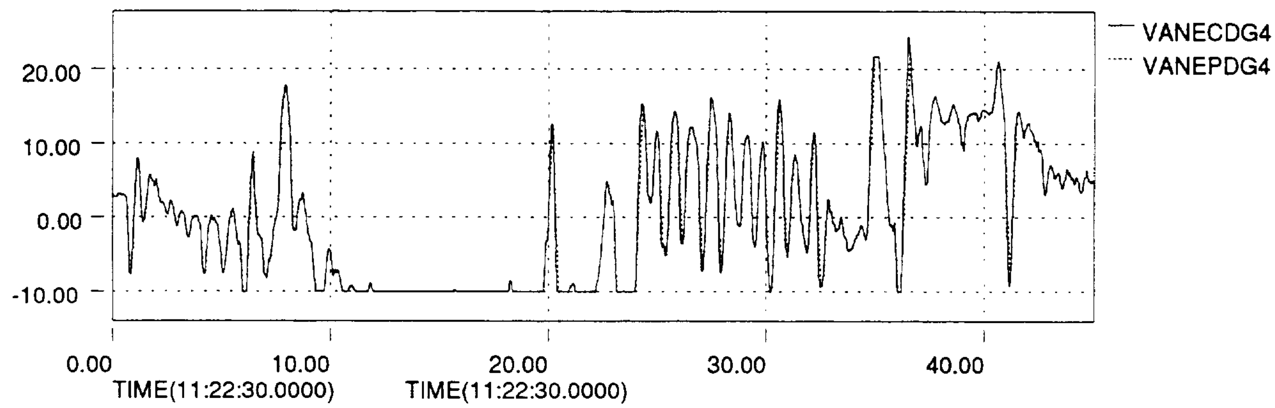

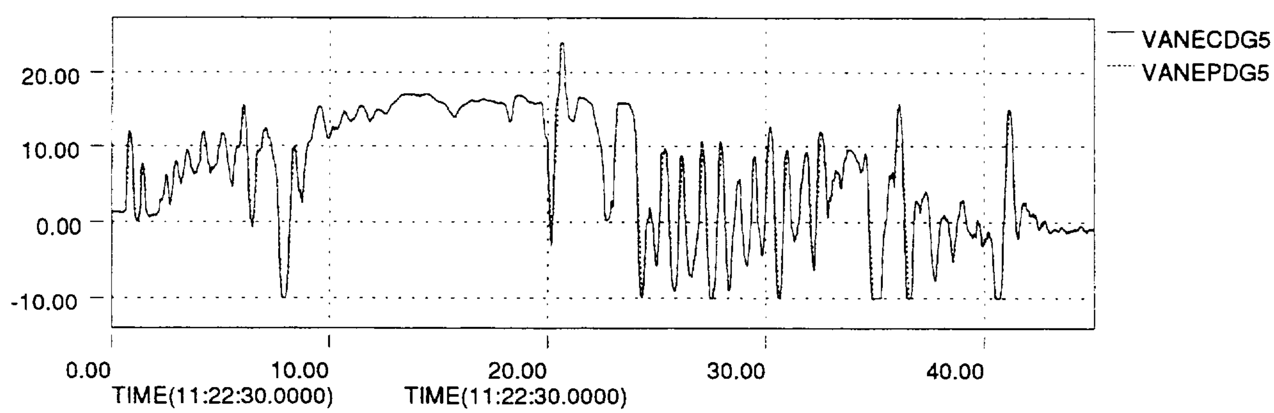

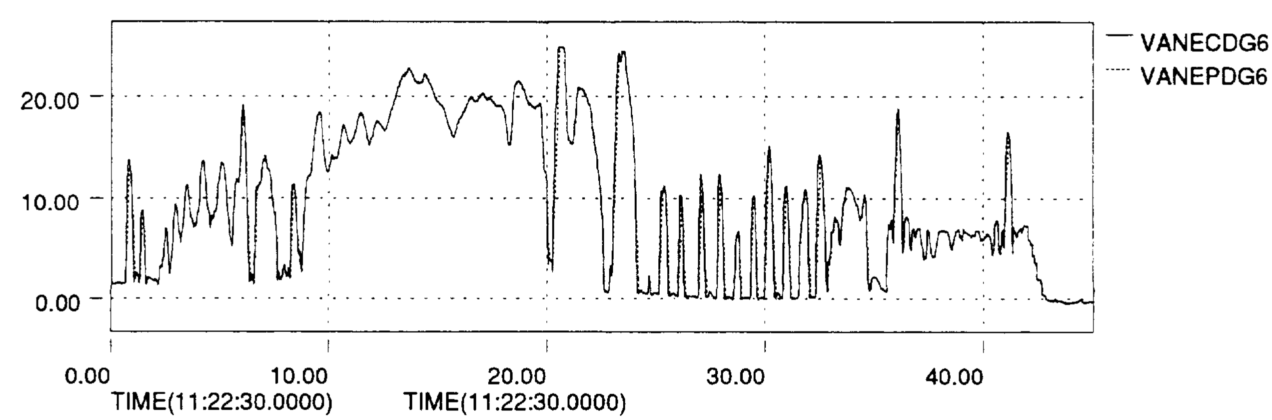

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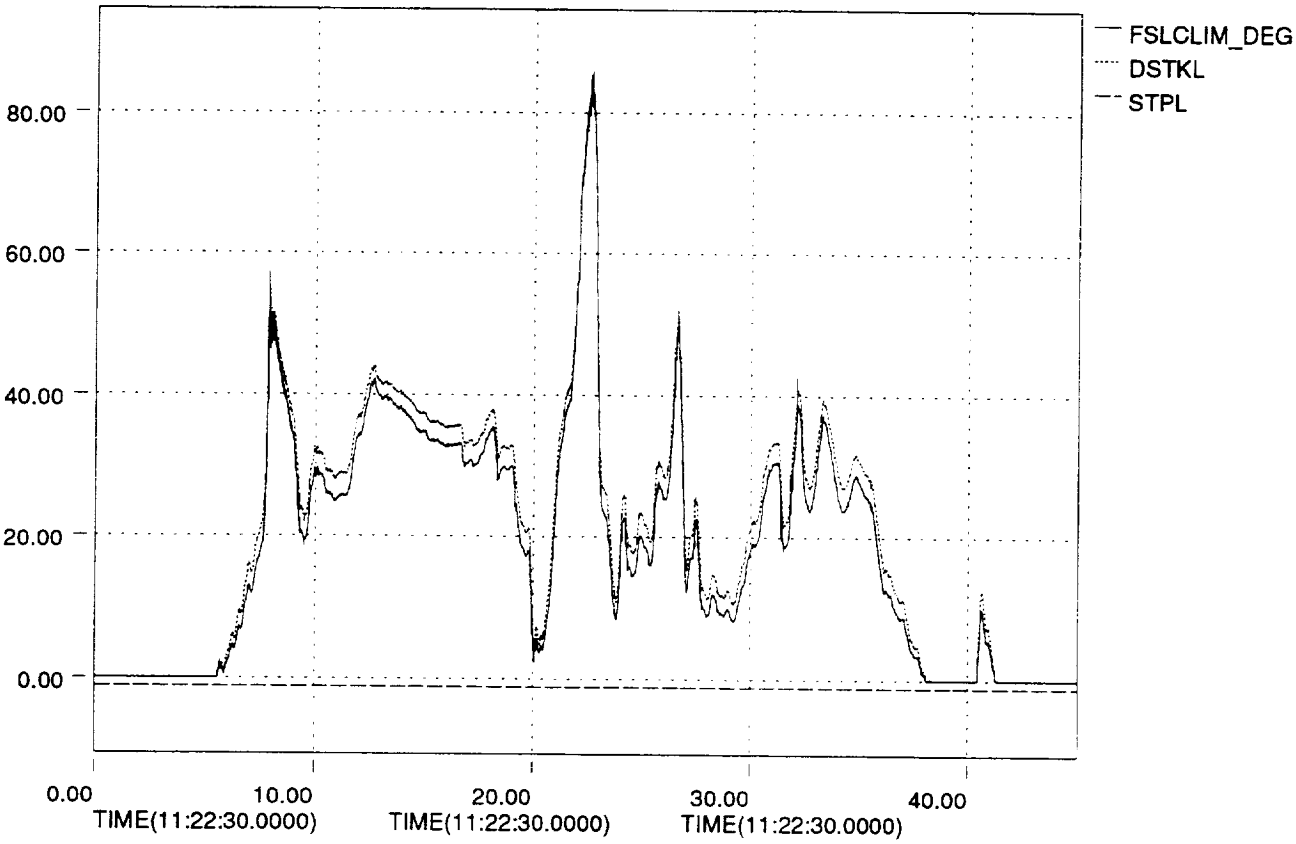
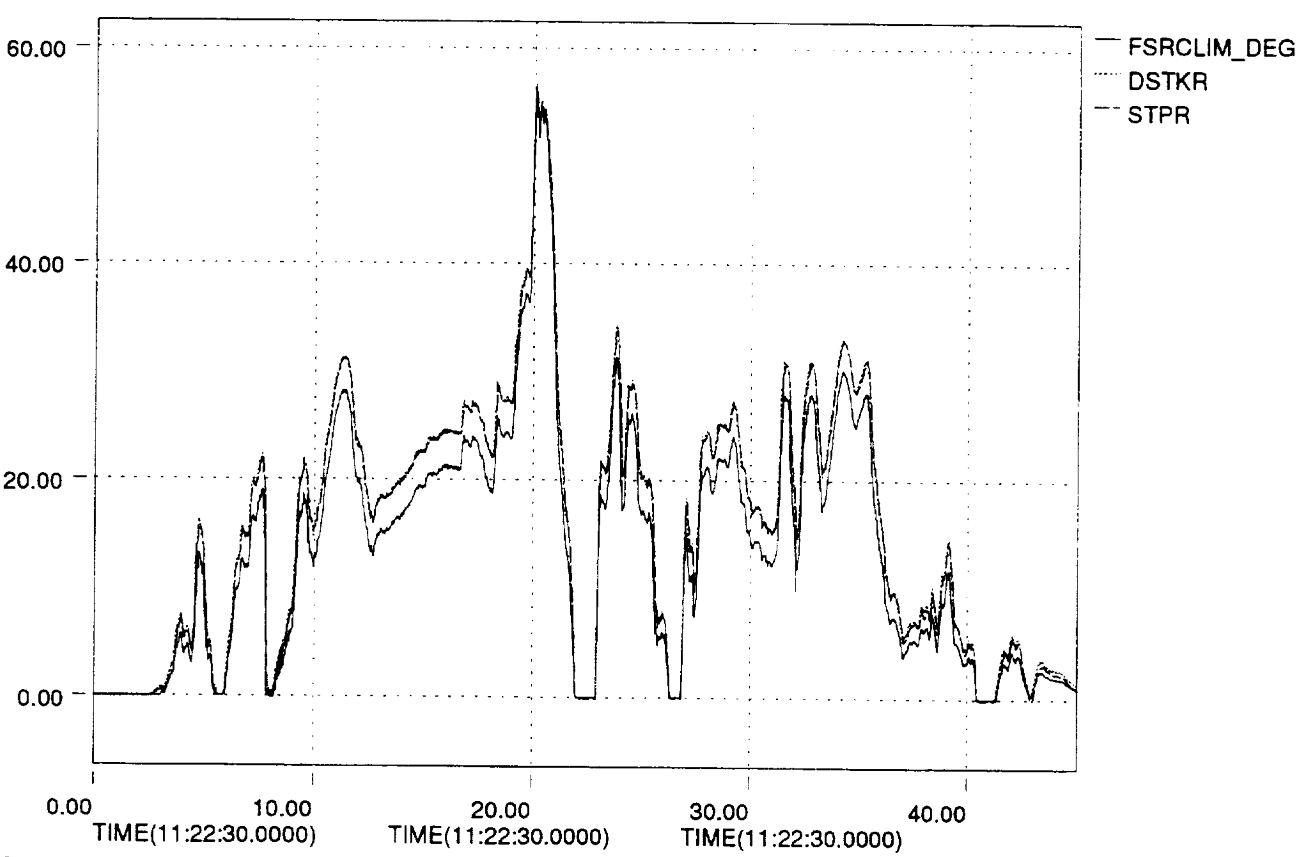
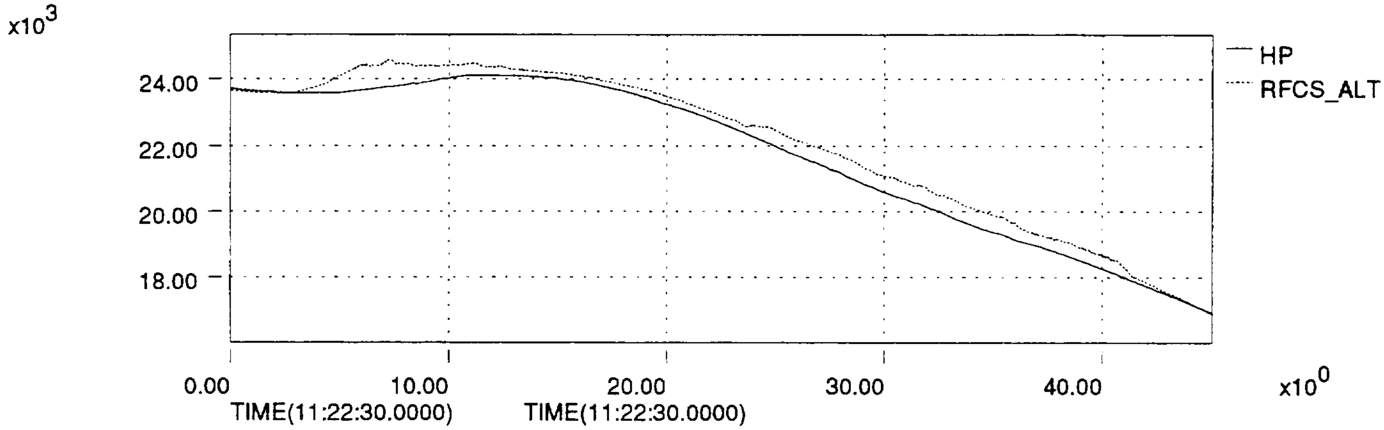
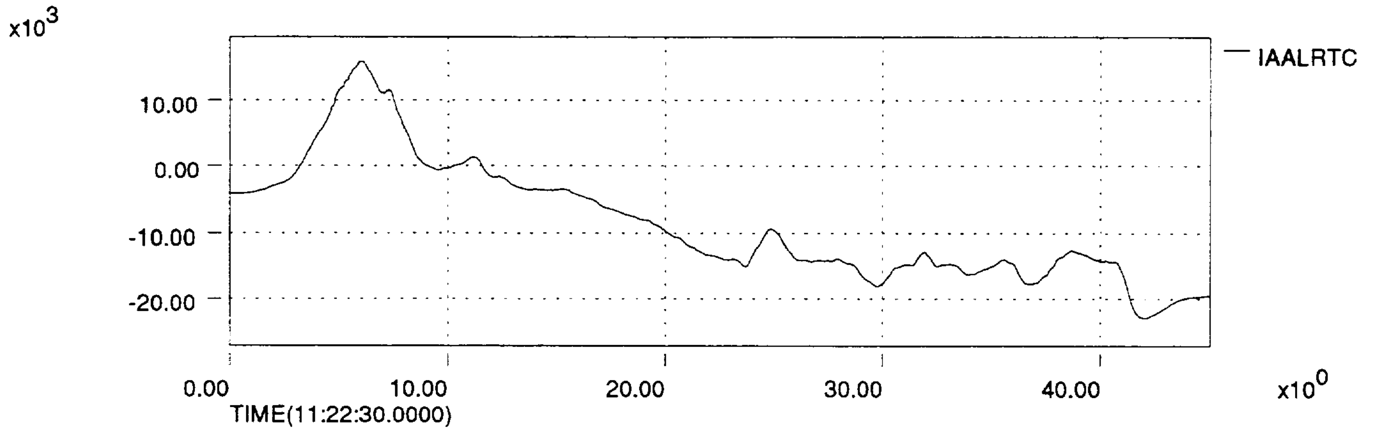
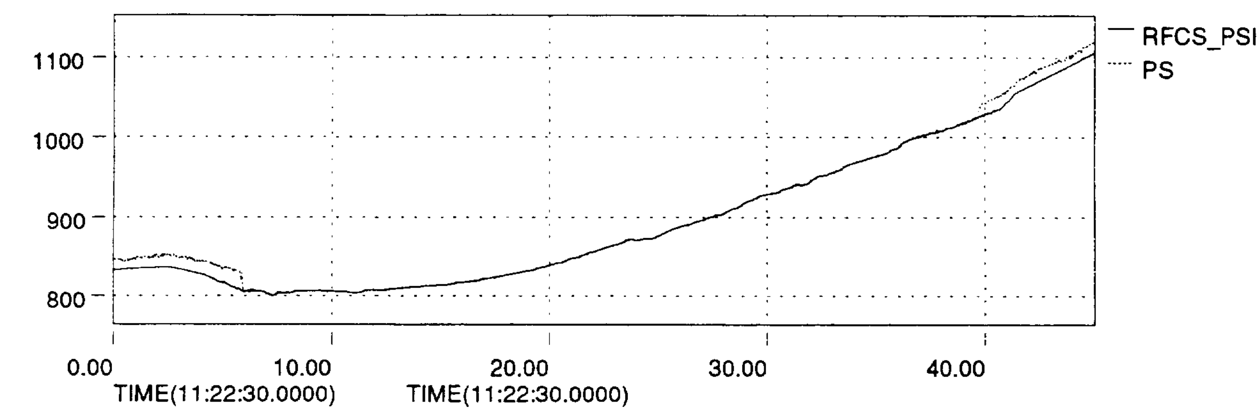


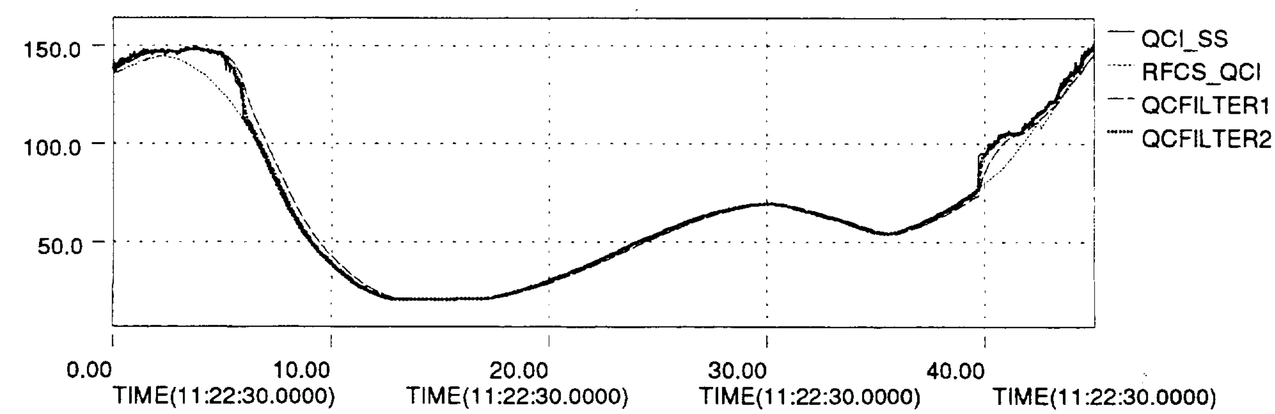


File=P383a.cmp3; Signal Suffix=[none]; Date=

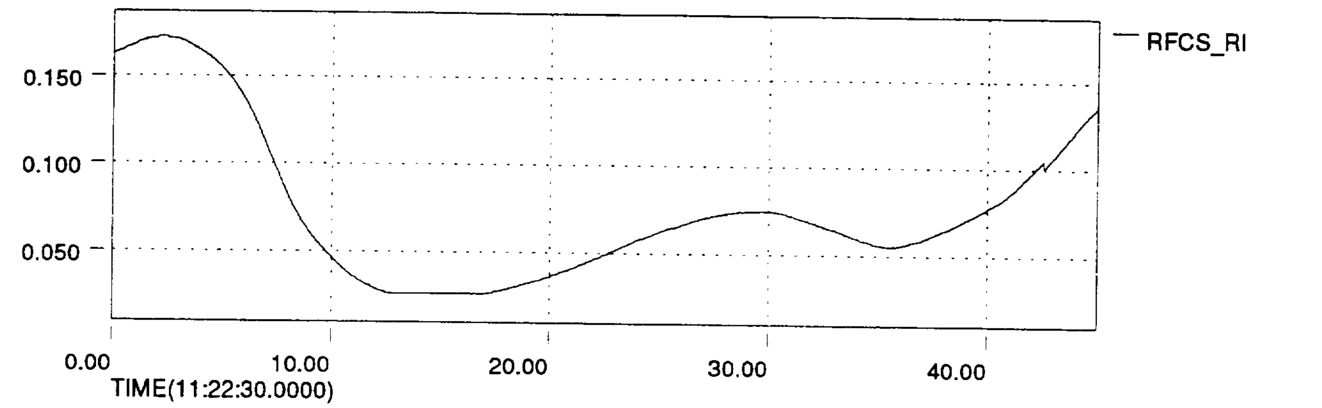


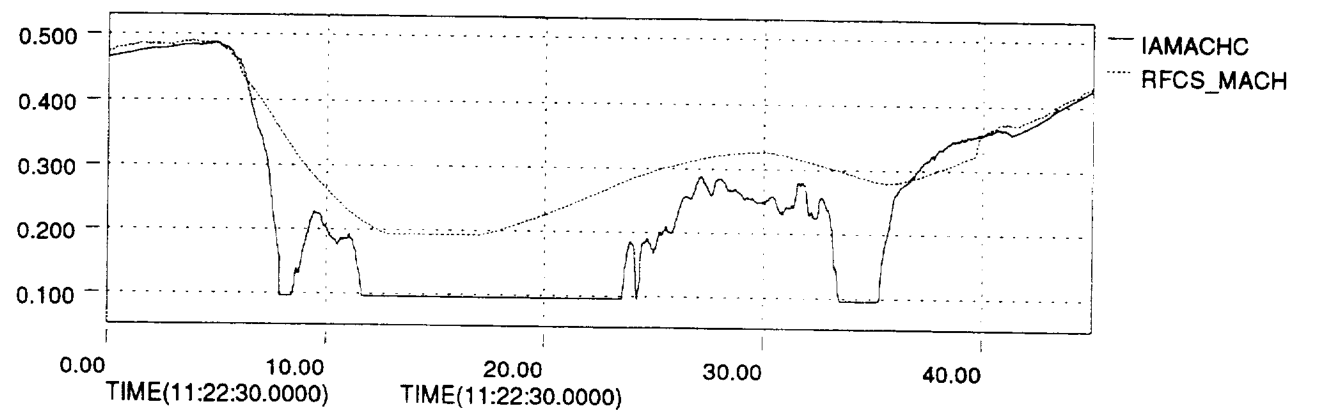


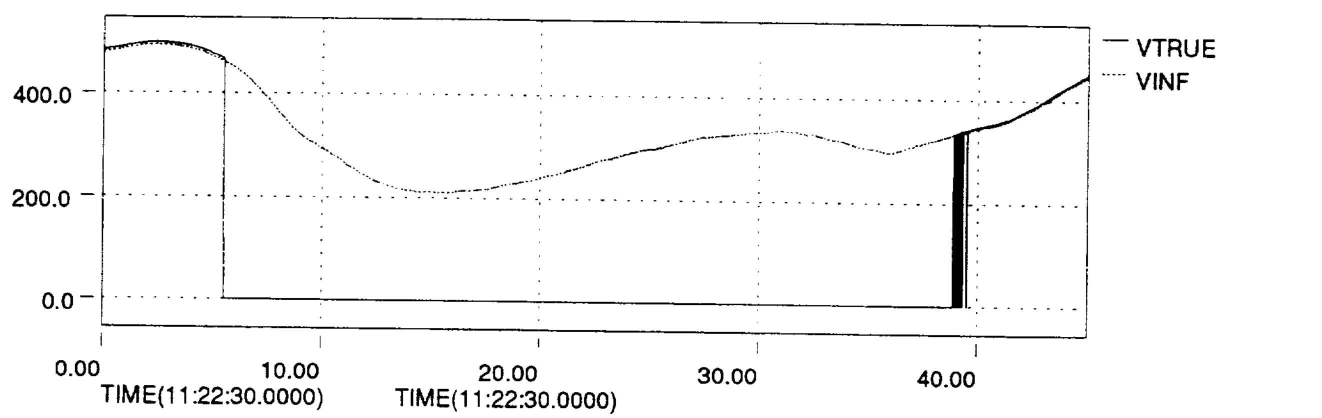


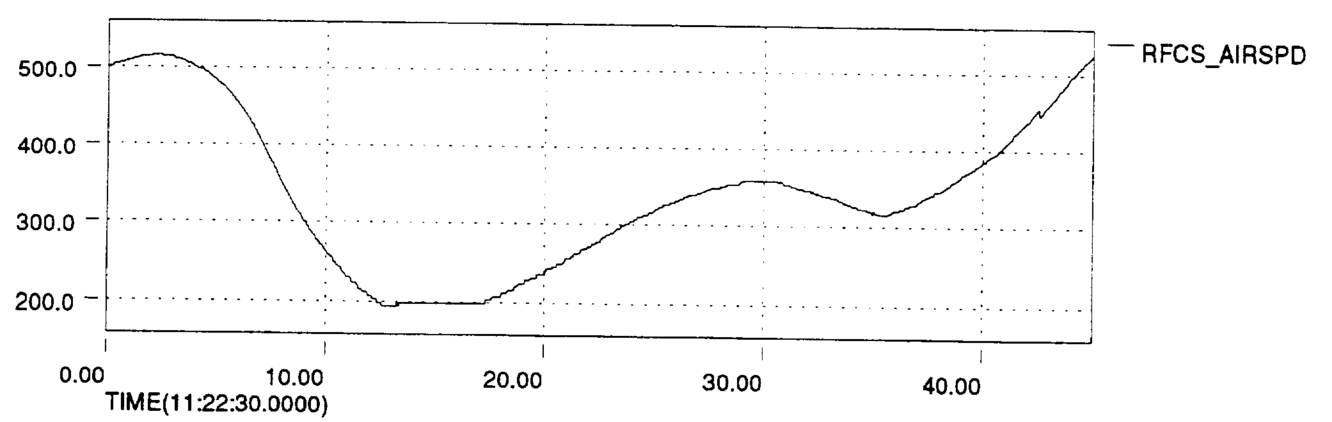


File=P383a.cmp3; Signal Suffix=[none]; Date=









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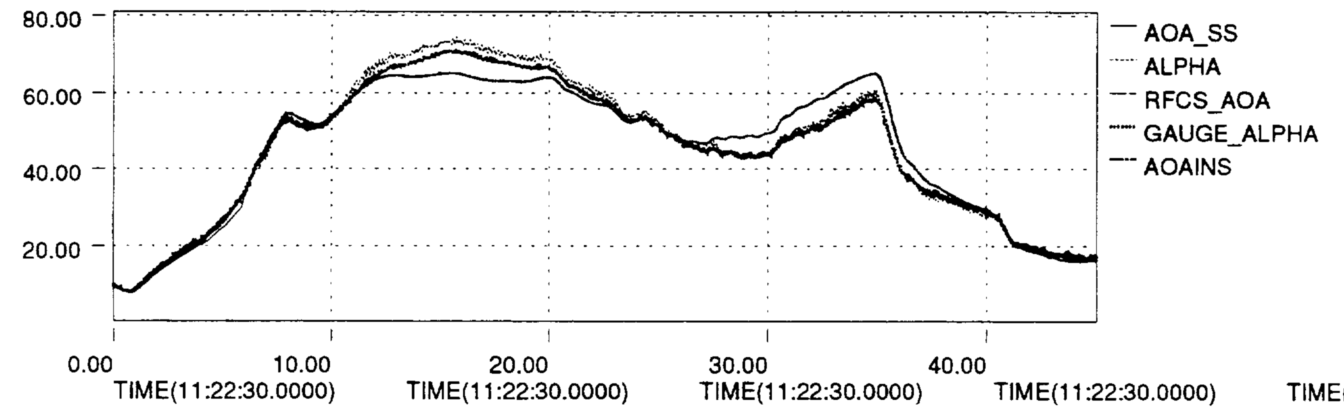

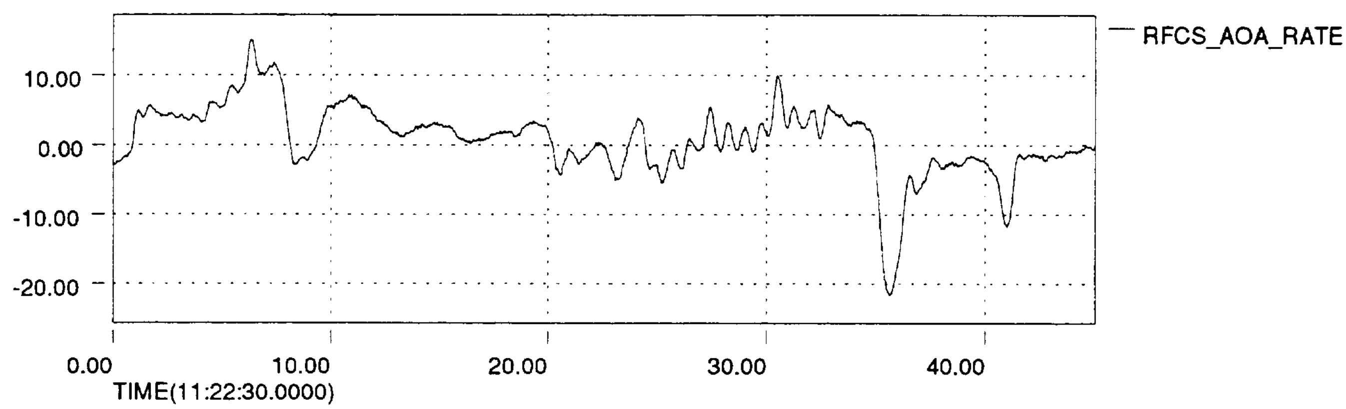

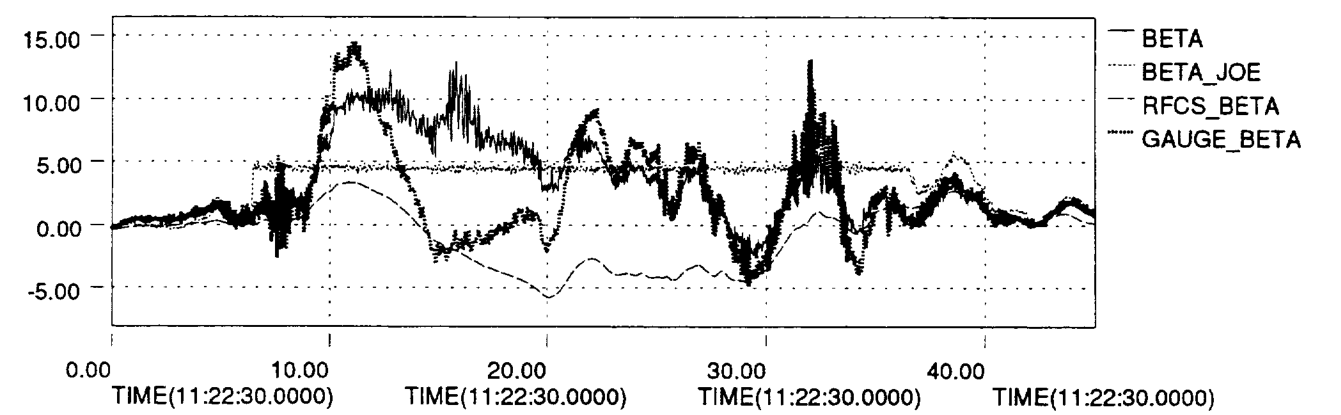

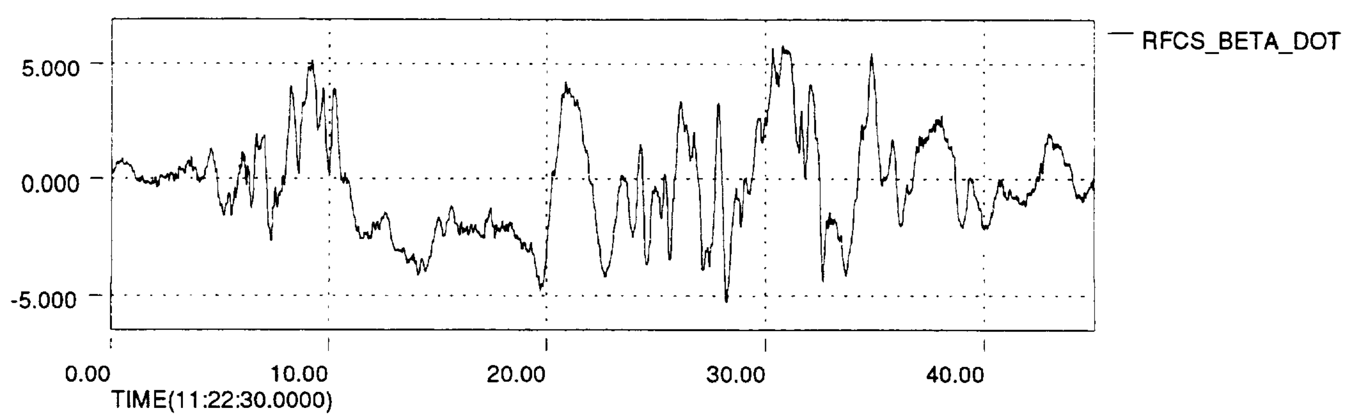

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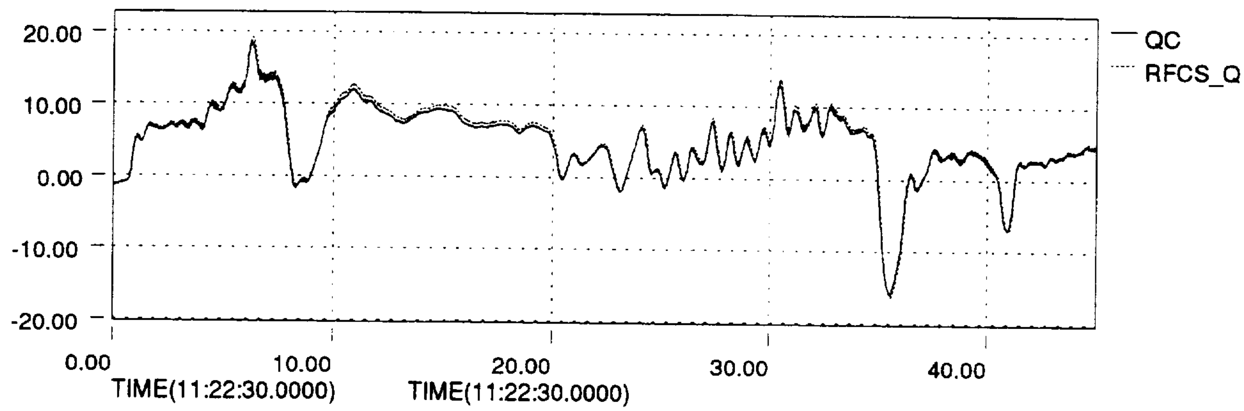
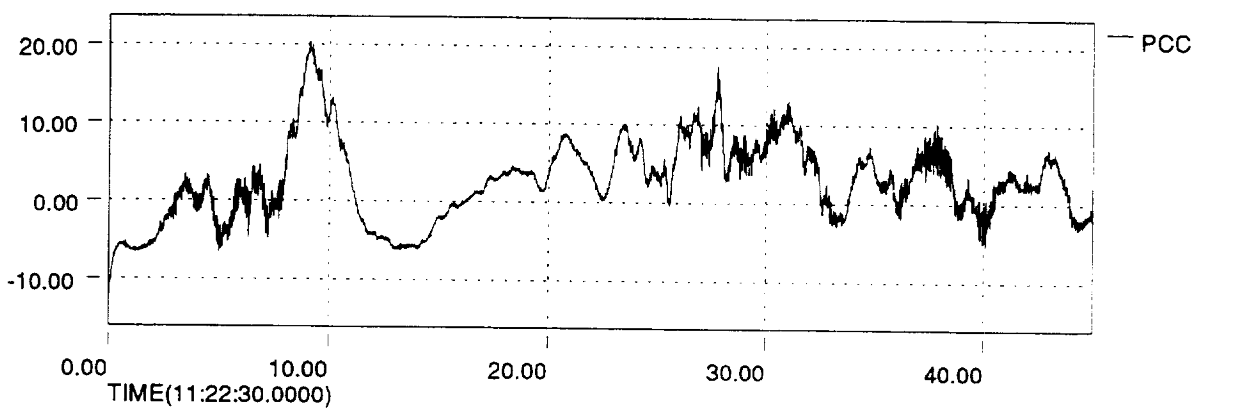
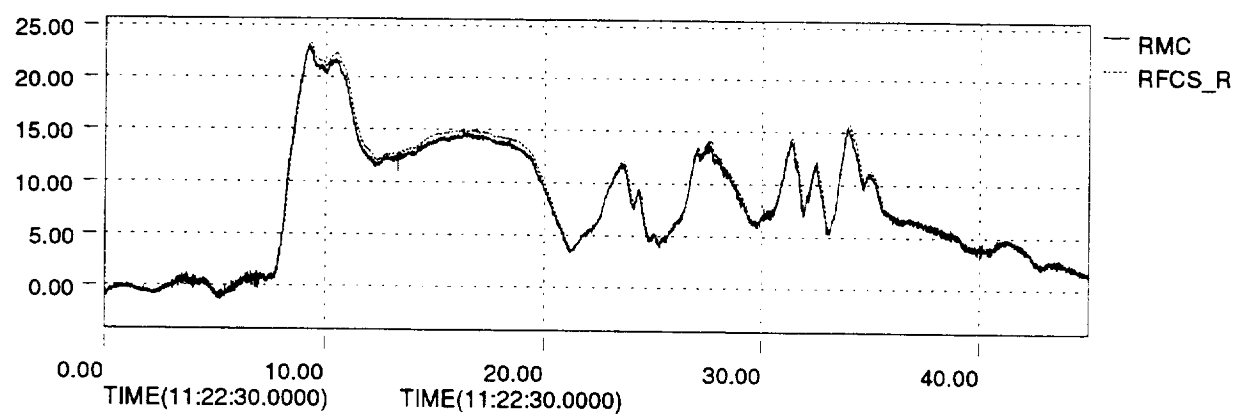
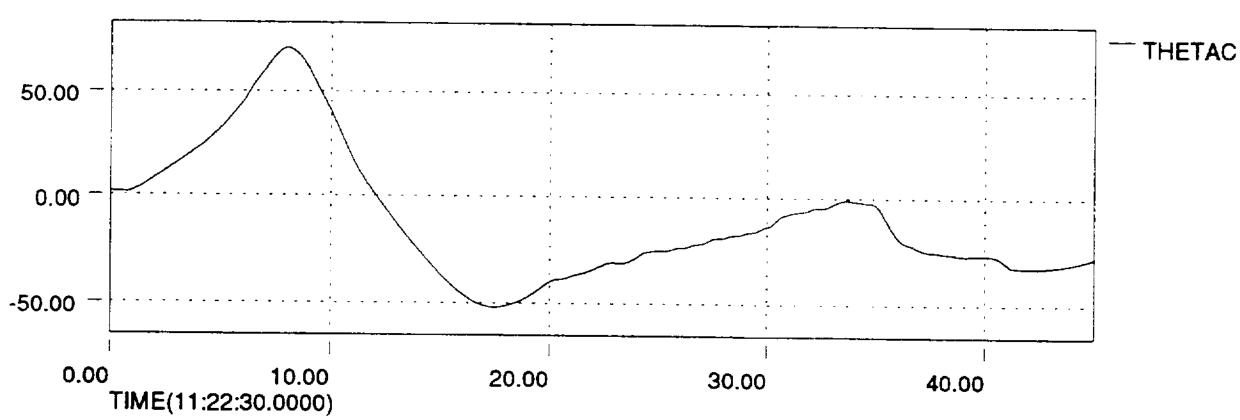
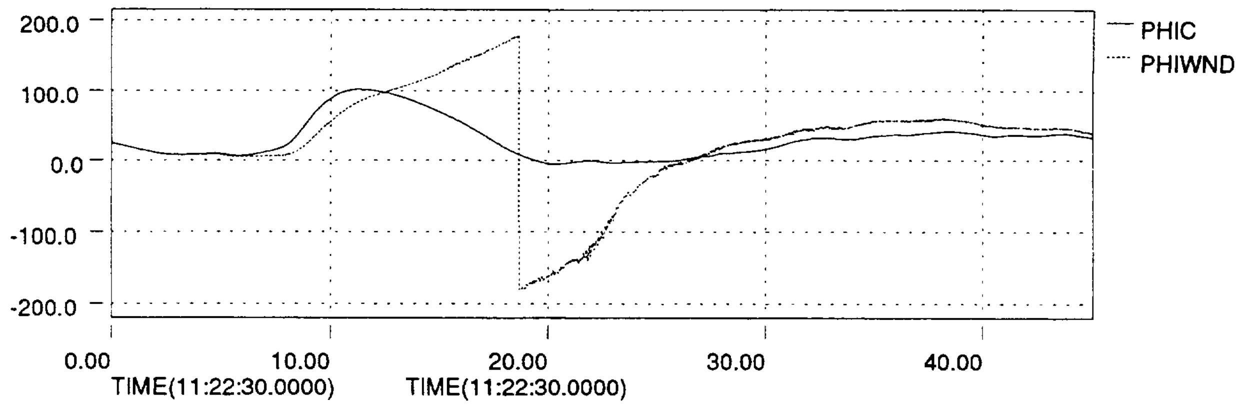


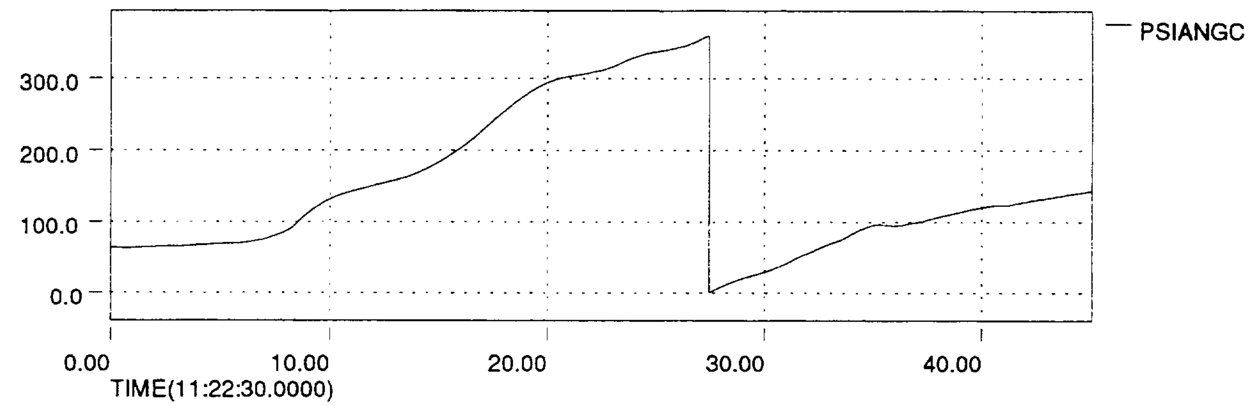


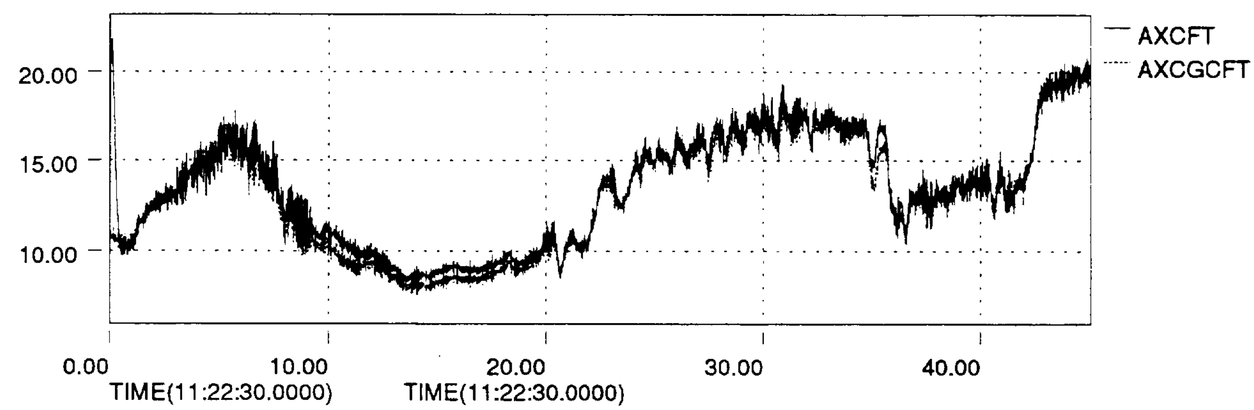


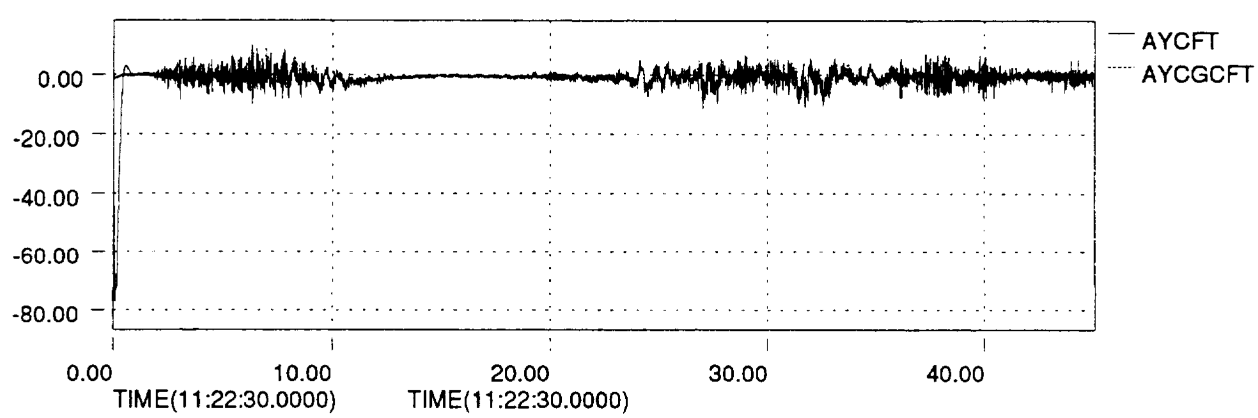


File=P383a.cmp3; Signal Suffix=[none]; Date=









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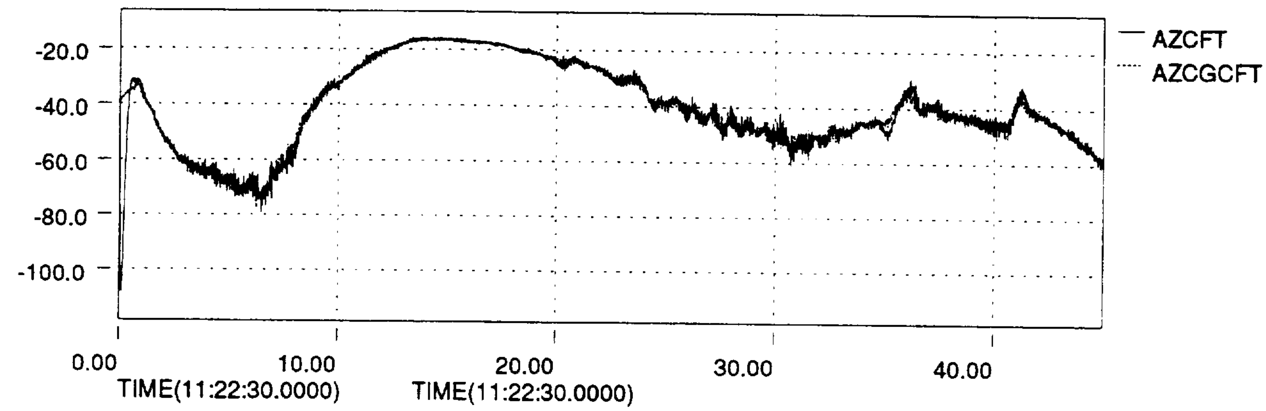

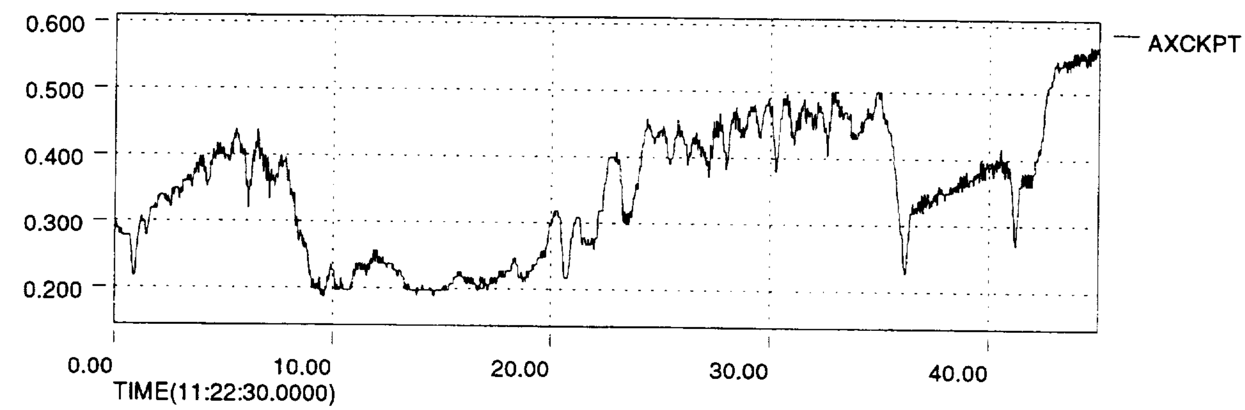

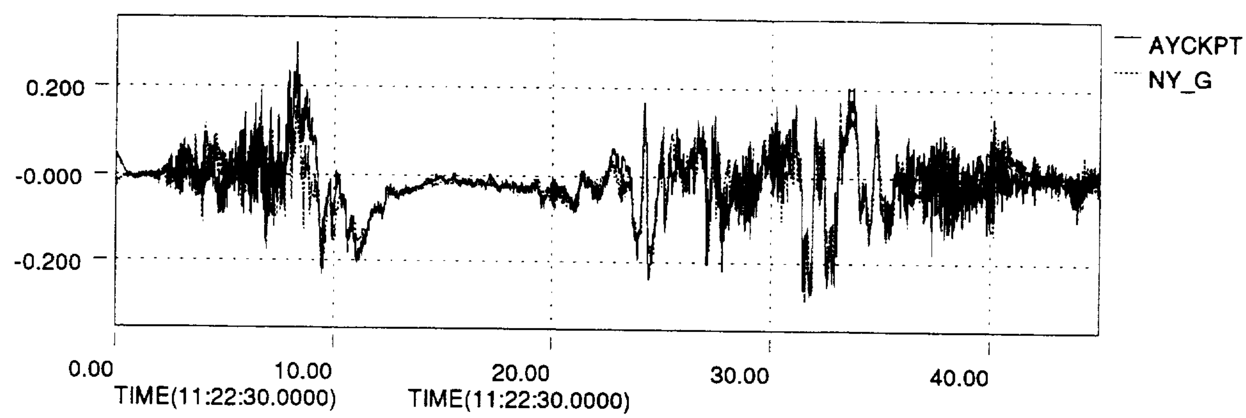

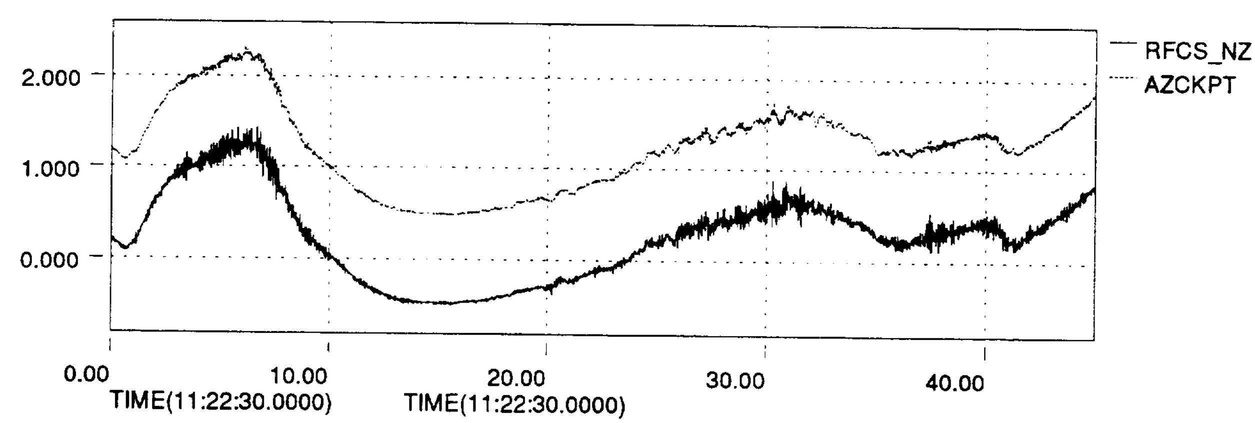

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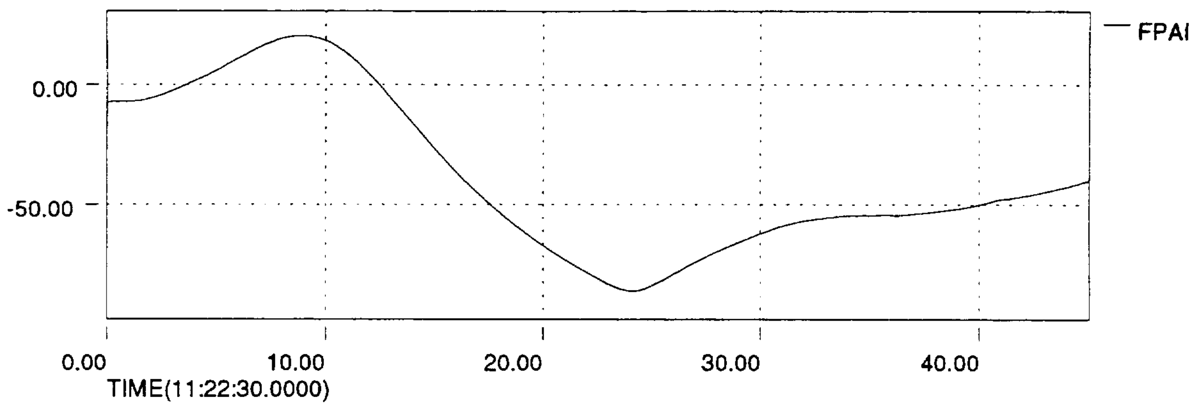
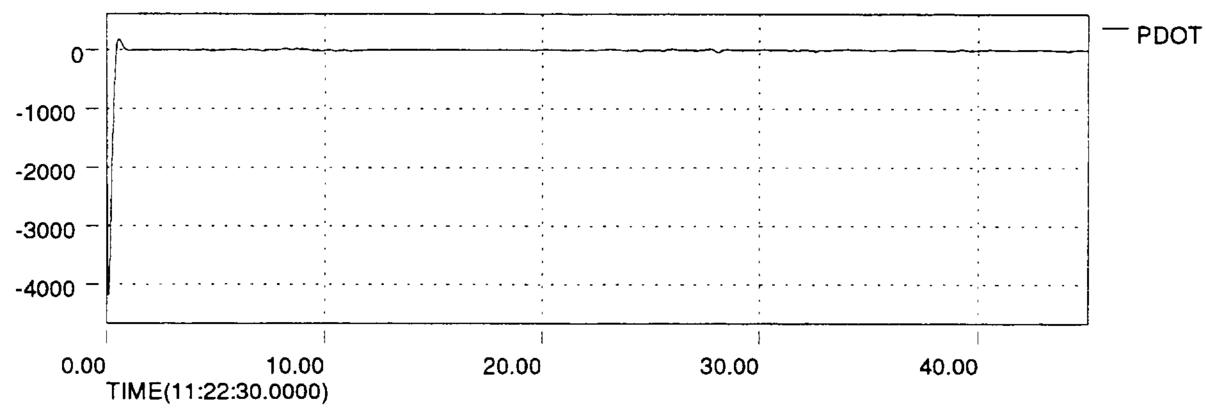
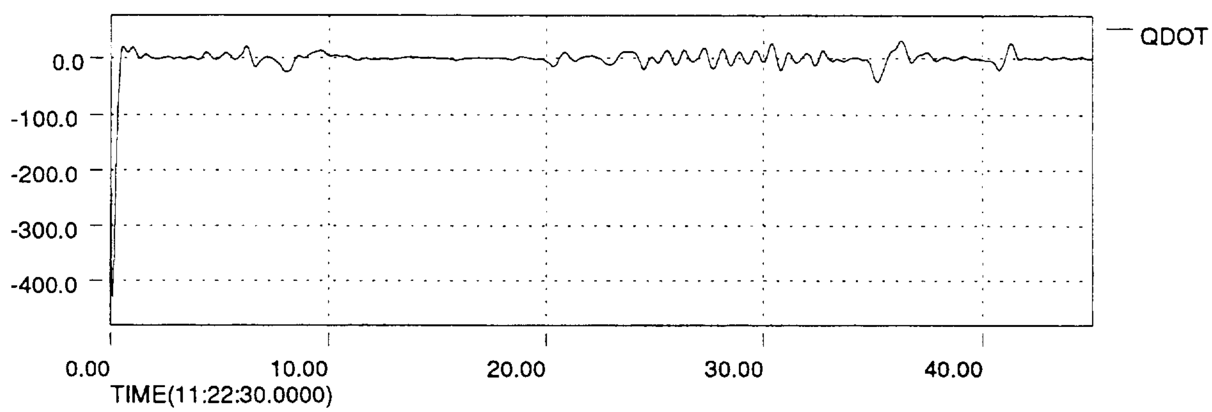
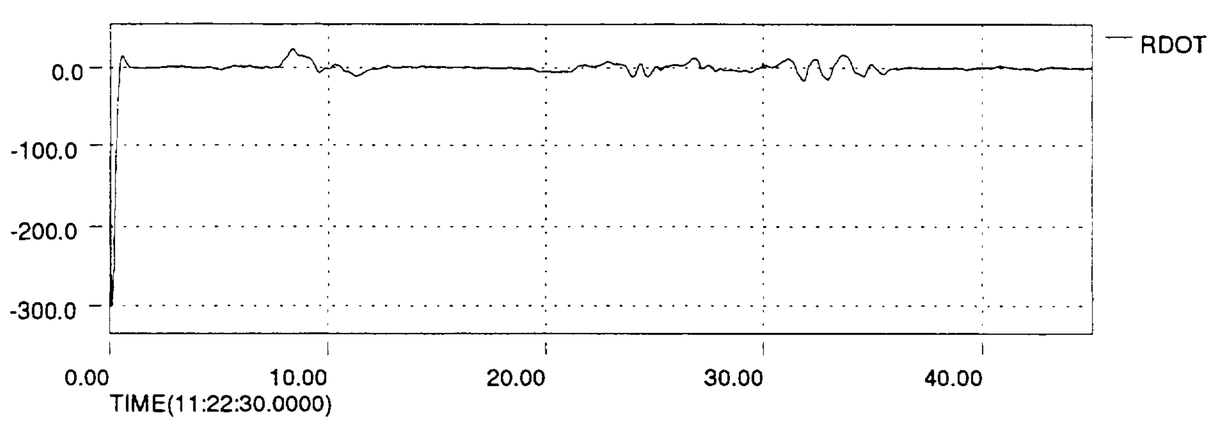
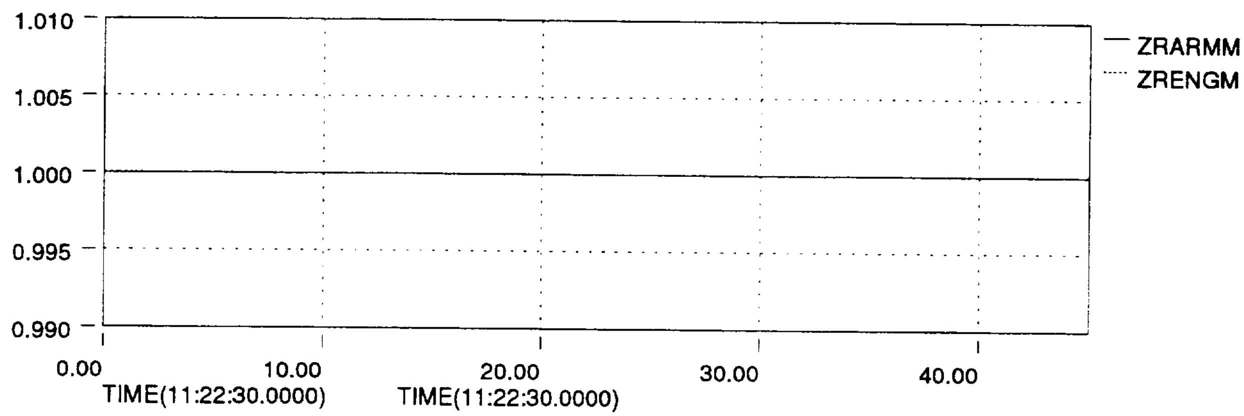


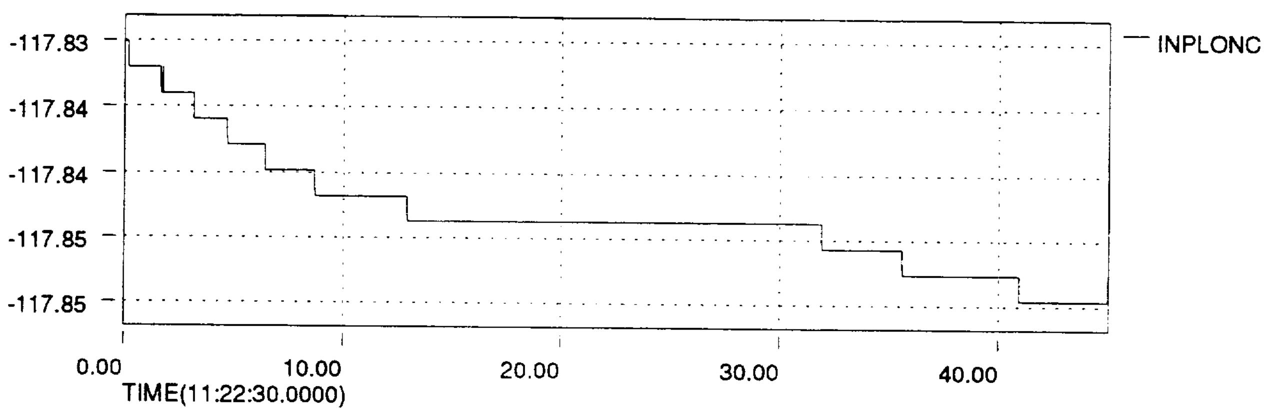


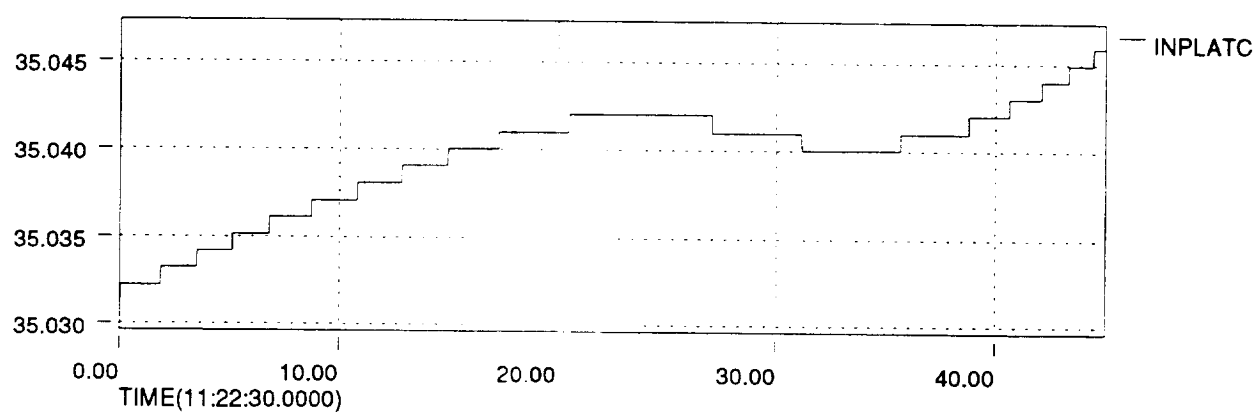


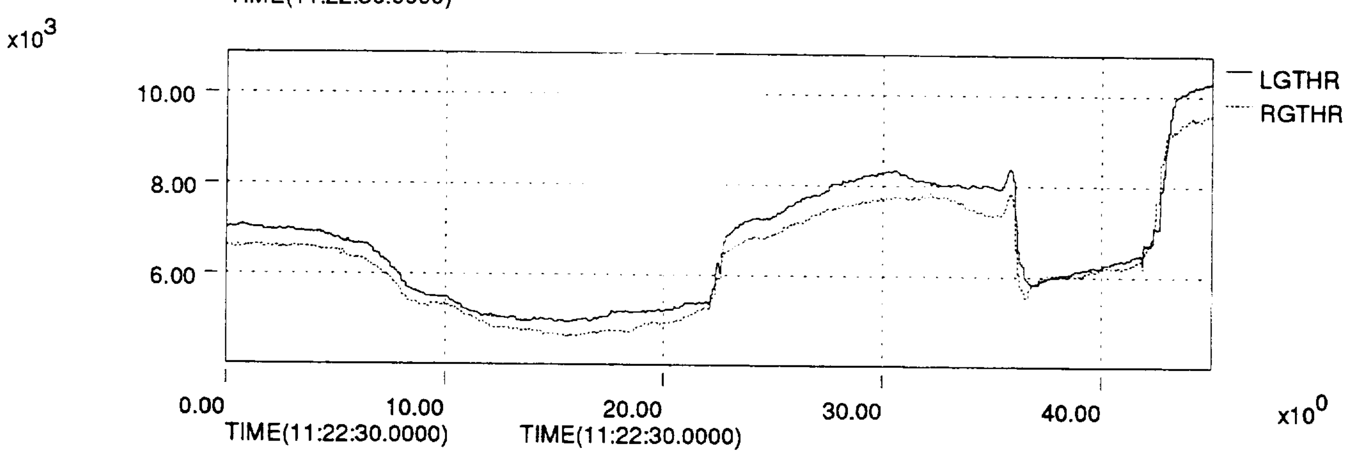


File=P383a.cmp3; Signal Suffix=[none]; Date=

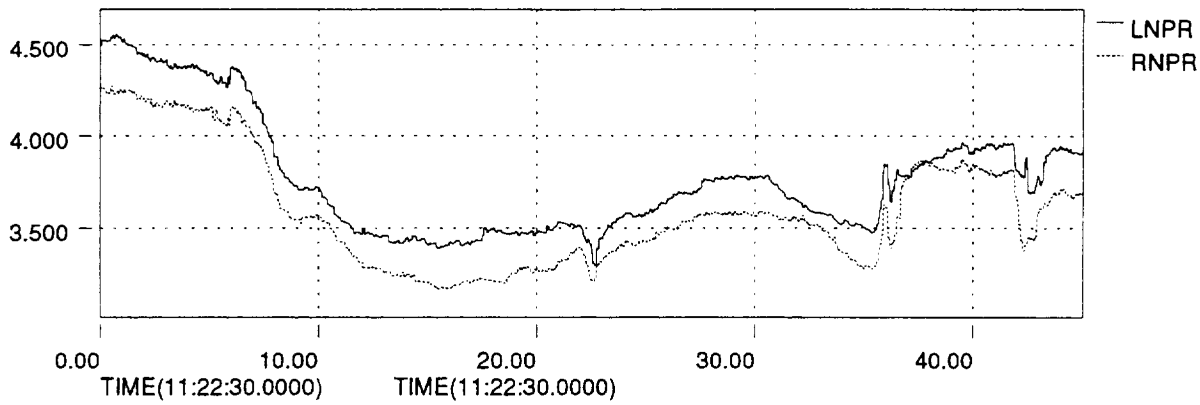


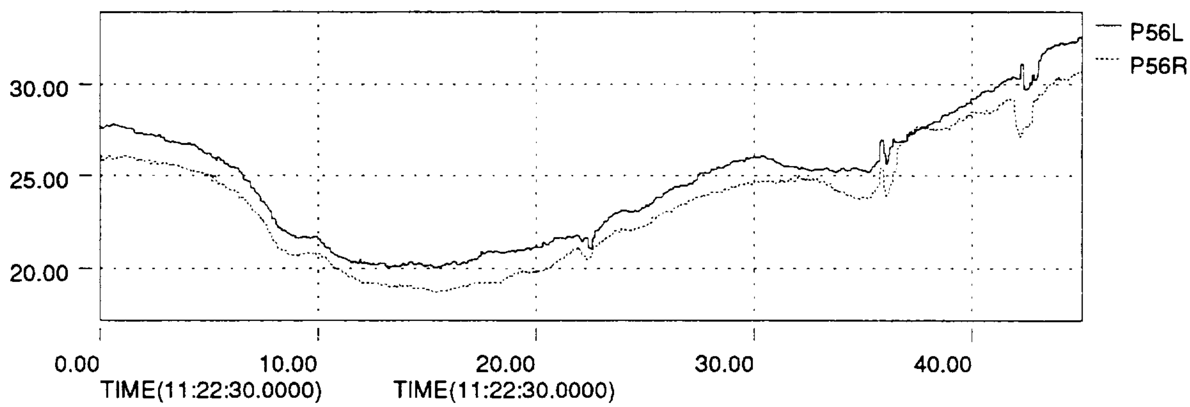


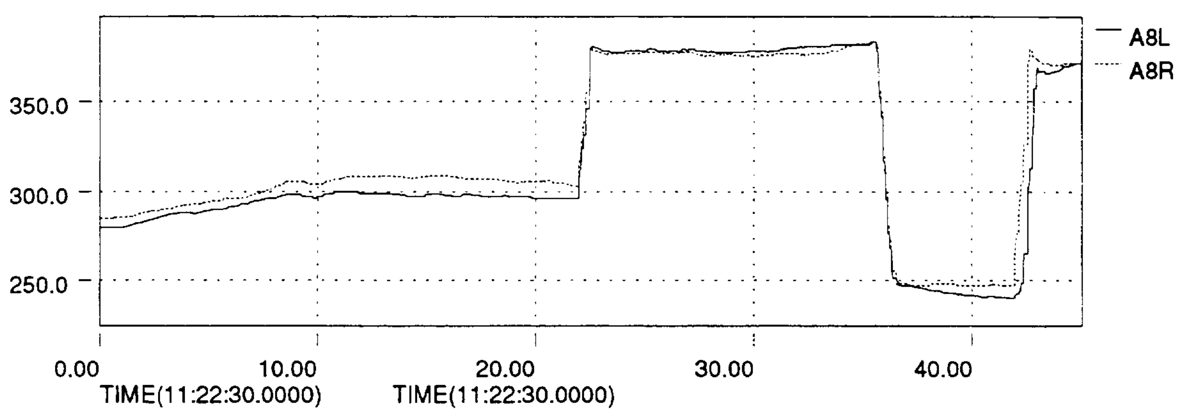


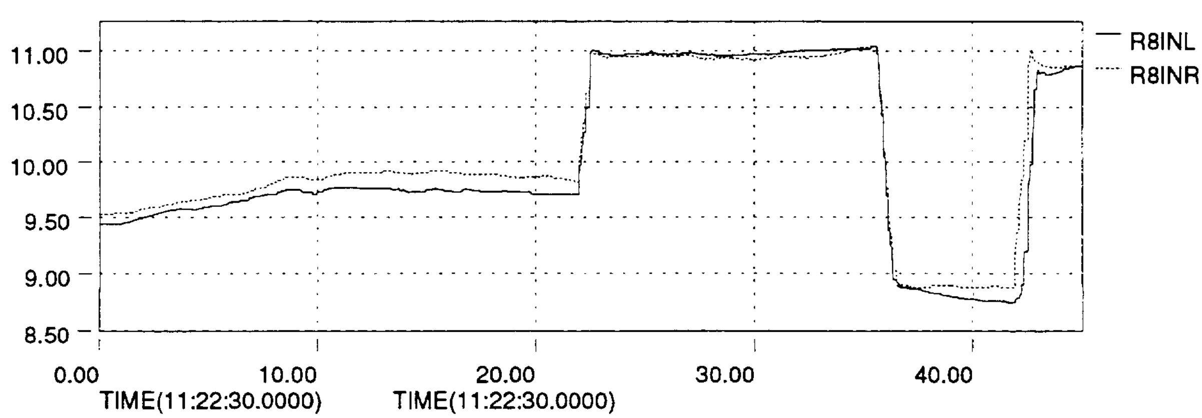


File=P383a.cmp3; Signal Suffix=[none]; Date=

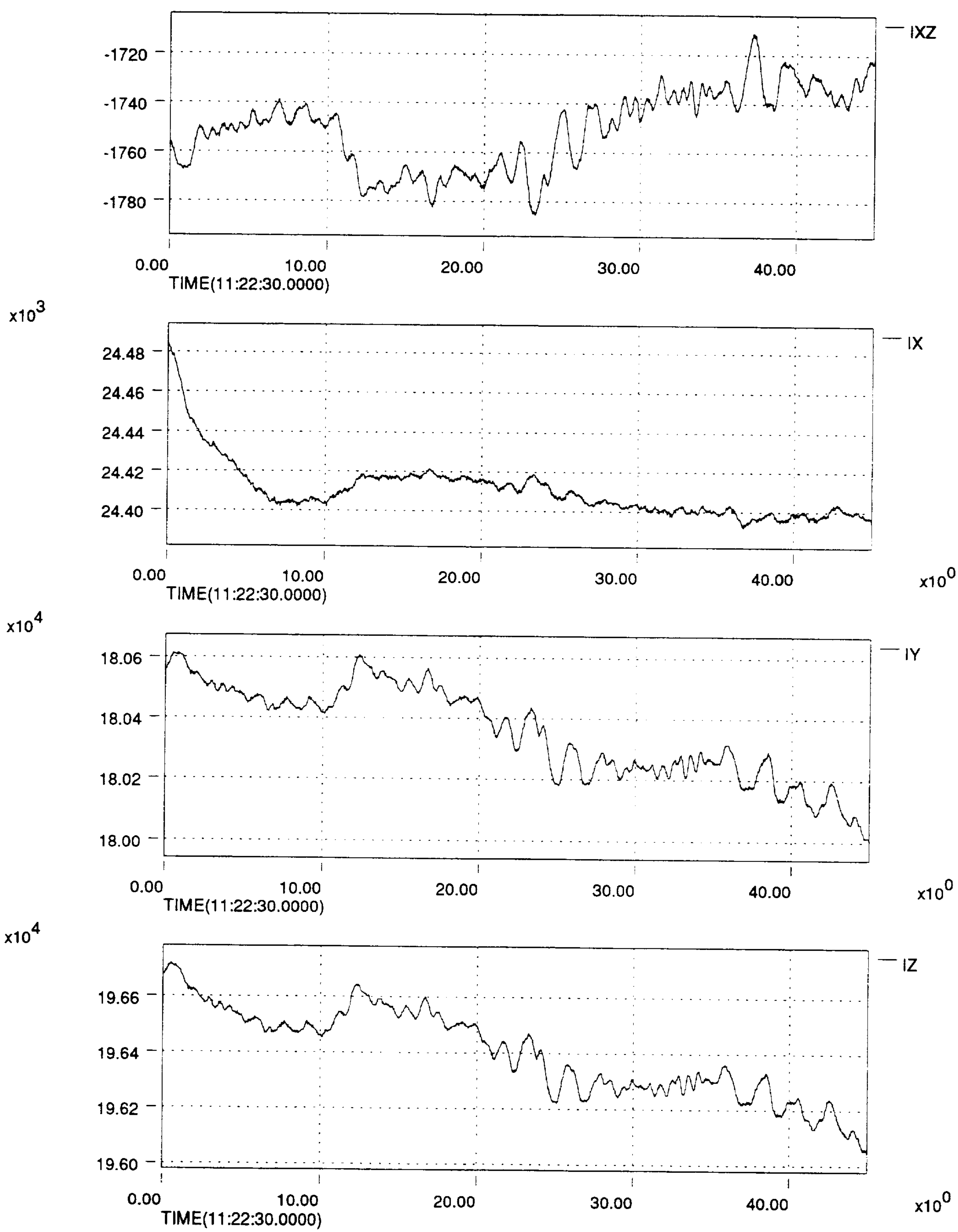




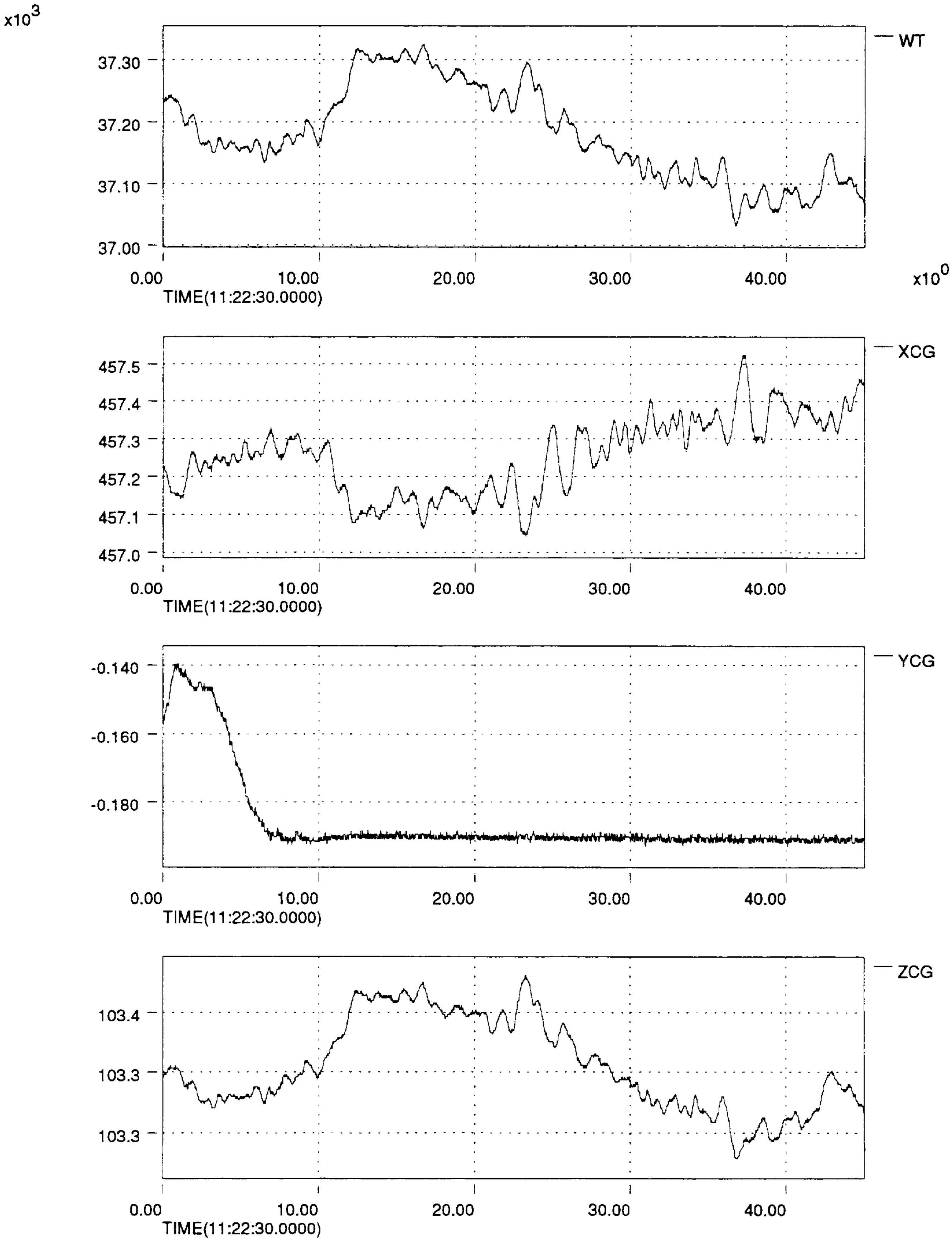




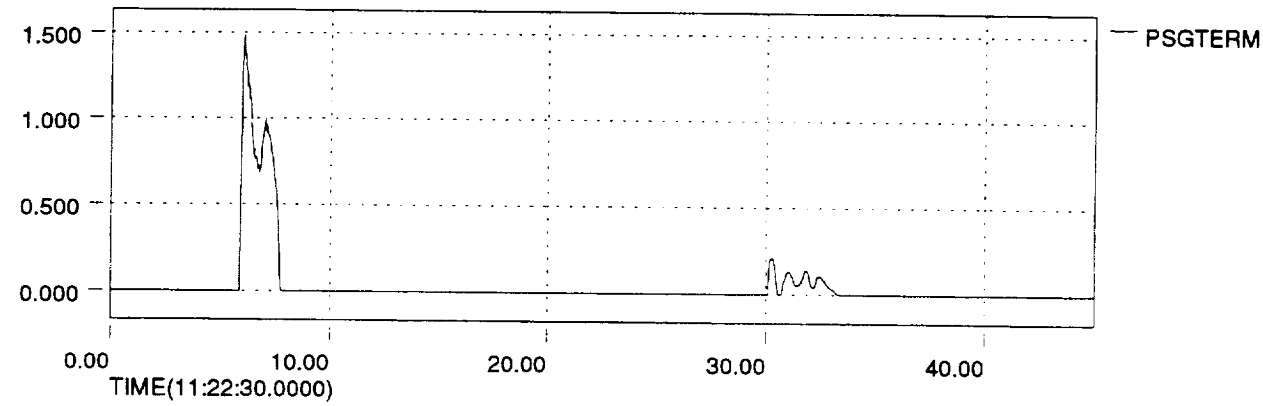
File=P383a.cmp3; Signal Suffix=[none]; Date=

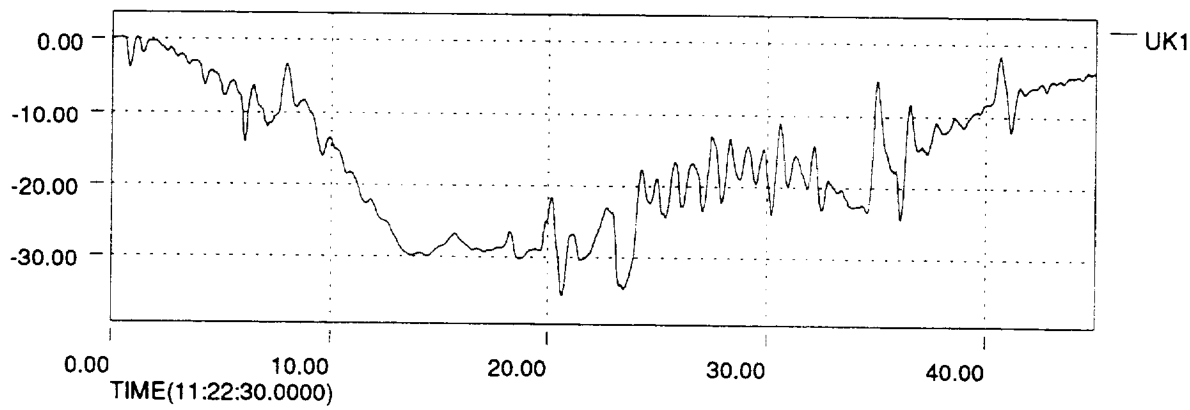


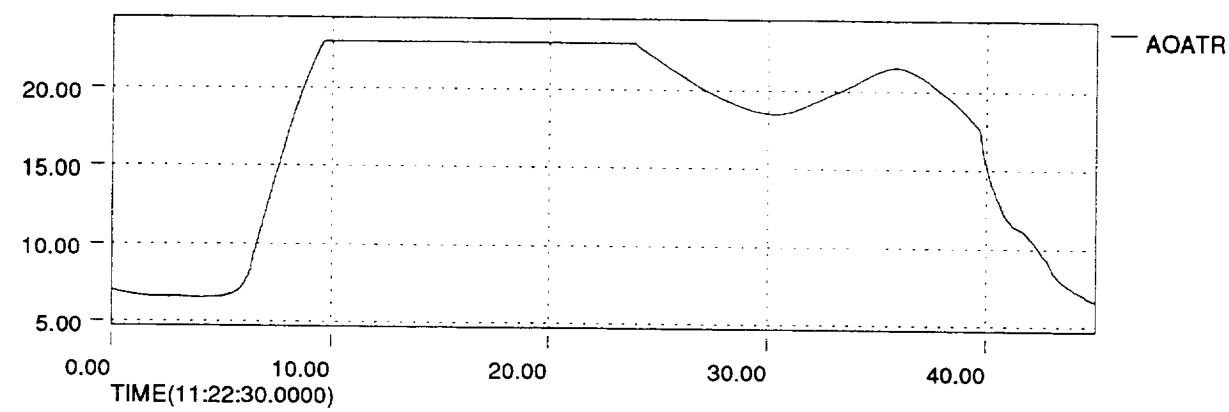
File=P383a.cmp3; Signal Suffix=[none]; Date=

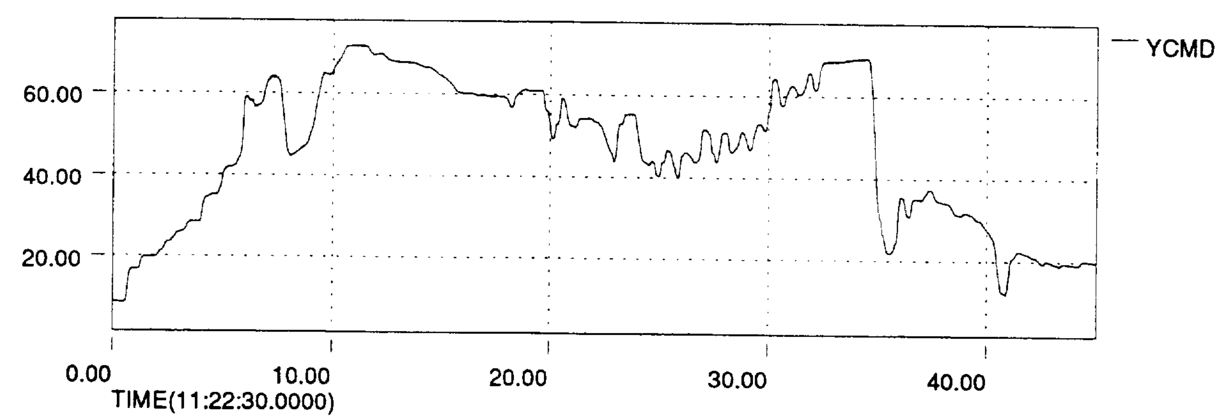


File=P383a.cmp3; Signal Suffix=[none]; Date=

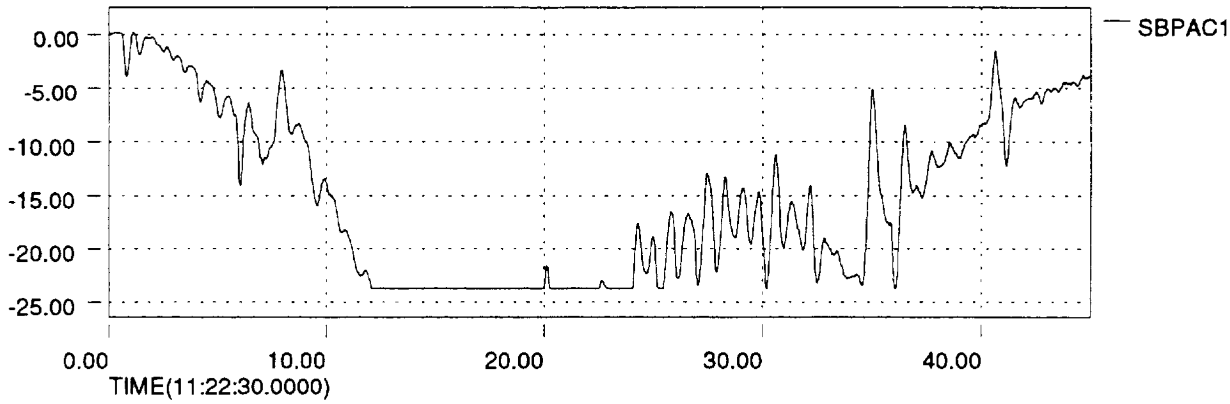


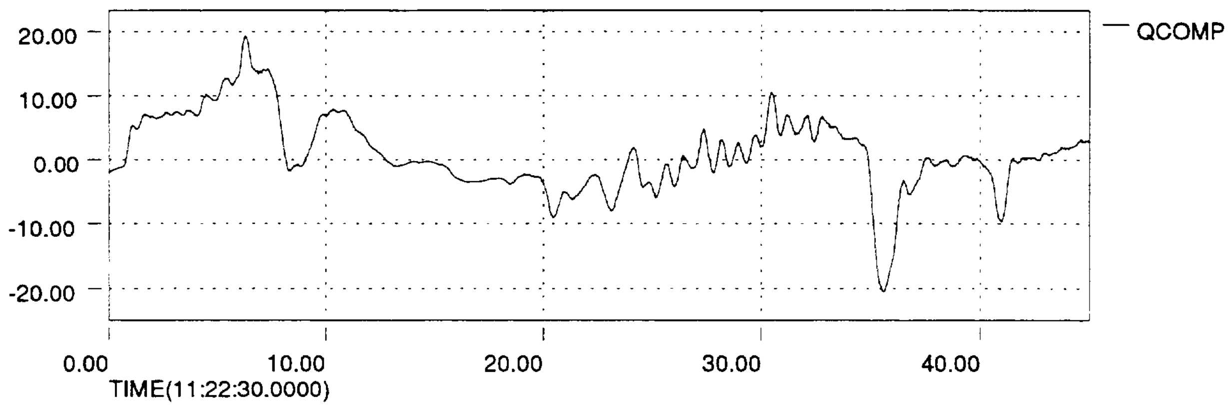


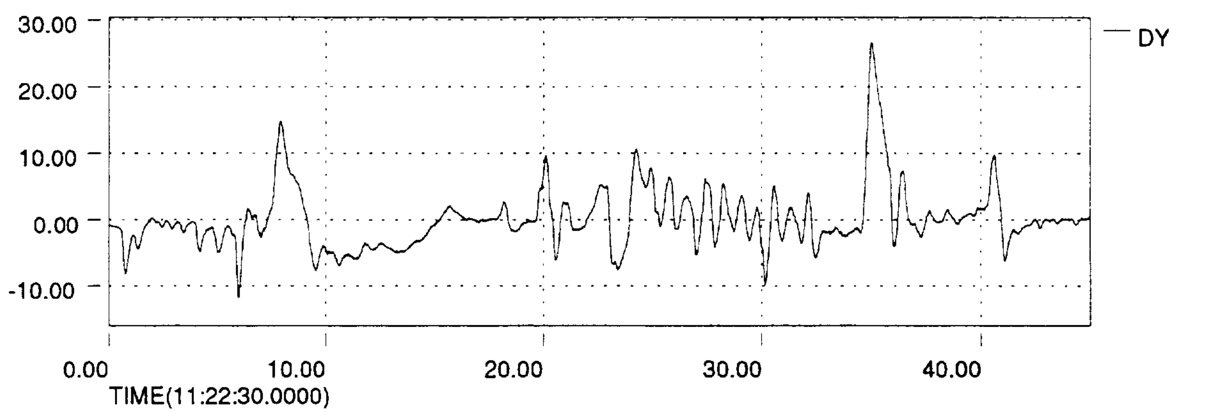


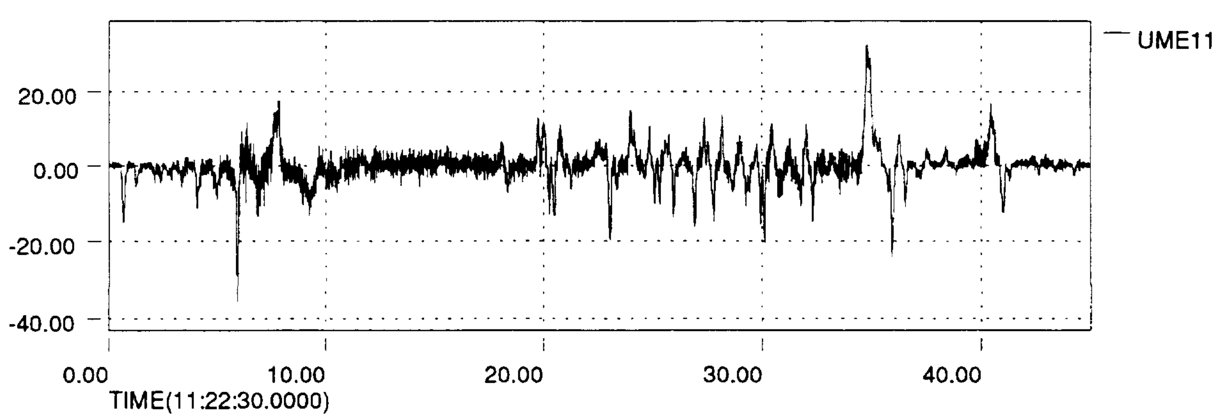


File=P383a.cmp3; Signal Suffix=[none]; Date=

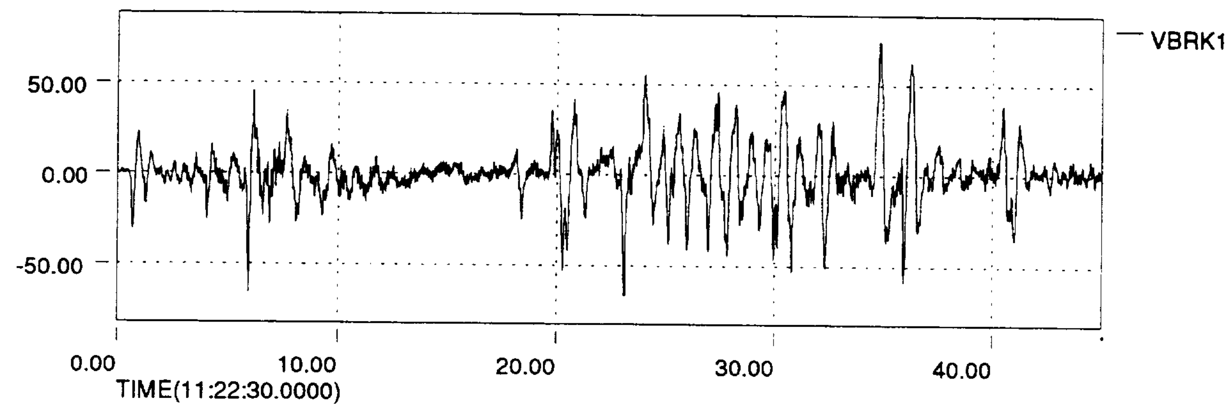


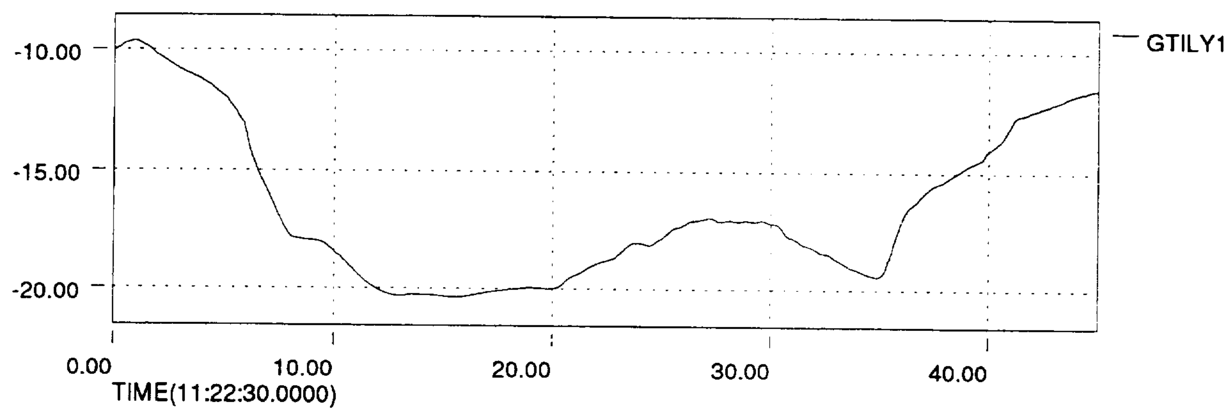


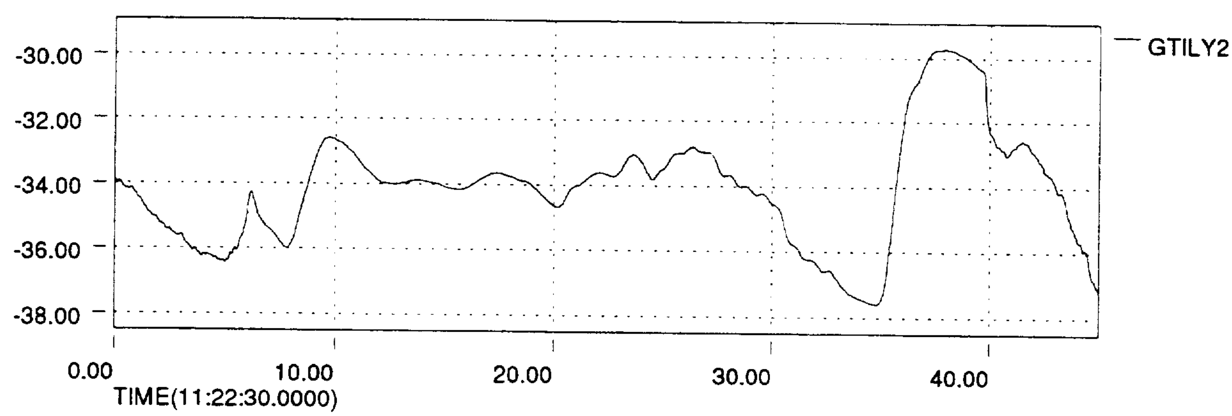


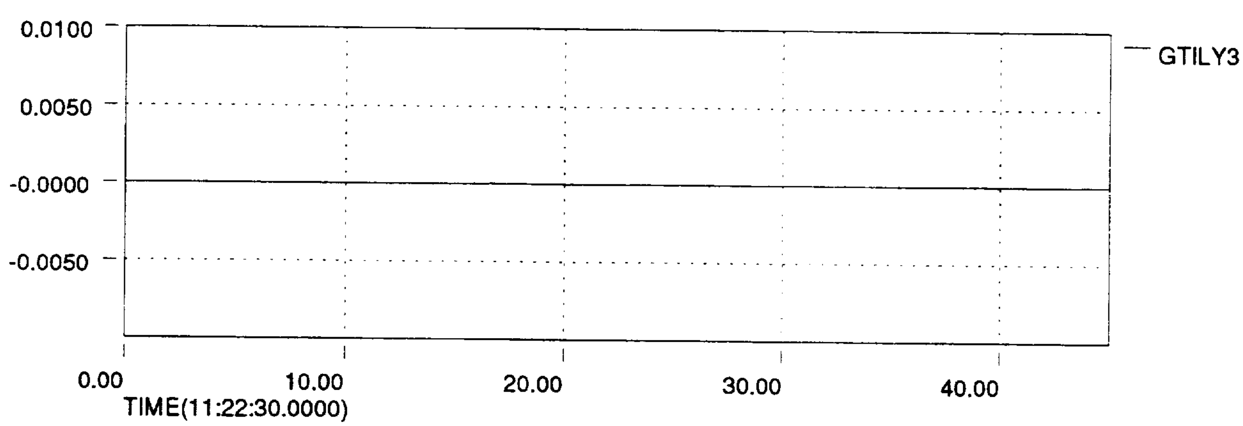


File=P383a.cmp3; Signal Suffix=[none]; Date=

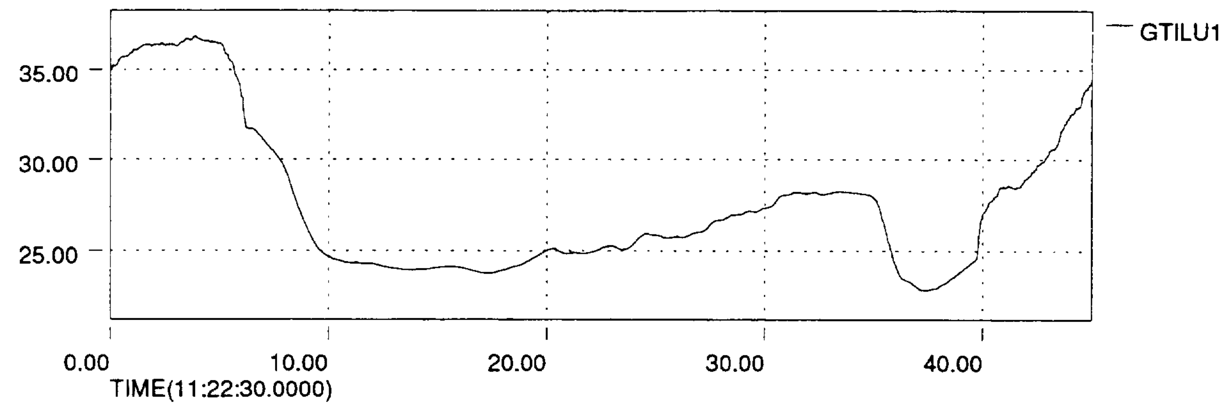


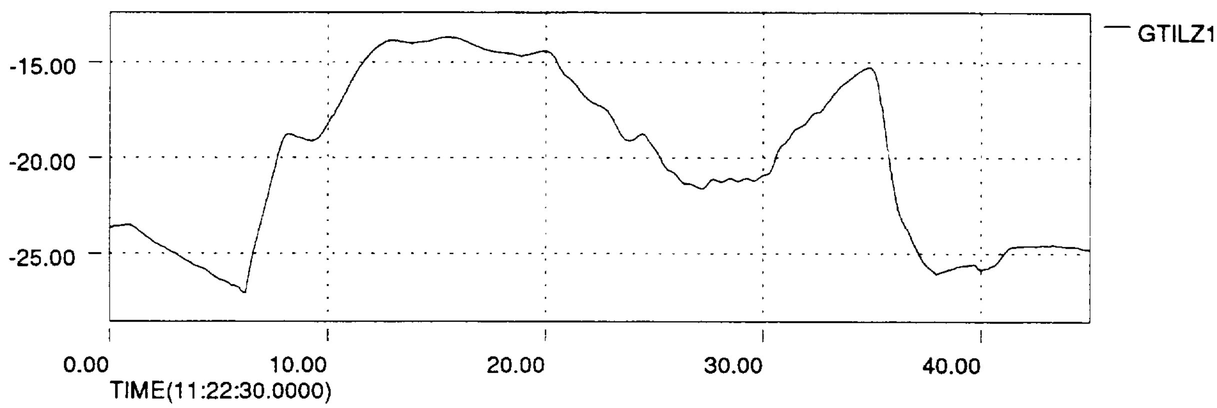


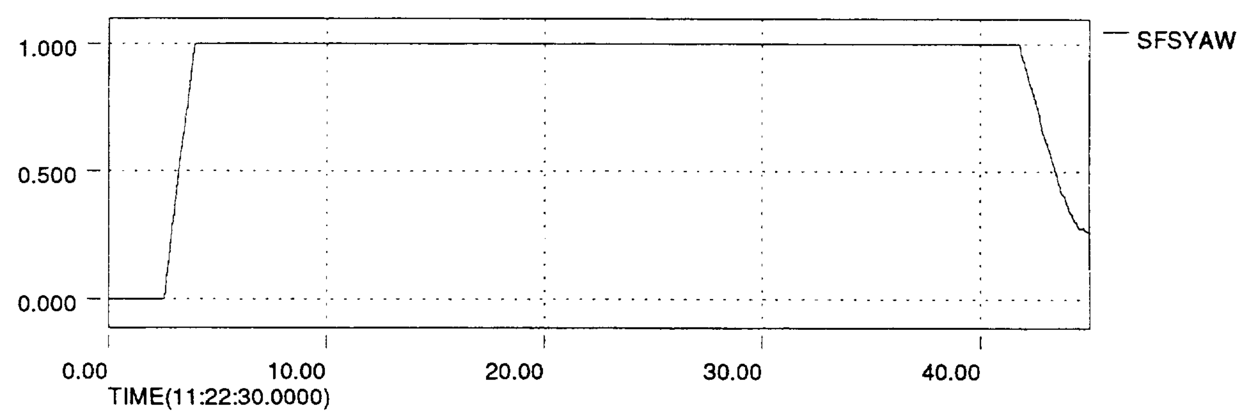


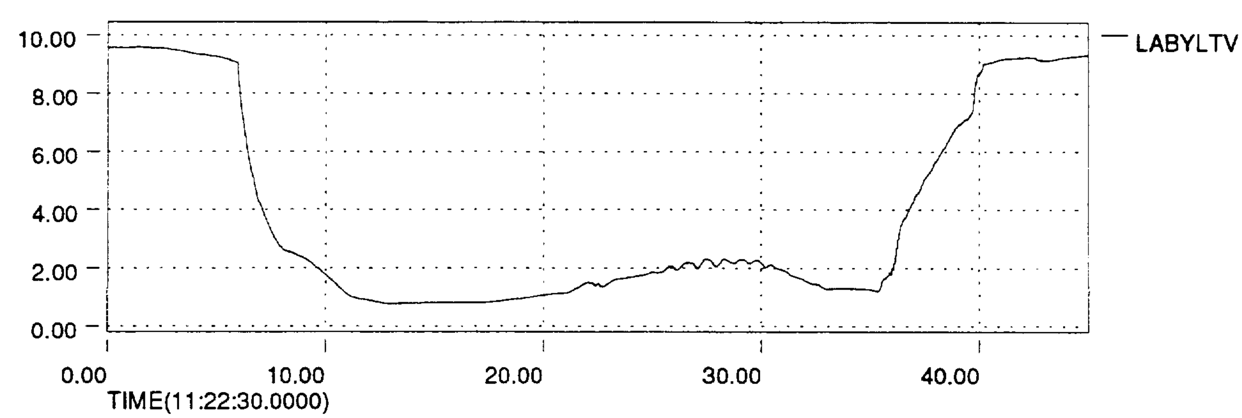


File=P383a.cmp3; Signal Suffix=[none]; Date=

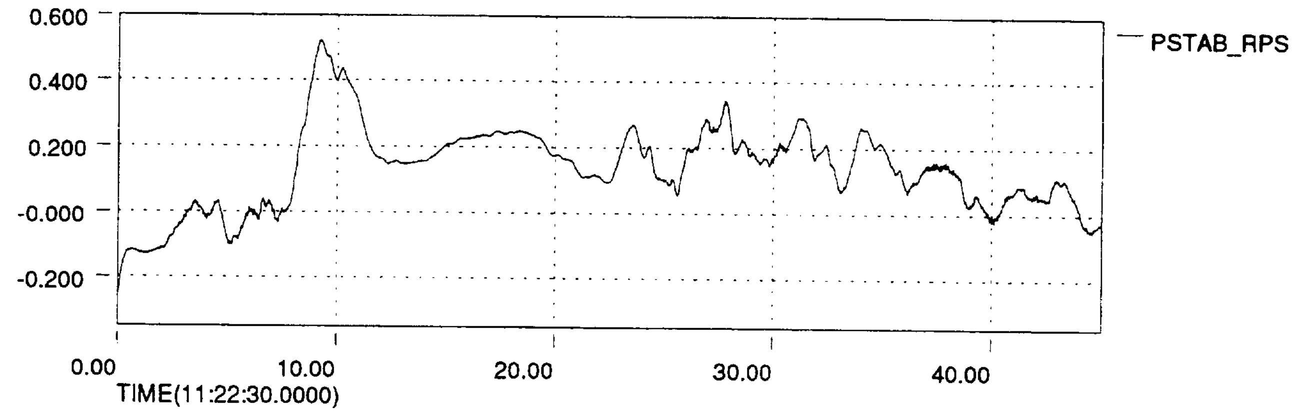


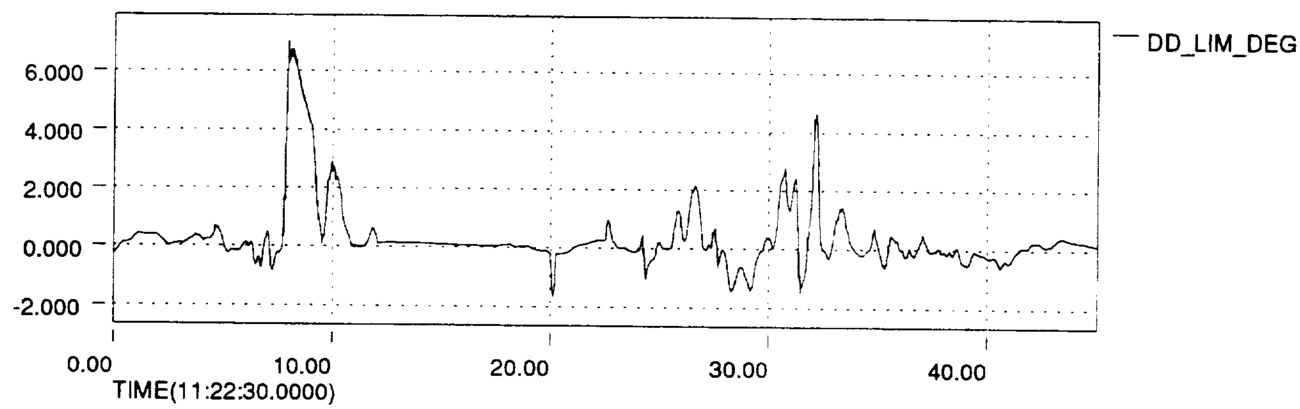


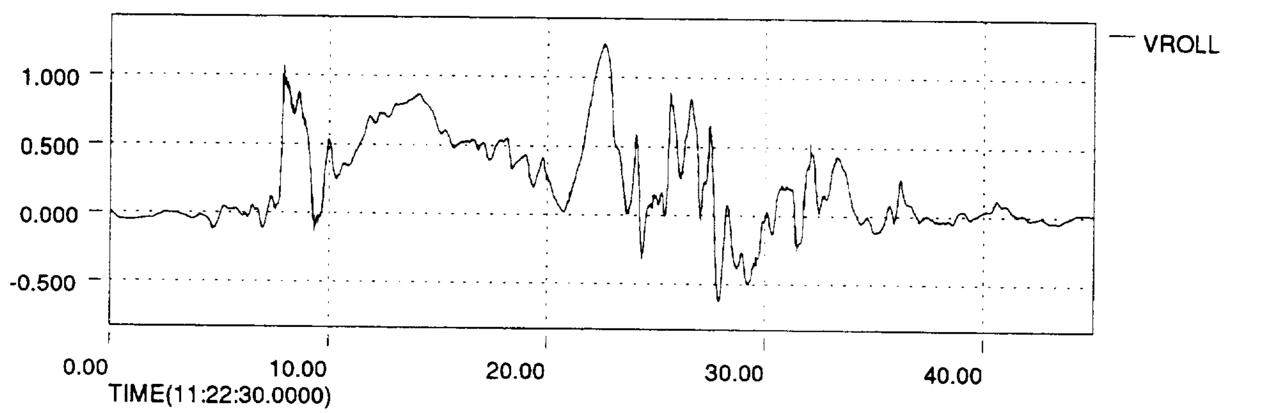


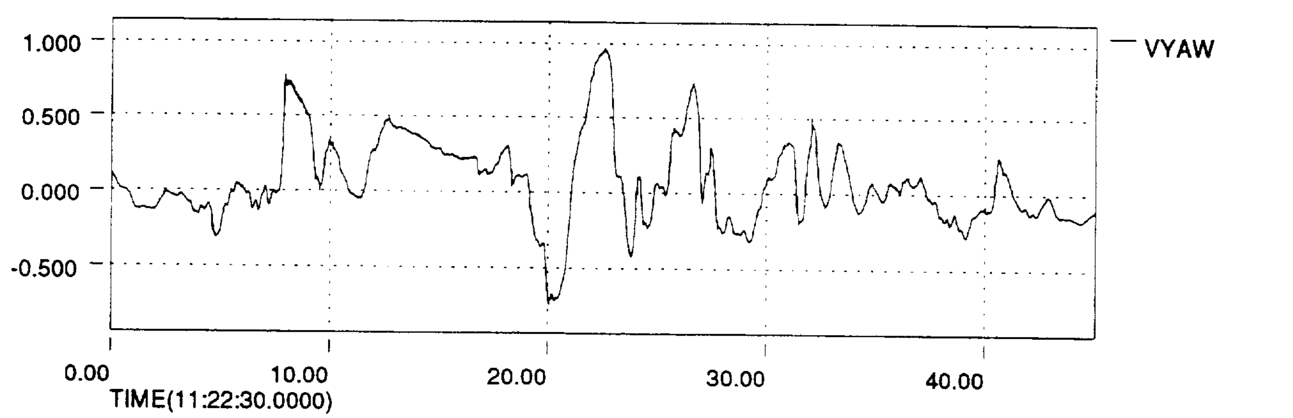


File=P383a.cmp3; Signal Suffix=[none]; Date=

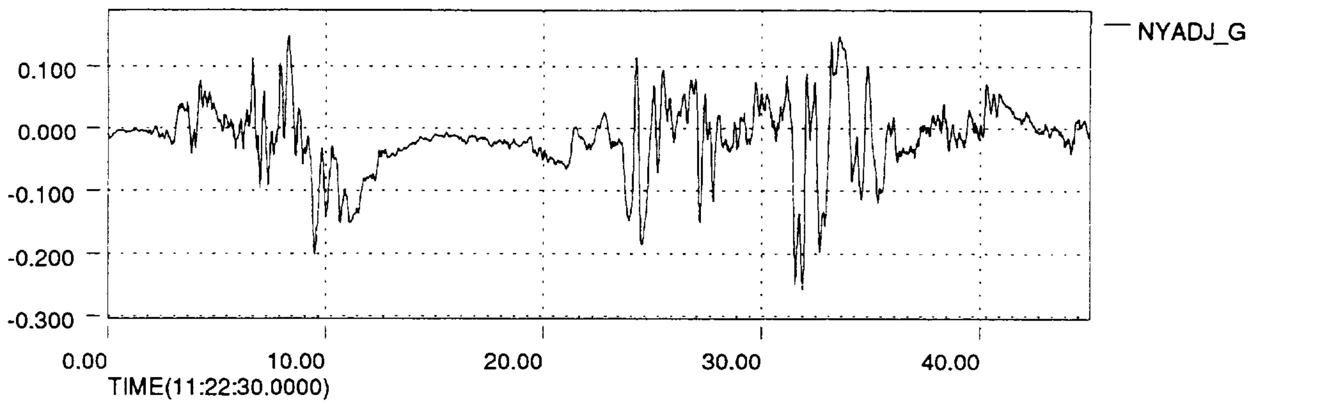


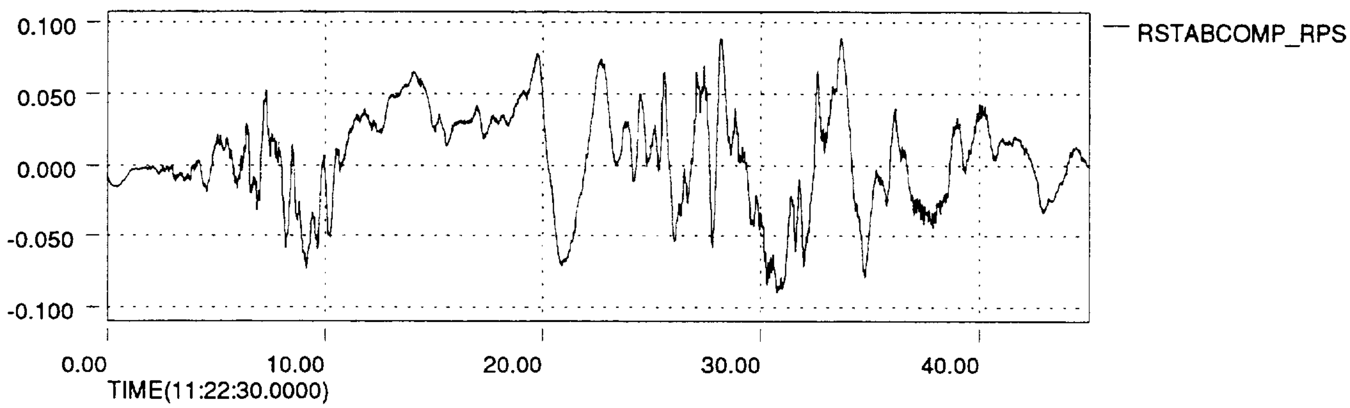


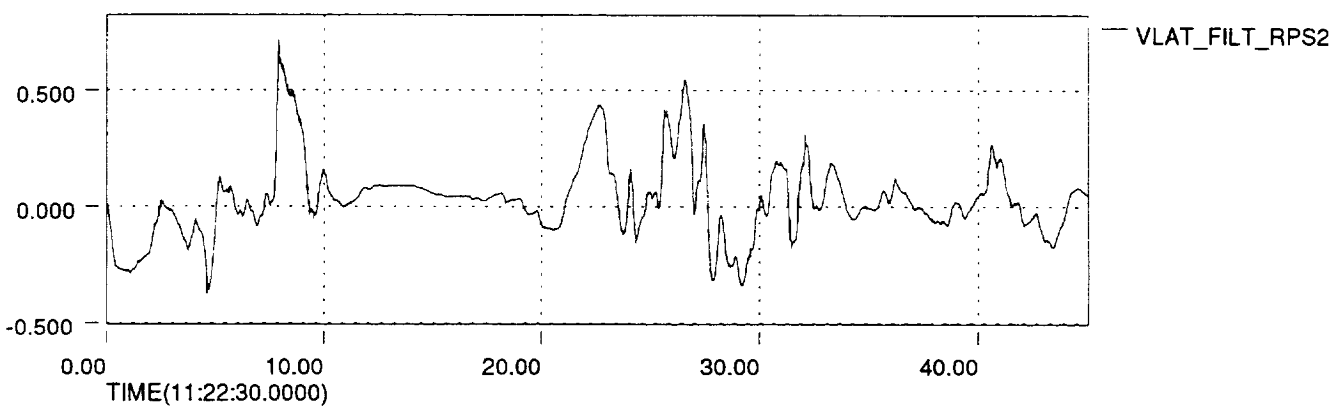


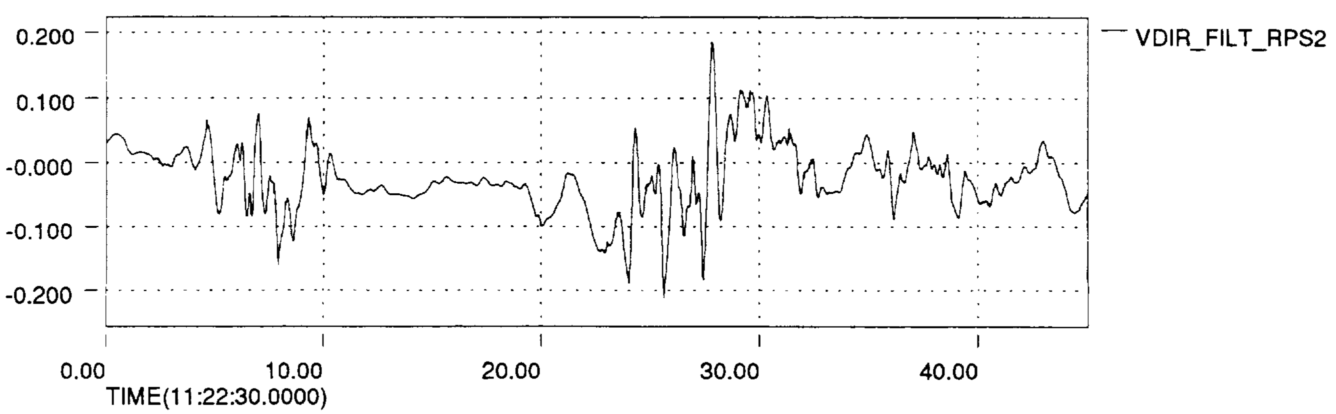


File=P383a.cmp3; Signal Suffix=[none]; Date=

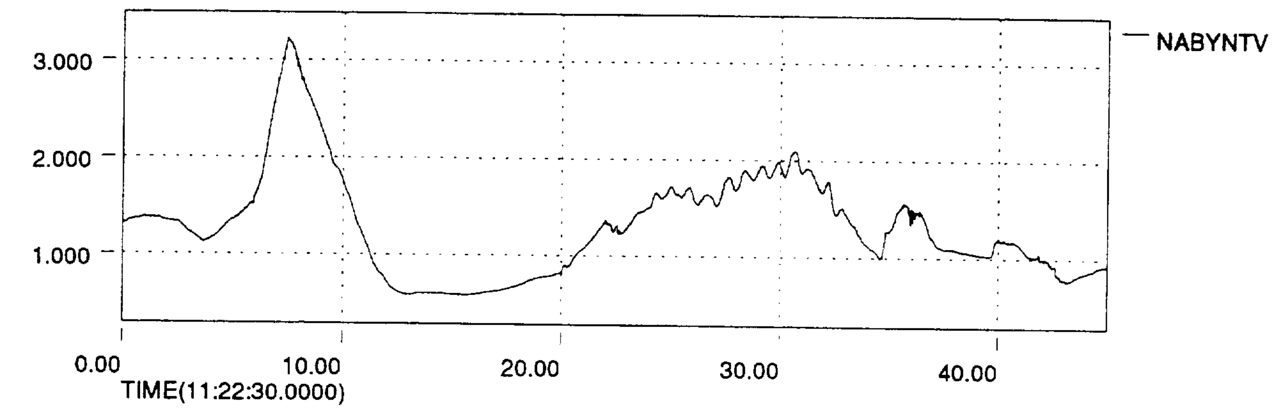


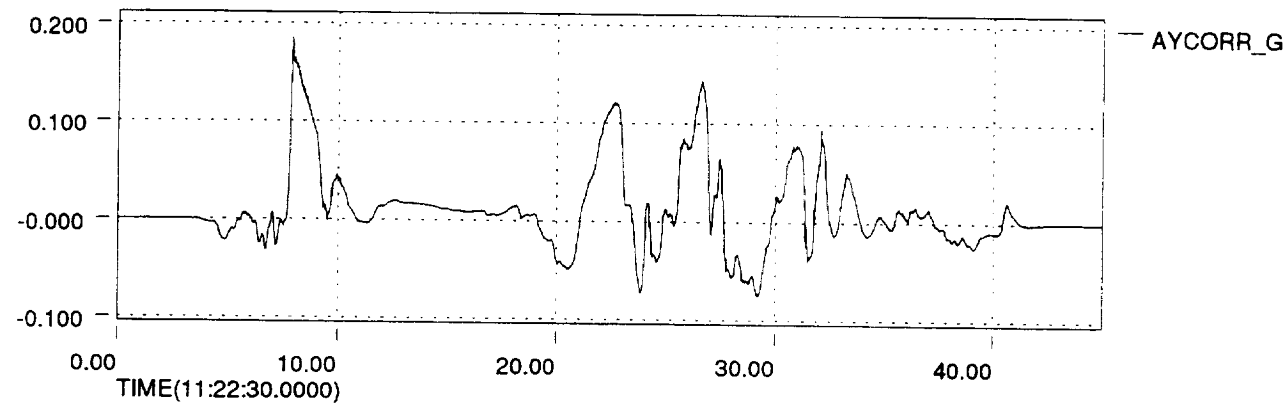


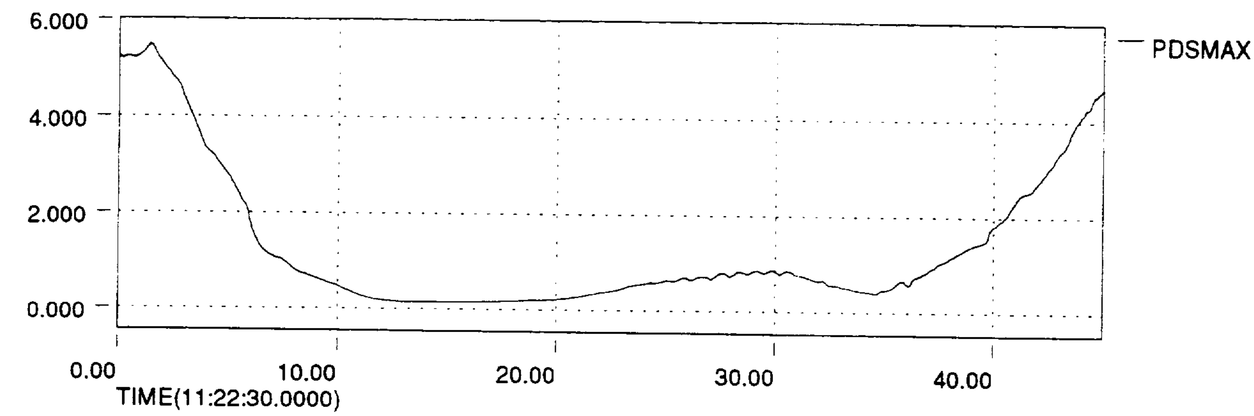


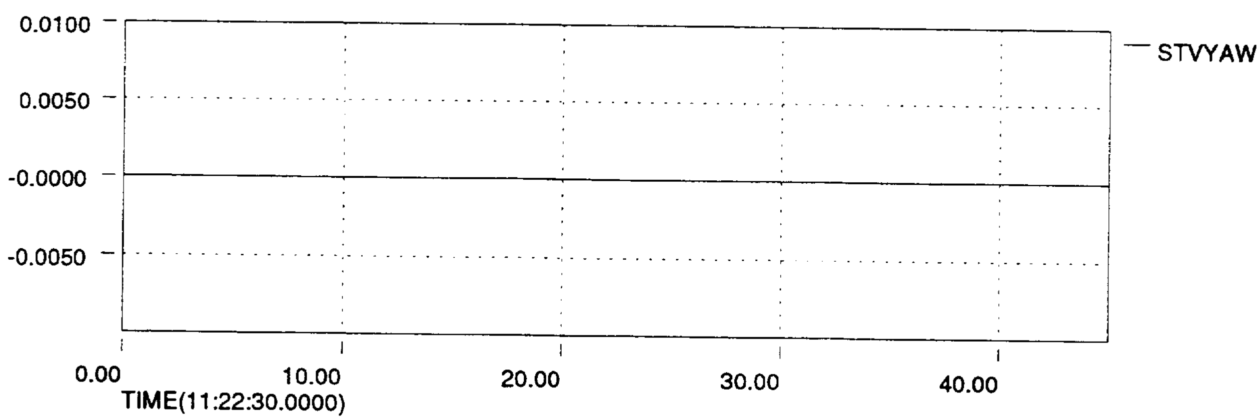


File=P383a.cmp3; Signal Suffix=[none]; Date=

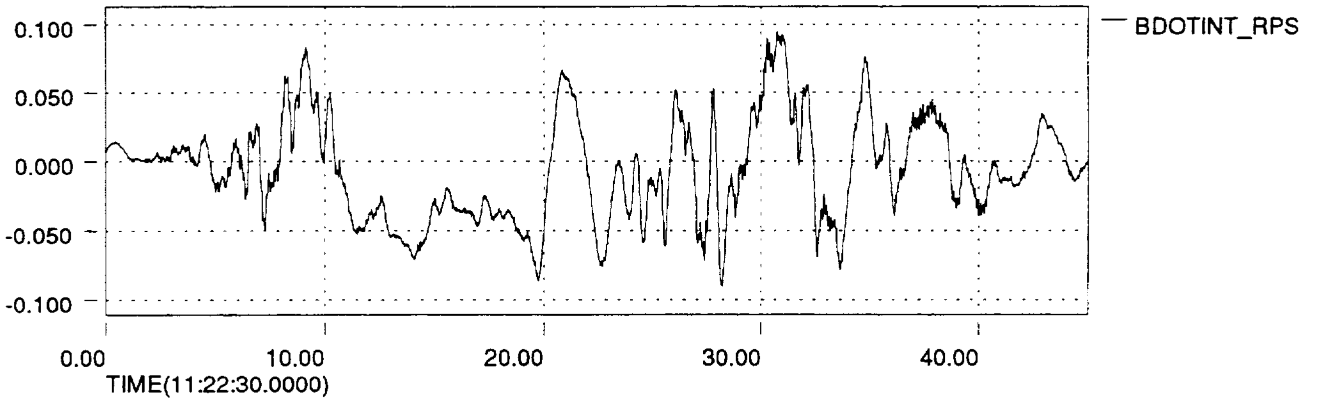


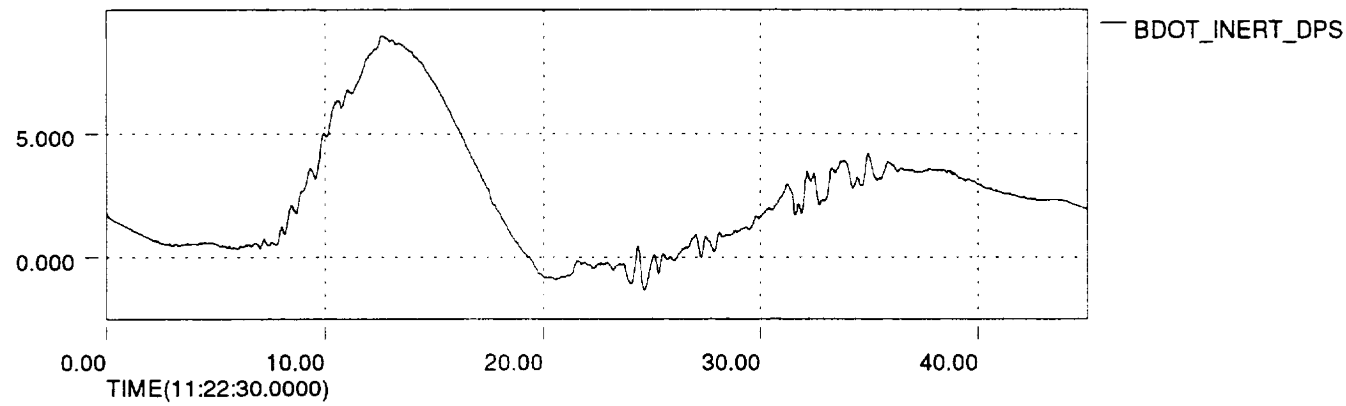


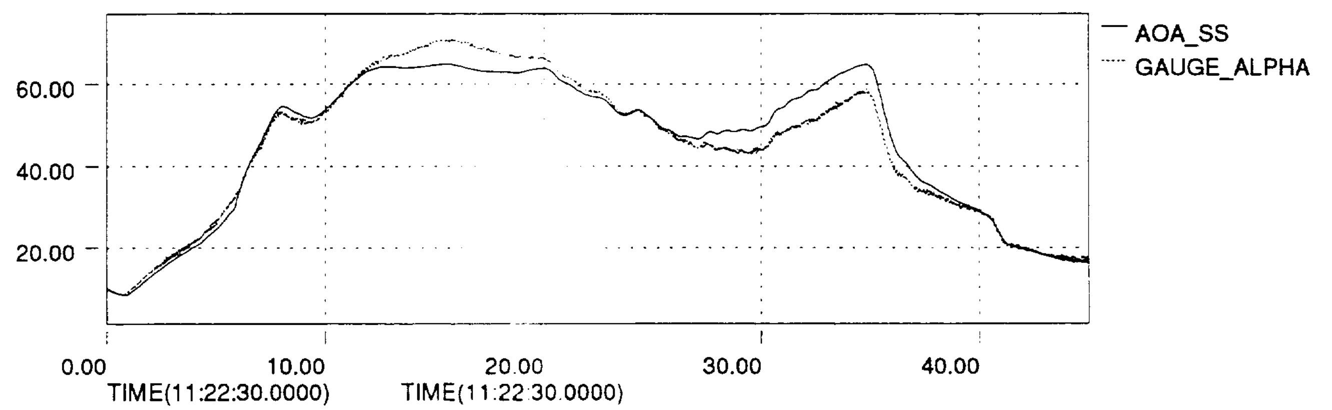




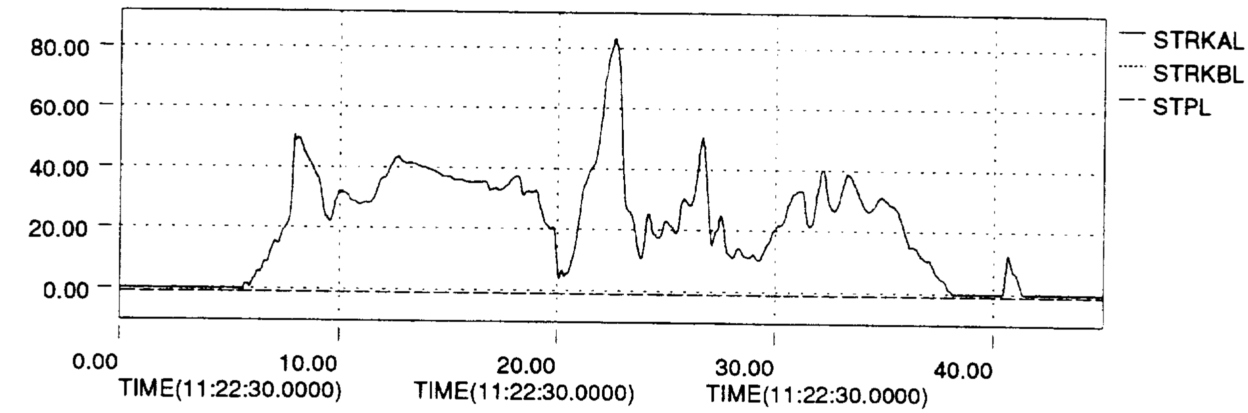
File=P383a.cmp3; Signal Suffix=[none]; Date=

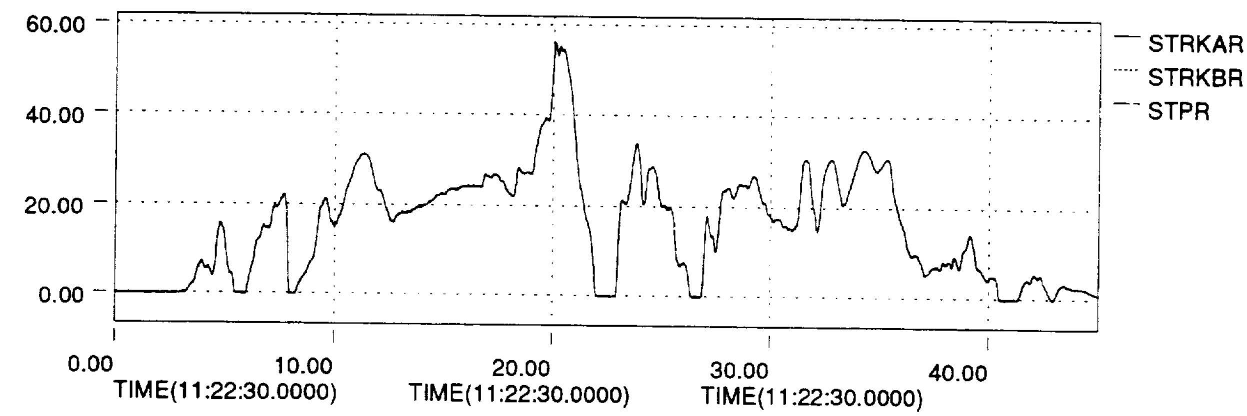


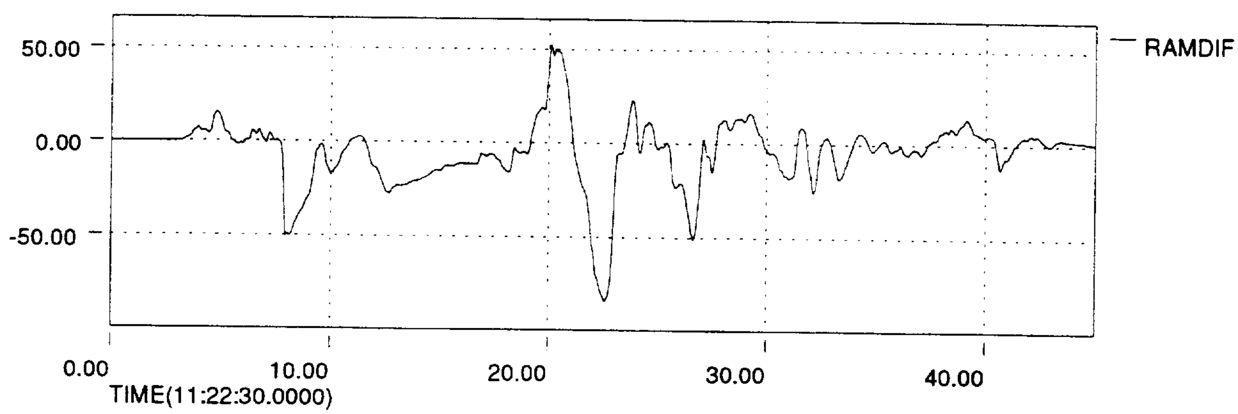


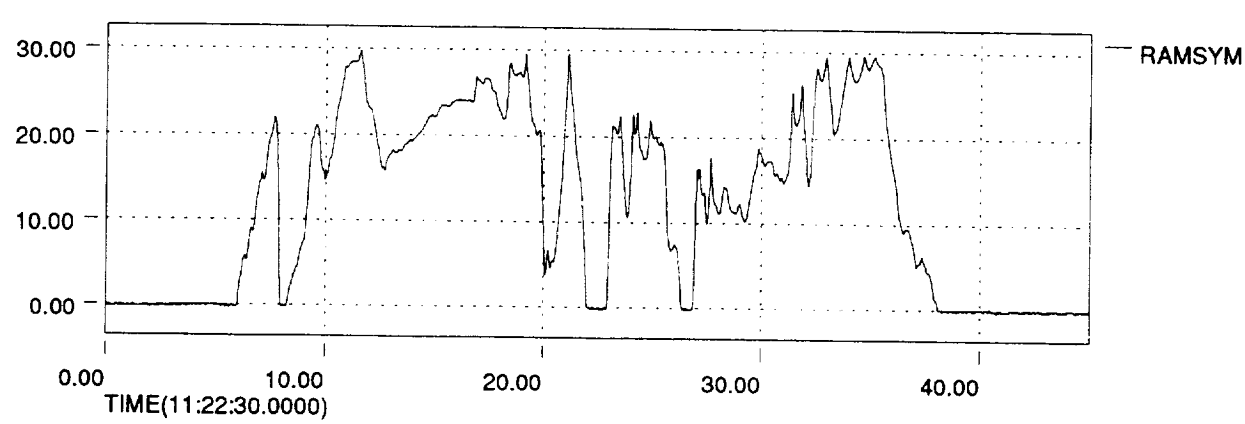


File=P383a.cmp3; Signal Suffix=[none]; Date=









File=P383a.cmp3; Signal Suffix=[none]; Date=

Appendix F
Log Sheets for ANSER Flights

ANSER Flt295 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Duration	Card No.	Comments
295	7-11-95								IAALRTC, BETA_JOE, IY, ICARXVC, ICA1314C- ICA1319C not available. YJETAC has corrected sign
		R295a			6 53 50 000	6 55 50 000	120	Pre-flt	
			P295a	Control checks	6 53 50 000	6 55 50 000	120		
		R295b			7 41 25 000	7 41 42 000	17	002	
			P295b	Engagements	7 41 25 000	7 41 42 000	17		
		R295c			7 42 44 000	7 43 25 000	41	003	
			P295c	Mode switch	7 42 44 000	7 43 25 000	41		
		R295d			7 44 22 000	7 44 46 000	24	003A	
			P295d	Mode switch	7 44 22 000	7 44 46 000	24		
		R295e			7 45 08 000	7 45 35 000	27	003B	
			P295e	Mode switch	7 45 08 000	7 45 35 000	27		
		R295f			7 48 07 000	7 53 39 000	332	004	
			P295f1	Push-over 20° α	7 48 10 000	7 48 25 000	15		
			P295f2	Push-over 30° α	7 49 20 000	7 49 35 000	15		
			P295f3	Push-over 40° α	7 50 35 000	7 50 50 000	15		
			P295f4	Push-over 50° α	7 51 50 000	7 52 05 000	15		
			P295f5	Push-over 60° α	7 53 15 000	7 53 30 000	15		
		R295g			7 59 44 000	8 03 50 000	246	005	
			P295g	Strk trail damp 20°- 40° α	7 59 44 000	8 03 35 000	231		
		R295h			8 06 52 000	8 09 55 000	183	005	
			P295h	Strk trail damp 45°- 60° α	8 07 20 000	8 09 50 000	150		

ANSER Flt296 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Duration	Card No.	Comments
296	7-11-95								IAALRTC, BETA_JOE, IY, ICARXVC, ICA1314C- ICA1319C not available DSTKI, DSTKR, STPL, STPR added
		R296pre			9 31 37 000	9 32 41 000			
			P296pre1	Controls check	9 31 39 000	9 31 54 000	15		
			P296pre2	Controls check	9 32 01 000	9 32 16 000	15		
			P296pre3	Controls check	9 32 24 000	9 32 39 000	15		
		R296a			10 05 05 000	10 06 35 000		006	
			P296a1	360° Roll Lt., 30° α	10 05 05 000	10 05 30 000	25		
			P296a2	360° Roll Rt., 30° α	10 06 05 000	10 06 30 000	25		
		R296b			10 08 55 000	10 09 30 000		006	
			P296b	360° Roll Lt., 45° α	10 09 00 000	10 09 25 000	25		
		R296c			10 11 50 000	10 12 15 000		006	
			P296c	360° Roll Rt., 45° α	10 11 50 000	10 12 15 000	25		
		R296d			10 14 11 000	10 14 51 000		006	
			P296d	360° Roll Lt., 60° α	10 14 25 000	10 14 50 000	25		
		R296e			10 18 20 000	10 18 47 000		006	
			P296e	360° Roll Rt., 60° α	10 18 25 000	10 18 47 000	22		
		R296f			10 20 15 000	10 20 43 000		007	
			P296f	360° Pedal Roll Lt., 30° α	10 20 15 000	10 20 43 000	28		
		R296g			10 22 15 000	10 22 45 000		007	
			P296g	360° Pedal Roll Rt., 30° α	10 22 17 000	10 22 45 000	28		
		R296h			10 25 15 000	10 25 45 000		007	
			P296h	360° Pedal Roll Lt., 45° α	10 25 20 000	10 25 45 000	25		

ANSER Flt297

Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Duration	Card No.	Comments
297	7-13-95								IAALRTC, BETA_JOE, IY, ICA1314C- ICA1319C not available. ICARXYC replaces ICARXVC
		R297a			8 02 18 000	8 02 53 000	45	002	
			P297a	360° Pedal Roll Rt.,45°α	8 02 18 000	8 02 53 000	45		
		R297b			8 07 25 000	8 08 18 000	53	002	
			P297b	360° Pedal Roll Lt., 60°α	8 07 30 000	8 08 13 000	43		
		R297c			8 12 58 000	8 13 28 000	30	002	
			P297c	360° Pedal Roll Rt.,60°α	8 12 58 000	8 13 28 000	30		
				GAIN SET EVALUATION					
		R297d			8 15 28 000	8 21 06 000	338		
			P297d1	agg α-cap., set 0, 45° α	8 15 31 000	8 15 51 000	20	003	
			P297d2	agg α-cap., set 1, 45° α	8 18 23 000	8 18 43 000	20	004	
			P297d3	agg α-cap., set 2, 45° α	8 21 01 000	8 21 21 000	20	005	
		R297e			8 23 51 000	8 24 11 000	20	005	
			P297e	repeat set 2	8 23 51 000	8 24 11 000	20		
				360° Roll cap., 45°α					
		R297f			8 27 48 000	8 28 13 000	25	006	
			P297f	gain set 0	8 27 48 000	8 28 13 000	25		
		R297g			8 31 58 000	8 32 28 000	30	007	
			P297g	gain set 1	8 31 58 000	8 32 28 000	30		

ANSER Flt298 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Duration	Card No.	Comments
298	7-13-95								IAALRTC, BETA_JOE, IY, ICA1314C- ICA1319C not available.
		R298a		**30° α tracking**	10 29 08 000	10 30 27 000	79	009	
			P298a	gain set 0	10 29 08 000	10 30 25 000	77		
		R298b			10 36 03 000	10 37 13 000	70	010	
			P298b	gain set 1	10 36 08 000	10 37 08 000	60		
		R298c			10 44 02 000	10 45 01 000	59	011	
			P298c	gain set 2	10 44 02 000	10 44 57 000	55		
		R298d		**60° - 10° α-capture**	10 50 41 000	10 54 11 000	210		
			P298d1	gain set 0	10 51 31 000	10 51 51 000	20	012	
			P298d2	gain set 1	10 52 56 000	10 53 16 000	20	013	
			P298d3	gain set 2	10 53 51 000	10 54 11 000	20	014	

ANSER Flt299 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Duration	Card No.	Comments
299	7-13-95								IAALRTC, BETA_JOE, IY, ICA1314C- ICA1319C not available
		R299a		**Split S**	12 42 20 000	12 43 05 000	45	017	
			P299a	gain set 2	12 42 30 000	12 43 00 000	30		
		R299b			12 48 10 000	12 48 55 000	45	016	
			P299b	gain set 1	12 48 20 000	12 48 50 000	30		
		R299c			12 54 30 000	12 55 10 000	40	015	
			P299c	gain set 0	12 54 40 000	12 55 10 000	30		
		R299d			13 05 10 000	13 05 55 000	45	016	
			P299d	Repeat gain set 1	13 05 15 000	13 05 45 000	30		
		R299e		**360° Rolls**	13 13 20 000	13 19 20 000	210	018	
			P299e1	Stick left	13 13 25 000	13 13 40 000	20		
			P299e2	Stick right	13 14 20 000	13 14 30 000	20		
			P299e3	Pedal left	13 15 15 000	13 15 35 000	20		
			P299e4	Pedal right	13 16 45 000	13 17 05 000	20		
			P299e5	Stick and pedal left	13 18 10 000	13 18 25 000	15		
			P299e6	Stick and pedal right	13 19 05 000	13 19 15 000	10		

ANSER Flt300 page 1 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
300	7-21-95							IAALRTC, BETA_JOE, IY not available ICA1314C- ICA1319C replaced with AV78C-AV82C, Ps = AV83C
		R300a		**360° Rolls, 20° α**	7 19 14	7 23 04	002	
			P300a1	Stick left	7 19 19	7 19 39		
			P300a2	Stick right	7 20 34	7 20 59		
			P300a3	Pedal left	7 22 29	7 22 54		
		R300b			7 24 34	7 25 23		
			P300b	Pedal right	7 24 54	7 25 23		
		R300c			7 48 50	7 51 50		
			P300c1	Stick and pedal left	7 49 25	7 49 50		
			P300c2	Stick and pedal right	7 51 15	7 51 45		
		R300d		**360° Rolls, 30° α**	7 53 00	7 56 39	003	
			P300d1	Stick left	7 53 25	7 53 49		
			P300d2	Stick right	7 56 10	7 56 39		
		R300e			7 58 50	7 59 35		
			P300e	Pedal left	7 59 00	7 59 35		
		R300f			8 02 40	8 03 29		
			P300f	Pedal right	8 03 00	8 03 29		
		R300g			8 05 00	8 08 18		
			P300g1	Stick and pedal left	8 05 25	8 05 55		
			P300g2	Stick and pedal right	8 07 50	8 08 18		

ANSER Flt300 page 2 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
		R300h		**Trim to -10° α**	8 31 15	8 37 19	004	
			P300h1	OBES index 3 30/0	8 31 25	8 32 25		
			P300h2	OBES index 2 60/0	8 34 04	8 34 50		
			P300h3	OBES index 1 90/0	8 36 43	8 37 19		
		R300i			8 41 00	8 41 33		
			P300i	OBES index 1 90/0	8 41 00	8 41 33		
		R300j			8 43 22	8 48 40	005	
			P300j1	OBES index 8 30/0	8 43 30	8 44 00		
			P300j2	OBES index 9 0/60	8 46 02	8 46 35		
			P300j3	OBES index 10 0/90	8 48 00	8 48 35		
		R300k			8 50 25	8 51 00		
			P300k	OBES index 10 0/90	8 50 25	8 51 00		
		R300l		**Strake extension**	8 53 00	8 57 50	006	
			P300l1	OBES index 3, 15° α 30/0	8 53 09	8 54 09		
			P300l2	OBES index 2 60/0	8 54 26	8 55 00		
			P300l3	OBES index 2 60/0	8 55 11	8 55 54		
			P300l4	OBES index 3, 20° α 30/0	8 56 07	8 56 29	007	
			P300l5	OBES index 2, 25° α 60/0	8 56 38	8 57 09		
			P300l6	OBES index 3 30/0	8 57 19	8 57 42	008	

ANSER Flt300 page 3 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
		R300m			9 00 30	9 02 33		
			P300m1	OBES index 1 90/0	9 00 40	9 01 03	008	
			P300m2	OBES index 1 90/0	9 01 28	9 01 57	009	
			P300m3	OBES index 1 0/90	9 02 06	9 02 33	009	

ANSER Flt301 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
301	7-27-95							IAALRTC, BETA_JOE, IY not available
		R301a		**Strake extension**	7 25 53	7 30 23	002	
			P301a1	OBES index 3 30/0	7 26 08	7 27 03		
			P301a2	OBES index 2 60/0	7 27 13	7 28 10		
			P301a3	OBES index 1 90/0	7 28 17	7 29 18		
			P301a4	OBES index 1 0/0	7 29 38	7 30 18		

ANSER Flt302 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
302	7-27-95							IAALRTC, BETA_JOE, IY not available
		R302a		**Strake extension**	9 55 46	9 59 16	003	stop is actally 9 59 16 325
			P302a1	OBES index 3 30/0	9 57 02	9 57 25		
			P302a2	OBES index 2 60/0	9 57 44	9 58 41		
			P302a3	OBES index 1 90/0	9 58 48	9 59 38		
		R302a2			9 59 16	10 03 27	005	start is actally 9 59 16 500
			P302a4	OBES index 1 90/0	10 01 58	10 02 22		
			P302a5	OBES index 10 0/90	10 02 31	10 02 52		
		R302b			10 09 18	10 12 58	005	
			P302b1		10 09 38	10 10 58		
			P302b2	OBES index 3 30/0	10 10 58	10 11 53	006	
			P302b3	OBES index 2 60/0	10 11 58	10 12 43	006	
		R302c			10 15 13	10 18 58		
			P302c1	OBES index 1 90/0	10 16 34	10 17 27	007	
			P302c2	Decel to 70° α 0/0	10 17 58	10 18 58	008	

ANSER Flt303 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
303	7-27-95							IAALRTC, BETA_JOE, IY not available
		R303a			12 28 02	12 30 32	008	
			P303a1	OBES index 3 30/0	12 28 27	12 29 07		
			P303a2	OBES index 2 60/0	12 29 14	12 30 09		
			P303a3		12 30 17	12 30 27		
		R303b			12 34 22	12 36 47		
			P303b1	OBES index 1 90/0	12 34 52	12 35 32	008	
			P303b2	OBES index 1 90/0	12 35 52	12 36 17	009	
			P303b3	OBES index 10 0/90	12 36 27	12 36 47		
		R303c			12 39 22	12 40 32	010	
			P303c	OBES index 3 30/0	12 39 57	12 40 32		

ANSER Flt304 Pilot: SMOLKA

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
304	8/3/95			**FLIGHT ABORTED**					IAALRTC, BETA_JOE, IY now available; AAP not available
				no files processed					

ANSER Flt305 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
305	8-03-95							IAALRTC, BETA_JOE, IY not available
		R305a		**Aero Expansion**	11 10 40	11 14 25	002	
			P305a	OBES index 2 60/0 50°→55°→40° OBES index 1 90/0 40°→45°→20°	11 11 10	11 14 20		
		R305b			11 19 50	11 21 10	003	
			P305b	OBES index 3 30/0 20°→70°→55°	11 20 05	11 21 07		
		R305c			11 24 30	11 26 25	003	
			P305c	OBES index 2 60/0 55°→60°→45° OBES index 1 90/0 45°→50°	11 24 40	11 26 22		

ANSER Flt306 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
306	8-08-95							IAALRTC, BETA_JOE, IY not available
		R306a		**Loads Expansion**	7 19 02	7 20 02		
			P306a	OBES index 1 90/0 50° α	7 19 02	7 20 02	002	
		R306b			7 24 42	7 25 42		
			P306b	OBES index 10 0/90 50°α	7 24 42	7 25 42	002	
		R306c			7 31 52	7 34 12		
			P306c	OBES index 2 60/0 20°→ 65°→ 50° OBES index 1 90/0 50°→ 70°→ 55°	7 31 52	7 34 12	003	
		R306d			7 40 42	7 41 37		
			P306d	OBES index 1 90/0 55°→ 60°→ 65°→ 70°	7 40 42	7 41 37	004	
		R306e			7 46 02	7 46 37		
			P306e	OBES index 1 90/0 60° α	7 46 02	7 46 37	005	

ANSER Flt307 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
307	8-08-95							IAALRTC, BETA_JOE, IY not available
		R307a		**Loads Expansion**	9 38 24	9 39 19		
			P307a	OBES index 10 0/60 60°α	9 38 24	9 39 19	006	
		R307b			9 43 49	9 44 59		
			P307b	OBES index 10 0/90 20° α, 2 g rt OBES index 1 90/0 20° α, 2 g lt	9 43 49	9 44 59	007	
		R307c			9 48 59	9 49 49		
			P307c	OBES index 10 0/90 30° α, 2 g rt	9 48 59	9 49 49	008	
		R307d			9 53 14	9 53 59		
			P307d	OBES index 1 90/0 30° α, 2 g lt	9 53 14	9 53 59	008	
		R307e			9 58 09	9 58 49		
			P307e	OBES index 10 0/90 40° α, 2 g rt	9 58 09	9 58 49	009	

ANSER Flt308 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
308	8-08-95							IAALRTC, BETA_JOE, IY not available
		R308a		**Aero Expansion**	12 19 43	12 20 38		
			P308a	OBES index 1 90/0 40° α, 2 g lt	12 19 43	12 20 38	009	
		R308b			12 24 53	12 25 33		
			P308b	OBES index 10 0/90 20° α, 3 g rt	12 24 53	12 25 33	010	
		R308c			12 30 48	12 31 28		
			P308c	OBES index 1 90/0 20° α, 3 g lt	12 30 48	12 31 28	010	
		R308d			12 35 28	12 35 58		
			P308d	Split-S, 3 g	12 35 28	12 35 58	011	
		R308e			12 38 13	12 38 58		
			P308e	OBES index 10 0/90 Split-S, 3 g, 30° α	12 38 13	12 38 58	011	

ANSER Flt309

Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
309	8-10-95							IAALRTC, BETA_JOE, IY not available
		R309a		**Loads Expansion**	7 11 19	7 12 04	002	
			P309a	OBES index 1 90/0 Split-S, 3 g, 30° α	7 11 19	7 12 04		
		R309b			7 18 09	7 19 19		
			P309b	OBES index 1 90/0 Split-S, 3 g, 35° α	7 18 09	7 19 19		
		R309c			7 23 07	7 23 42		
			P309c	Split-S, 3 g, 35° α	7 23 07	7 23 42		
		R309d			8 21 15	8 21 40	003	
			P309d	Split-S, 3 g, 40° α	8 21 15	8 21 40		
		R309e			8 26 40	8 27 05		
			P309e	Repeat Split-S, 3 g, 40° α	8 26 40	8 27 05		
		R309f			8 31 25	8 32 10		
			P309f	OBES index 1 90/0 Split-S, 3 g, 40° α	8 31 25	8 32 10		
		R309g			8 37 10	8 37 50		
			P309g	OBES index 10 0/90 Split-S, 3 g, 40° α	8 37 10	8 37 50		
		R309h			8 40 30	8 42 21	004 - 005	
			P309h	Strake doublet OBES index 19 90/0 0/90 20° α → doublet → 30° α → doublet → 40° α → doublet → 50° α → doublet → 60° α → doublet	8 40 30	8 42 21		

ANSER Flt309 (Cont'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
		R309i			8 45 00	8 48 10	005	
			P309i1	Strake doublet OBES index 19 90/0 0/90 50° $\alpha \rightarrow$ doublet $\rightarrow$ 60° $\alpha \rightarrow$ doublet $\rightarrow$ 70° $\alpha \rightarrow$ doublet	8 45 00	8 46 20		
			P309i2	Strake doublet OBES index 19 90/0 0/90 70° $\alpha \rightarrow$ doublet	8 47 25	8 48 10		

ANSER Flt310 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
310	8-15-95			**Loads Expansion**				IAALRTC, BETA_JOE, IY not available
		R310a			7 08 15	7 09 36	002	
			P310a	Stabilize at 20° α	7 08 15	7 09 36		
		R310b			7 11 20	7 12 35		
			P310b	Strake doublet OBES index 19 90/0 0/90 20° α, 2g → doublet → 30° α, 2g → doublet	7 11 20	7 12 35		
		R310c			7 15 00	7 15 50		
			P310c	Strake doublet OBES index 19 90/0 0/90 40° α, 2g → doublet	7 15 00	7 15 50		
		R310d			7 19 10	7 20 00		
			P310d	Repeat Strake doublet OBES index 19 90/0 0/90 40° α, 2g → doublet	7 19 10	7 20 00		
				ANSER Env Exp - Mode Transitions				
		R310e			7 22 30	7 24 10	003	
			P310e	20° α, TV → STV → 701E → S → TV → S → 701E	7 22 30	7 24 10		
		R310f			7 26 20	7 28 10	004	
			P310f	30° α, TV → STV → 701E → S → TV → S → 701E	7 26 20	7 28 10		
		R310g			7 31 40	7 33 50	005	
			P310g	50° α, TV → STV → 701E → S → TV → S → 701E	7 31 40	7 33 50		

ANSER Flt310 (Cont'd) **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Start	Stop	Card No.	Comments
		R310h			7 37 05	7 37 30	006	
			P310h	65° α, TV → STV → 701E	7 37 05	7 37 30		

ANSER Flt311 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
311	8-16-95			**ANSER Env Exp - Mode Transitions**					IAALRTC, BETA_JOE, IY not available
		R311a				7 07 40	7 08 50	006	
			P311a	65° α, S $\rightarrow$ TV $\rightarrow$ S $\rightarrow$ 701E		7 07 40	7 08 50		
				STV Env Exp					
		R311b			STV	7 11 35	7 13 20	007	
			P311b	Push-overs 30° $\alpha \rightarrow$ 5° α 45° $\alpha \rightarrow$ 5° α 60° $\alpha \rightarrow$ 5° α		7 11 35	7 13 20		
		R311c			STV	7 17 35	7 19 10	008	
			P311c	Full-stick PUPO's 30° $\alpha \rightarrow$ FAS $\rightarrow$ 10° α 45° $\alpha \rightarrow$ FAS $\rightarrow$ 10° α 60° $\alpha \rightarrow$ FAS $\rightarrow$ 10° α		7 17 35	7 19 10		
		R311d		<u>Full-stick roll-push</u> -90° $\phi \rightarrow$ WL $\rightarrow$ 10° α	STV	7 21 40	7 25 40	009	
			P311d1	30° α		7 21 40	7 22 25		
			P311d2	45° α		7 23 00	7 23 35		
			P311d3	55° α & 60° α		7 24 30	7 25 15		
		R311e			S	7 27 00	7 28 40	006	
			P311e	Push-overs 30° $\alpha \rightarrow$ 5° α 45° $\alpha \rightarrow$ 5° α 60° $\alpha \rightarrow$ 5° α		7 27 00	7 28 40		

ANSER Flt311 (Cont'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R311f		<u>Full-stick PUPO's</u>	S	7 30 50	7 33 20	007	
			P311f1	30° α → FAS → 10° α 45° α → FAS → 10° α		7 31 20	7 32 10		
			P311f2	60° α → FAS → 10° α		7 32 40	7 33 20		

ANSER Flt312 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
312	8-24-95			**ANSER Env Exp**				002	IAALRTC, BETA_JOE, IY not available
		R312a			S	7 40 15	7 42 45		
			P312a1	Incr freq lat doublets, 30° α		7 40 20	7 40 45		
			P312a2	Full-stick roll-push -90° $\phi \rightarrow$ WL $\rightarrow$ 10° α 30° α		7 40 55	7 41 25		
			P312a3	45° α		7 41 45	7 42 40		
		R312b			S	7 46 55	7 47 30		
			P312b	55° α		7 46 55	7 47 30		
		R312c			S	7 48 30	7 49 05		
			P312c	Repeat 55° α		7 48 30	7 49 05		
		R312d			S	7 50 25	7 51 40		
			P312d	Threepeat 55° α + 60° α		7 50 25	7 51 40		
		R312e			S	8 19 50	8 20 25		
			P312e	Repeat 60° α		8 19 50	8 20 25		
				Loads Expansion					
		R312f			TV	8 25 10	8 25 45	003	
			P312f	Strake doublet OBES index 19 90/0 0/90 20° α, 2g $\rightarrow$ doublet		8 25 10	8 25 45		

ANSER Flt312 (Cont'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				Controls Research					
		R312g			STV	8 32 40	8 33 50	005	
			P312g	30° α: Half stk pitch doub. → half stk roll doub. → half ped yaw doub. → full ped SHSS lt. → full ped SHSS rt.		8 32 40	8 33 50		
		R312h			S	8 35 30	8 37 02	006	
			P312h	30° α: Half stk pitch doub. → half stk roll doub. → half ped yaw doub. → full ped SHSS lt. → full ped SHSS rt. → repeat full ped SHSS lt.		8 35 30	8 37 02		
		R312i			S	8 38 50	8 39 23	006	
			P312i	30° α: repeat full ped SHSS rt.		8 38 50	8 39 23		
		R312j		Closed-Loop Lateral PID	S	8 41 25	8 42 08	006	
			P312j	Lat PID, OBES index 23, 30° α		8 41 25	8 42 08		
		R312k				8 43 30	8 44 25	007/ 008	
			P312k	Aggress. α-capture, 20° α → 30° α in TV mode, then repeat in STV	TV, STV	8 43 30	8 44 25		
		R312ℓ		Full stk 360° roll left at 25° α		8 48 45	8 49 25	009	
			P312ℓ	701E	701E	8 48 45	8 49 25		
		R312m				8 50 25	8 52 42	009	
			P312m1	TV	TV	8 50 30	8 51 05	009	
			P312m2	STV	STV	8 51 25	8 51 55	009	
			P312m3	S	S	8 52 10	8 52 42	009	

ANSER Flt313

Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
313	8-24-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available
		R313a			STV	10 42 15	10 43 36	010	
			P313a	45° α: Half stk pitch doub. → half stk roll doub. → half ped yaw doub. → full ped SHSS lt. → full ped SHSS rt.		10 42 40	10 43 36		
		R313b			S	10 45 00	10 46 00	011	
			P313b	45° α: Half stk pitch doub. → half stk roll doub. → half ped yaw doub. → full ped SHSS lt. → full ped SHSS rt.		10 45 00	10 46 00		Rt strk pos sensor failed (STPR → 0)

ANSER Flt314 Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
314	8-29-95			**Controls/Agility Research**					IAALRTC, BETA_JOE, IY not available LSRLA, LSRLB, RSRLA, RSRLB added to raw data
		R314a				7 15 55	7 16 20	002	
			P314a	25° α: 360° roll	701E	7 15 55	7 16 20		
		R314b				7 20 55	7 21 45	003	
			P314b	Aggressive alpha capture, 20° $\rightarrow$ 45° α	TV	7 20 55	7 21 45		
		R314c				7 24 25	7 25 05	004	
			P314c	Aggressive alpha capture, 20° $\rightarrow$ 45° α	STV	7 24 25	7 25 05		
		R314d		35° α: 360° roll		7 28 30	7 29 00	005	
			P314d	RFCS 'off'	701E	7 28 30	7 29 00		
		R314e				8 21 45	8 22 35	006	
			P314e	TV	TV	8 21 45	8 22 35		
		R314f				8 25 30	8 26 10	007	
			P314f	STV	STV	8 25 30	8 26 10		
		R314g				8 29 30	8 30 25	008	
			P314g	S (left)	S	8 29 30	8 30 25		Downmode to TV
		R314h				8 32 30	8 33 20	008	
			P314h	Repeat 314g (left)	S	8 32 30	8 33 20		Downmode to TV

ANSER Flt314 (Cont'd) **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R314i				8 35 20	8 36 10	008	
			P314i	Threepeat 314g (right)	S	8 35 20	8 36 10		
		R314j		<u>45° α: 360° roll</u>		8 39 20	8 40 20	009	
			P314j	TV	TV	8 39 20	8 40 20		
		R314k				8 44 00	8 44 50	010	
			P314k	STV	STV	8 44 00	8 44 50		
		R314ℓ				8 47 25	8 48 40	011	
			P314ℓ	S (left)	S	8 47 25	8 48 40		
		R314m				8 49 45	8 50 16	011	
			P314m	Repeat 314ℓ (right)	S	8 49 45	8 50 16		
		R314n				9 16 25	9 17 15	011	
			P314n	Threepeat 314ℓ (left)	S	9 16 25	9 17 15		
		R314o				9 21 10	9 22 30	012	
			P314o	60° α: Half stk pitch doub. → half stk roll doub. → half ped yaw doub. → 50° α: full ped SHSS lt. → full ped SHSS rt.	STV	9 21 10	9 22 30		
		R314p		<u>50° α: 360° roll</u>		9 27 15	9 27 50	014	
			P314p	TV	TV	9 27 15	9 27 50		
		R314q				9 31 35	9 32 25	015	
			P314q	STV	STV	9 31 35	9 32 25		

ANSER Flt314 (Concl'd) **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R314r				9 35 35	9 36 45	016	
			P314r	S	S	9 35 35	9 36 45		
		R314s				9 41 25	9 42 46	013	
			P314s	60° α: Half stk pitch doub. → half stk roll doub. → half ped yaw doub. → 50° α: full ped SHSS lt. → full ped SHSS rt.	S	9 41 25	9 42 46		Not full rudder on SHSS
		R314t				9 46 10	9 47 30	013	
			P314t	60° α, Closed-loop Lateral PID OBES index 25	S	9 46 10	9 47 30		

ANSER Flt315 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
315	8-30-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available LSRLA, LSRLB, RSRLA, RSRLB added to raw data AAP not available
		R315a		<u>55° α: 360° roll</u>		8 43 32	8 44 02	004	
			P315a	TV	TV	8 43 32	8 44 02		
		R315b				8 46 55	8 47 52	005	
			P315b	STV	STV	8 46 55	8 47 52		
		R315c				8 51 03	8 51 33	004	
			P315c	Repeat TV	TV	8 51 03	8 51 33		
		R315d				8 55 36	8 56 36	006	
			P315d	S	S	8 55 36	8 56 36		
		R315e				8 58 39	8 59 29	002	
			P315e	55° α: Full ped SHSS lt. → full ped SHSS rt.	STV	8 58 39	8 59 29		
		R315f				9 27 35	9 28 30	003	
			P315f	55° α: Full ped SHSS lt. → full ped SHSS rt.	S	9 27 35	9 28 30		
		R315g				9 30 30	9 30 55	007	
			P315g	Aggressive alpha capture, 20° → 45° α	TV	9 30 30	9 30 55		
		R315h				9 33 20	9 33 45	008	
			P315h	Aggressive alpha capture, 20° → 45° α	STV	9 33 20	9 33 45		

ANSER Flt315 (Cont'd) Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R315i				9 36 35	9 37 35	009	
			P315i	60° α: Full ped SHSS lt. → full ped SHSS rt.	STV	9 36 35	9 37 35		
		R315j				9 31 11	9 39 46	010	
			P315j	60° α: Full ped SHSS lt. → full ped SHSS rt.	S	9 31 11	9 39 46		
		R315k				9 42 33	9 42 49	014	
			P315k	Aggressive alpha capture, 1 g, -45° ϕ → 30° α	TV	9 42 33	9 42 49		
		R315ℓ				9 45 01	9 45 19	014	
			P315ℓ	Repeat 315k	TV	9 45 01	9 45 19		
		R315m				9 47 55	9 48 05	015	
			P315m	Aggressive alpha capture, 1 g, -45° ϕ → 30° α	STV	9 47 55	9 48 05		
		R315n				9 50 25	9 50 42	016	
			P315n	Aggressive alpha capture, 1 g, -45° ϕ → 45° α	TV	9 50 25	9 50 42		Not max A/B
		R315o				10 16 50	10 17 09	011	
			P315o	65° α: 360° roll	TV	10 16 50	10 17 09		Terminate, temperature
		R315p				10 19 00	10 19 27	011	
			P315p	Repeat 315o	TV	10 19 00	10 19 27		Terminate, temperature
		R315q				10 22 00	10 22 16	017	
			P315q	Aggressive alpha capture, 1 g, -45° ϕ → 45° α	STV	10 22 00	10 22 16		
		R315r				10 24 52	10 25 07	018	
			P315r	Aggressive alpha capture, 1 g, -45° ϕ → 60° α	TV	10 24 52	10 25 07		

ANSER Flt315 (Cont'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R315s				10 27 50	10 28 06	019	
			P315s	Aggressive alpha capture, 1 g, -45° $\phi \rightarrow$ 60° α	STV	10 27 50	10 28 06		
		R315t				10 30 30	10 30 45	019	
			P315t	Repeat 315s	STV	10 30 30	10 30 45		Terminate
		R315u		35° α: Loaded roll, -60° $\phi \rightarrow$ 90° ϕ		10 32 40	10 33 05	020	
			P315u	Closed loop	701E	10 32 40	10 33 05		
		R315v				10 34 30	10 35 00	020	
			P315v	Open loop	701E	10 34 30	10 35 00		
		R315w				10 37 30	10 38 00	021	
			P315w	Repeat 315u	701E	10 37 30	10 38 00		
		R315x				10 41 05	10 41 27	022	
			P315x	Closed loop	TV	10 41 05	10 41 27		
		R315y				10 43 40	10 44 05	023	
			P315y	Closed loop	STV	10 43 40	10 44 05		
		R315z				10 46 20	10 46 35	024	
			P315z	Closed loop	S	10 46 20	10 46 35		Downmode to TV

ANSER Flt316 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
316	8-31-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R316a				7 17 15	7 17 47		
			P316a	65° α: 360° Roll	S	7 17 15	7 17 47	004	
		R316b		35° α: Loaded roll, -60° ϕ → 90° ϕ		7 20 10	7 20 35		
			P316b	Closed loop	TV	7 20 10	7 20 35	005	
		R316c				7 23 40	7 24 04		
			P316c	Closed loop	STV	7 23 40	7 24 04	006	
		R316d				7 28 00	7 28 22		
			P316d	Closed loop	S	7 28 00	7 28 22	007	
		R316e				7 31 25	7 31 45		
			P316e	Open loop	TV	7 31 25	7 31 45	008	
		R316f				7 33 20	7 33 41		
			P316f	Open loop	STV	7 33 20	7 33 41	009	
		R316g		25° α: Loaded roll, -60° ϕ → 90° ϕ		7 37 40	7 37 45		
			P316g	Closed loop	TV	7 37 40	7 37 45	011	Downmode to 701E
		R316h				7 40 20	7 40 40		
			P316h	Closed loop	TV	7 40 20	7 40 40	011	
		R316i				7 43 20	7 43 43		
			P316i	Closed loop	STV	7 43 20	7 43 43	012	
		R316j				7 45 30	7 45 47		
			P316j	Closed loop	S	7 45 30	7 45 47	013	

ANSER Flt317

Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
317	8-31-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R317a		<u>25° α: Loaded roll,</u> <u>-60° $\phi \rightarrow$ 90° ϕ</u>		9 38 50	9 41 00	014	
			P317a1	Open loop	TV	9 38 50	9 39 10	014	Knock-off
			P317a2	Open loop	TV	9 39 50	9 40 10	014	
		R317b				9 41 35	9 41 55	015	
			P317b	Open loop	STV	9 41 35	9 41 55		
		R317c				9 43 20	9 43 50	016	
			P317c	Open loop	S	9 43 20	9 43 50		
		R317d		<u>35° α: Loaded roll,</u> <u>-60° $\phi \rightarrow$ 90° ϕ</u>		9 46 35	9 47 05	017	
			P317d	Closed loop	701E	9 46 35	9 47 05		
		R317e				9 51 30	9 52 00	019	
			P317e	Closed loop	TV	9 51 30	9 52 00		Jim commented on "shudder"
		R317f				9 56 25	9 56 45	020	
			P317f	Closed loop	STV	9 56 25	9 56 45		
		R317g				10 00 20	10 00 40	021	
			P317g	Closed loop	S	10 00 20	10 00 40		
		R317h				10 03 50	10 04 10	022	
			P317h	Open loop	TV	10 03 50	10 04 10		
		R317i				10 06 50	10 07 15	023	
			P317i	Open loop	STV	10 06 50	10 07 15		

ANSER Flt317 Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
317	8-31-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R317a		<u>25° α: Loaded roll, -60° $\phi \rightarrow$ 90° ϕ</u>		9 38 50	9 41 00	014	
			P317a1	Open loop	TV	9 38 50	9 39 10	014	Knock-off
			P317a2	Open loop	TV	9 39 50	9 40 10	014	
		R317b				9 41 35	9 41 55	015	
			P317b	Open loop	STV	9 41 35	9 41 55		
		R317c				9 43 20	9 43 50	016	
			P317c	Open loop	S	9 43 20	9 43 50		
		R317d		<u>35° α: Loaded roll, -60° $\phi \rightarrow$ 90° ϕ</u>		9 46 35	9 47 05	017	
			P317d	Closed loop	701E	9 46 35	9 47 05		
		R317e				9 51 30	9 52 00	019	
			P317e	Closed loop	TV	9 51 30	9 52 00		Jim commented on "shudder"
		R317f				9 56 25	9 56 45	020	
			P317f	Closed loop	STV	9 56 25	9 56 45		
		R317g				10 00 20	10 00 40	021	
			P317g	Closed loop	S	10 00 20	10 00 40		
		R317h				10 03 50	10 04 10	022	
			P317h	Open loop	TV	10 03 50	10 04 10		
		R317i				10 06 50	10 07 15	023	
			P317i	Open loop	STV	10 06 50	10 07 15		

ANSER Flt318 **Pilot:**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
318	8/31/95			**FLIGHT ABORTED**					IAALRTC, BETA_JOE, IY now available; AAP not available
				no files processed					

ANSER Flt319 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
319	9-07-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R319a		<u>30° α: Long/Lat Tracking</u>		8 36 49	8 37 31	002	
			P319a		701E	8 36 49	8 37 31		
		R319b				8 42 35	8 43 20	003	
			P319b		TV	8 42 35	8 43 20		
		R319c				8 47 05	8 48 05	004	
			P319c		STV	8 47 05	8 48 05		
		R319d				9 22 13	9 23 05	005	
			P319d		S	9 22 13	9 23 05		
		R319e		<u>Tail Buffet</u>		9 28 45	9 29 35	034	
			P319e	60° α	TV	9 28 45	9 29 35		
		R319f				9 32 05	9 33 00	035	
			P319f	50° α	TV	9 32 05	9 33 00		
		R319g				9 34 55	9 35 50	036	
			P319g	40° α	TV	9 34 55	9 35 50		
		R319h				9 38 20	9 39 50	037	
			P319h	35° → 30° α	STV	9 38 20	9 39 50		
		R319i				10 05 40	10 07 05	038	
			P319i	25° → 20° α	STV	10 05 40	10 07 05		

ANSER Flt319 (Cont'd)

Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R319j		30° α: Lat Gross Acquisition		10 10 55	10 11 20	006	
			P319j		701E	10 10 55	10 11 20		
		R319k				10 14 05	10 14 25	006	
			P319k	Repeat 319j	701E	10 14 05	10 14 25		
		R319ℓ				10 18 05	10 18 25	007	
			P319ℓ		TV	10 18 05	10 18 25		
		R319m				10 21 56	10 22 16	007	
			P319m	Repeat 319ℓ	TV	10 21 56	10 22 16		
		R319n				10 25 49	10 26 11	008	
			P319n		STV	10 25 49	10 26 11		
		R319o				10 31 37	10 31 56	009	
			P319o		S	10 31 37	10 31 56		Downmode
		R319p				10 35 01	10 35 21	009	
			P319p	Repeat 319o	S	10 35 01	10 35 21		
		R319q				11 00 25	11 00 55	010	
			P319q	30° α: Long Gross Acquisition	TV	11 00 25	11 00 55		
		R319r		3 g, .45 M: Long/Lat Tracking		11 04 58	11 05 50	011	
			P319r		701E	11 04 58	11 05 50		
		R319s				11 11 18	11 12 13	012	
			P319s		TV	11 11 18	11 12 13		
		R319t				11 16 30	11 17 22	013	
			P319t		STV	11 16 30	11 17 22		
		R319u				11 21 22	11 22 07	014	
			P319u		S	11 21 22	11 22 07		

ANSER Flt320 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
320	9-19-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R320a		<u>0.6 M Long/Lat Tracking</u>		8 54 15	8 55 10	002	
			P320a	RFCS 'Off'	701E	8 54 15	8 55 10		
		R320b				8 59 47	9 00 50	002A	
			P320b	TV-Mode	TV	8 59 47	9 00 50		
		R320c				9 05 10	9 06 20	002B	
			P320c	STV-Mode	STV	9 05 10	9 06 20		
		R320d				9 33 50	9 35 05	002C	
			P320d	S-Mode	S	9 33 50	9 35 05		
		R320e		<u>45° α: Long/Lat Tracking</u>		9 42 30	9 43 11	003	
			P320e	RFCS 'Off'	701E	9 42 30	9 43 11		
		R320f				9 48 12	9 48 49	003A	
			P320f	TV-Mode - Gain Set 0	TV	9 48 12	9 48 49		
		R320g				9 54 32	9 55 30	003B	
			P320g	STV-Mode - Gain Set 0	STV	9 54 32	9 55 30		
		R320h				10 00 20	10 00 35	003C	
			P320h	S-Mode - Gain Set 0	S	10 00 20	10 00 35		Downmode
		R320i				10 03 10	10 03 30	003C	
			P320i	Repeat 320h	S	10 03 10	10 03 30		Downmode
		R320j				10 07 30	10 08 20	009	
			P320j	TV-Mode - Gain Set 1	TV	10 07 30	10 08 20		

ANSER Flt321 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
321	9-19-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R321a		45° α: Long/Lat Tracking		12 17 30	12 19 00	003D	
			P321a	Med gain	TV	12 17 30	12 19 00		Knock off, α too low
		R321b				12 21 55	12 22 55	003D	
			P321b	Repeat 321a	TV	12 21 55	12 22 55		Knock off, α too low
		R321c				12 25 15	12 26 20	003D	
			P321c	Threepeat	TV	12 25 15	12 26 20		Knock off, altitude
		R321d				12 28 40	12 30 00	003D	
			P321d	Fourpeat	TV	12 28 40	12 30 00		Knock off, altitude
		R321e				13 02 00	13 03 20	003D	
			P321e	Fivepeat	TV	13 02 00	13 03 20		
		R321f				13 08 25	13 09 15	003E	
			P321f	Low gain	TV	13 08 25	13 09 15		
		R321g				13 13 30	13 14 50	003F	
			P321g	Med gain	S	13 13 30	13 14 50		
		R321h				13 18 10	13 19 40	003G	
			P321h	Low gain	S	13 18 10	13 19 40		
		R321i				13 23 30	13 25 00	004B	
			P321i	45° α: Lat Gross Acq, Med gain	S	13 23 30	13 25 00		

ANSER Flt322 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
322	9-21-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R322a		<u>45° α: Lat Gross Acq</u>		8 48 12	8 48 32	002	
			P322a		TV	8 48 12	8 48 32		
		R322b				8 51 48	8 52 12	002	
			P322b	Repeat 322a	TV	8 51 48	8 52 12		
		R322c				8 56 48	8 57 10	002A	
			P322c		STV	8 56 48	8 57 10		
		R322d				9 02 08	9 02 26	002A	
			P322d	Repeat 322c	STV	9 02 08	9 02 26		
		R322e				9 07 37	9 07 55	002B	
			P322e		S	9 07 37	9 07 55		α too high, rate as 60° α
		R322f				9 42 56	9 43 14	002B -2	
			P322f		S	9 42 56	9 43 14		
		R322g				9 49 22	9 49 40	003	
			P322g	45° α: Long Gross Acq	TV	9 49 22	9 49 40		
		R322h		<u>60° α: Long/Lat Tracking</u>		9 53 01	9 53 44	004	
			P322h		TV	9 53 01	9 53 44		
		R322i				9 59 08	9 59 45	004A	
			P322i		STV	9 59 08	9 59 45		60° α not reached

ANSER Flt322 (Cont'd) **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R322j				10 04 25	10 04 50	004A	
			P322j	Repeat 322i	STV	10 04 25	10 04 50		
		R322k				10 09 00	10 09 26	004B	
			P322k		S	10 09 00	10 09 26		
		R322ℓ		<u>60° α: Lat Gross Acq</u>		10 15 02	10 15 30	005	
			P322ℓ		TV	10 15 02	10 15 30		
		R322m				10 20 24	10 20 50	005A	
			P322m		STV	10 20 24	10 20 50		

ANSER Flt323 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
323	9-21-95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R323a				12 22 04	12 22 30	006	
			P323a	60° α: Long Gross Acq	TV	12 22 04	12 22 30		
		R323b		Scissors		12 27 20	12 27 35	008	
			P323b		701E	12 27 20	12 27 35		
		R323c				12 33 44	12 34 20	008	
			P323c	Repeat 323b	701E	12 33 44	12 34 20		
		R323d				13 03 35	13 04 12	008A	
			P323d		STV	13 03 35	13 04 12		
		R323e				13 08 02	13 08 28	008B	
			P323e		S	13 08 02	13 08 28		
		R323f				13 10 36	13 11 00	008B	
			P323f	Repeat 323e	S	13 10 36	13 11 00		
		R323g		Post-Stall Reversal		13 15 00	13 15 30	009	
			P323g		701E	13 15 00	13 15 30		Bad set-up
		R323h				13 18 38	13 19 55	009	
			P323h	Repeat 323g	701E	13 18 38	13 19 55		
		R323i				13 26 24	13 27 00	009A	
			P323i		STV	13 26 24	13 27 00		Not max A/B
		R323j				13 29 00	13 30 10	009A	
			P323j	Repeat 323i	STV	13 29 00	13 30 10		

ANSER Flt324 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
324	10/03/95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R324a		30° α: Long/Lat Tracking		8 40 00	8 40 50	002	
			P324a		TV	8 40 00	8 40 50		Not rated
		R324b				8 44 55	8 45 40	002	
			P324b	Repeat 324a	TV	8 44 55	8 45 40		
		R324c				8 50 35	8 51 05	002A	
			P324c		STV	8 50 35	8 51 05		
		R324d				8 53 10	8 53 20	002A	
			P324d	Repeat 324c	STV	8 53 10	8 53 20		Downmode
		R324e				8 55 35	8 56 00	002A	
			P324e	Threepeat 324c	STV	8 55 35	8 56 00		
		R324f				8 58 20	8 59 00	002A	
			P324f	Fourpeat 324c	STV	8 58 20	8 59 00		
		R324g				9 06 20	9 06 55	002B	
			P324g		S	9 06 20	9 06 55		
		R324h				9 10 35	9 11 10	002C	
			P324h	Gain set 1	TV	9 10 35	9 11 10		

ANSER Flt325 — Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
325	10/03/95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R325a				11 11 15	11 12 10	002	
			P325a	45° α: Long/Lat Tracking	STV	11 11 15	11 12 10		
		R325b		<u>45° α: Lat Gross Acq</u>		11 17 18	11 17 38	003	
			P325b		TV	11 17 18	11 17 38		
		R325c				11 21 05	11 21 25	003A	
			P325c		STV	11 21 05	11 21 25		
		R325d				11 24 20	11 24 41	004	
			P325d	45° α: Long Gross Acq	TV	11 24 20	11 24 41		
		R325e		<u>60° α: Long/Lat Tracking</u>		11 29 05	11 29 55	005	
			P325e		TV	11 29 05	11 29 55		α too low; not Max A/B?
		R325f				11 59 35	12 00 10	005	
			P325f	Repeat 325e	TV	11 59 35	12 00 10		
		R325g				12 05 20	12 06 20	005A	
			P325g		STV	12 05 20	12 06 20		α too low
		R325h				12 09 45	12 10 30	005A	
			P325h	Repeat 325g	STV	12 09 45	12 10 30		
		R325i				12 13 45	12 14 20	005B	
			P325i		S	12 13 45	12 14 20		Downmode
		R325j		<u>60° α: Lat Gross Acq</u>		12 18 23	12 18 50	006	
			P325j		TV	12 18 23	12 18 50		
		R325k				12 21 45	12 22 00	006A	
			P325k		STV	12 21 45	12 22 00		Downmode

ANSER Flt325 (Cont'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R325ℓ				12 24 35	12 25 15	006A	
			P325ℓ	Repeat 325k	STV	12 24 35	12 25 15		
		R325m				12 29 20	12 29 50	006B	
			P325m		S	12 29 20	12 29 50		
		R325n				12 33 22	12 33 45	007	
			P325n	Post-Stall Reversal	S	12 33 22	12 33 45		

ANSER Flt326 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
326	10/05/95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R326a		<u>30° α: Long/Lat Tracking</u>		13 08 10	13 08 50	002	
			P326a		TV	13 08 10	13 08 50		Not rated
		R326b				13 13 45	13 14 30	002A	
			P326b		STV	13 13 45	13 14 30		
		R326c				13 18 35	13 19 20	002B	
			P326c		S	13 18 35	13 19 20		
		R326d				13 23 15	13 23 50	002C	
			P326d	Gain Set 1	TV	13 23 15	13 23 50		Downmode
		R326e				13 37 00	13 37 45	008	
			P326e	45° α <u>Closed-Loop Lateral PID</u> OBES index 24	S	13 37 00	13 37 45		

ANSER Flt327 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
327	10/06/95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R327a		30° α: Lat Gross Acq		9 37 55	9 38 20	002	
			P327a		TV	9 37 55	9 38 20		
		R327b				9 42 25	9 42 50	002A	
			P327b		STV	9 42 25	9 42 50		
		R327c				9 46 10	9 46 37	002B	
			P327c		S	9 46 10	9 46 37		
		R327d		Long Gross Acq		9 50 15	9 50 40	003	
			P327d	30° α: Gain Set 0	TV	9 50 15	9 50 40		
		R327e				9 53 50	9 54 10	003A	
			P327e	30° α: Gain Set 1	TV	9 53 50	9 54 10		
		R327f				9 57 40	9 58 00	004	
			P327f	45° α: Gain Set 1	TV	9 57 40	9 58 00		
		R327g				10 00 45	10 55 00	006	
			P327g	60° α: Gain Set 0	TV	10 00 45	10 55 00		Downmode
		R327h				10 08 15	10 08 40	006	
			P327h	Repeat 327g	TV	10 08 15	10 08 40		
		R327i				10 10 58	10 11 20	006A	
			P327i	60° α: Gain Set 1	TV	10 10 58	10 11 20		
		R327j				10 14 00	10 14 40	005	
			P327j	45° α: Long/Lat Tracking - Gain Set 1	TV	10 14 00	10 14 40		Card for 60° α. Did not reach 60° α. Rate as 45° α.

ANSER Flt328 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
328	10/10/95			**Controls Research**					IAALRTC, BETA_JOE, IY not available AAP not available
		R328a		<u>25° α: 90° Roll Capture</u>		12 08 25	12 08 40	002	
			P328a	Left	STV	12 08 25	12 08 40		
		R328b				12 10 35	12 10 50	002R	
			P328b	Right	STV	12 10 35	12 10 50		
		R328c		<u>25° α: 180° Roll Capture</u>		12 12 30	12 12 50	003	
			P328c	Left	STV	12 12 30	12 12 50		
		R328d				12 15 10	12 15 30	003R	
			P328d	Right	STV	12 15 10	12 15 30		
		R328e		<u>25° α: 180° Roll Thru</u>		12 18 00	12 18 20	004	
			P328e	Left	STV	12 18 00	12 18 20		
		R328f				12 20 50	12 21 10	004	
			P328f	Right	STV	12 20 50	12 21 10		Downmode
		R328g		<u>30° α: 90° Roll Capture</u>		12 22 45	12 23 05	005	
			P328g	Left	STV	12 22 45	12 23 05		
		R328h				12 24 30	12 24 43	005R	
			P328h	Right	STV	12 24 30	12 24 43		
		R328i		<u>30° α: 90° Roll Capture</u>		12 45 25	12 46 00	006	
			P328i	Left	STV	12 45 25	12 46 00		
		R328j				12 47 10	12 48 20	006R	
			P328j1	Right	STV	12 47 10	12 47 40	006R	
			P328j2	Repeat 328j1		12 47 55	12 48 20	006R	
		R328k		<u>30° α: 180° Roll Thru</u>		12 50 45	12 51 00	007	
			P328k	Left	STV	12 50 45	12 51 00		

ANSER Flt328 (Cont'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R328ℓ				12 53 25	12 53 45	007	
			P328ℓ	Right	STV	12 53 25	12 53 45		
		R328m		<u>50° α: 90° Heading Capture</u>		13 07 10	13 07 40	008	
			P328m	Left	STV	13 07 10	13 07 40		Downmode
		R328n				13 09 10	13 09 50	008	
			P328n	Repeat 328m	STV	13 09 10	13 09 50		
		R328o				13 11 30	13 12 10	008R	
			P328o	Right	STV	13 11 30	13 12 10		
		R328p		<u>50° α: 180° Roll Thru</u>		13 13 40	13 14 10	009	
			P328	Left	STV	13 13 40	13 14 10		
		R328q				13 16 00	13 16 35	009	
			P328q	Right	STV	13 16 00	13 16 35		
		R328r		<u>65° α: 90° Heading Capture</u>		13 19 27	13 20 00	010	
			P328r	Left	STV	13 19 27	13 20 00		
		R328s				13 23 50	13 24 30	010R	
			P328s	Right	STV	13 23 50	13 24 30		
		R328t		<u>65° α: 180° Roll Thru</u>		13 26 40	13 27 25	011	
			P328t	Left	STV	13 26 40	13 27 25		
		R328u				13 29 55	13 30 40	011R	
			P328u	Right	STV	13 29 55	13 30 40		
		R328v		<u>35° α: 180° Roll Capture</u>		13 34 45	13 35 00	012	
			P328v	Left	STV	13 34 45	13 35 00		Downmode
		R328w				13 36 35	13 36 50	012	
			P328w	Repeat 328v	STV	13 36 35	13 36 50		

ANSER Flt329 | Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
329	10/12/95			**Controls Research**					IAALRTC, BETA_JOE, IY and, AAP not available added raw data VTRUE1, RHO, DRFL, DRFR
		R329a		<u>25° α: 180° Roll Thru</u>		8 42 50	8 43 15		
			P329a	Left	STV	8 42 50	8 43 15	002	
		R329b				8 44 25	8 44 50		
			P329b	Right	STV	8 44 25	8 44 50	002	
		R329c		<u>35° α: 90° Roll Capture</u>		8 46 00	8 46 40		
			P329c	Left	STV	8 46 00	8 46 40	003	
		R329d				8 49 20	8 50 00		
			P329d	Right	STV	8 49 20	8 50 00	003R	
		R329e		<u>35° α: 180° Roll Thru</u>		8 51 50	8 52 40		
			P329e	Left	STV	8 51 50	8 52 40	004	
		R329f				8 53 45	8 54 20		
			P329f	Right	STV	8 53 45	8 54 20	004	Downmode
		R329g		<u>35° α: 180° Roll Capture</u>		8 59 10	8 59 25		
			P329g	Right (under)	STV	8 59 10	8 59 25	005	Downmode
		R329h				9 19 40	9 20 00		
			P329h	Repeat 329g	STV	9 19 40	9 20 00	005	Knock-off
		R329i				9 21 40	9 22 00		
			P329i	Threepeat 329g	STV	9 21 40	9 22 00	005	Downmode
		R329j				9 24 35	9 24 50		
			P329j	Fourpeat 329g	STV	9 24 35	9 24 50	005	Downmode
		R329k		<u>35° α: 180° Roll Thru</u>		9 27 40	9 27 55		
			P329k	Left (over)	STV	9 27 40	9 27 55	006	

ANSER Flt329 (Concl'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R329ℓ				9 39 40	9 40 10		
			P329ℓ	Right (under)	STV	9 39 40	9 40 10	006	Bad α
		R329m				9 43 40	9 44 00		
			P329m	Repeat 329ℓ	STV	9 43 40	9 44 00	006	Downmode
		R329n		Closed-Loop Lateral PID		9 47 05	9 47 35		
			P329n	5° α: OBES index 26	TV	9 47 05	9 47 35	007	
		R329o				9 48 30	9 49 00		
			P329o	20° α: OBES index 27	TV	9 48 30	9 49 00	007	
		R329p				9 49 40	9 50 10		
			P329p	30° α: OBES index 28	TV	9 49 40	9 50 10	008	
		R329q		Open-Loop Lateral PID		9 52 25	9 53 55		
			P329q1	40° α: OBES index 20	TV	9 52 30	9 52 50	009	
			P329q2	40° α: OBES index 21	TV	9 52 55	9 53 20	009	
			P329q3	40° α: OBES index 22	TV	9 53 22	9 53 50	009	
		R329r		Closed-Loop Lateral PID		9 56 30	9 57 00		
			P329r	45° α: OBES index 29	TV	9 56 30	9 57 00	010	
		R329s				9 59 35	10 00 05		
			P329s	60° α: OBES index 30	TV	9 59 35	10 00 05	011	
		R329t				10 03 05	10 05 55		
			P329t	60° α: OBES index 25	S	10 03 05	10 05 55	011A	
		R329u				10 05 28	10 05 55		
			P329u	45° α: OBES index 24	S	10 05 28	10 05 55	010A	Downmode
		R329v				10 07 25	10 08 15		
			P329v	Repeat 329u	S	10 07 25	10 08 15	010A	

ANSER Flt330 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
330	10-27-95			**Controls Research**					IAALRTC, BETA_JOE, IY and, AAP not available
		R330a		<u>30° α: Strake Exten - Full Pedal SHSS</u>		9 17 25	9 18 20		
			P330a	OBES index 3 30/0	TV	9 17 25	9 18 20	002	
		R330b				9 20 50	9 21 45		
			P330b	OBES index 8 0/30	TV	9 20 50	9 21 45	002	
		R330c				9 25 25	9 26 20		
			P330c	OBES index 1 90/0	TV	9 25 25	9 26 20	003	
		R330d				9 28 30	9 29 30		
			P330d	OBES index 10 0/90	TV	9 28 30	9 29 30	003	
		R330e				9 31 37	9 32 10		
			P330e	Closed-Loop Lat PID 30° α: OBES index 23, OI	S	9 31 37	9 32 10	004	
		R330f		<u>40° α: Strake Exten - Full Pedal SHSS</u>		9 34 45	9 35 40		
			P330f	OBES index 3 30/0	TV	9 34 45	9 35 40	005	
		R330g				9 37 45	9 38 45		
			P330g	OBES index 8 0/30	TV	9 37 45	9 38 45	005	
		R330h				9 41 25	9 42 30		
			P330h	OBES index 1 90/0	TV	9 41 25	9 42 30	006	
		R330i				9 44 30	9 45 30		
			P330i	OBES index 10 0/90	TV	9 44 30	9 45 30	006	

ANSER Flt331 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
331	10-27-95			**Controls Research**					IAALRTC, BETA_JOE, IY and, AAP not available
		R331a		<u>50° α: Strake Exten - Full Pedal SHSS</u>		11 29 57	11 30 57		
			P331a	OBES index 14 20/20	TV	11 29 57	11 30 57	007	
		R331b				11 34 23	11 35 18		
			P331b	OBES index 11 35/5	TV	11 34 23	11 35 18	008	
		R331c				11 38 32	11 39 27		
			P331c	OBES index 17 5/35	TV	11 38 32	11 39 27	008	
		R331d				11 42 35	11 43 35		
			P331d	OBES index 1 90/0	TV	11 42 35	11 43 35	009	
		R331e				11 47 40	11 48 43		
			P331e	OBES index 10 0/90	TV	11 47 40	11 48 43	009	
		R331f		<u>60° α: Strake Exten - Full Pedal SHSS</u>		11 51 29	11 52 33		
			P331f	OBES index 1 90/0	TV	11 51 29	11 52 33	010	

ANSER Flt332 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
332	10-31-95			**Controls Research**					IAALRTC, BETA_JOE, IY now available AAP not available **LEX Fence OFF**
		R332a		Closed-Loop PID - Lateral		8 33 55	8 34 25		
			P332a	5° α: OBES index 26	TV	8 33 55	8 34 25	002	
		R332b				8 35 21	8 35 51		
			P332b	20° α: OBES index 27	TV	8 35 21	8 35 51	002	
				Aero Research					
		R332c		Strake Extension		8 38 35	8 40 15		
			P332c1	30° α: OBES index 5 10/0	TV	8 38 35	8 39 15	003	
			P332c2	20° α: OBES index 1 90/0		8 39 30	8 40 15		
		R332d				8 42 13	8 43 58		
			P332d1	30° α: OBES index 6 0/10	TV	8 42 13	8 42 50	004	
			P332d2	20° α: OBES index 10 0/90		8 43 15	8 43 58		
		R332e				8 46 40	8 48 17		
			P332e1	40° α: OBES index 5 10/0	TV	8 46 40	8 47 18	005	
			P332e2	30° α: OBES index 4 20/0		8 47 39	8 48 17		
		R332f				8 50 40	8 52 03		
			P332f1	40° α: OBES index 6 0/10	TV	8 50 40	8 51 14	006	
			P332f2	30° α: OBES index 7 0/20		8 51 27	8 52 03		
		R332g				8 55 10	8 55 50		
			P332g	30° α: OBES index 3 30/0		8 55 10	8 55 50	007	
		R332h				8 58 37	8 59 15		
			P332h	30° α: OBES index 8 0/30		8 58 37	8 59 15	008	

ANSER Flt333 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
333	10-31-95			**Aero Research**					IAALRTC, BETA_JOE, IY now available AAP not available **LEX Fence OFF**
		R333a		Strake Extension		11 24 50	11 25 45		
			P333a	30° α: OBES index 1 90/0	TV	11 24 50	11 25 45	009	
		R333b				11 25 55	11 26 40		
			P333b	25° α: OBES index 1 90/0	TV	11 25 55	11 26 40	009	
		R333c				11 29 20	11 30 05		
			P333c	50° α: OBES index 5 10/0	TV	11 29 20	11 30 05	007	
		R333d				11 32 20	11 33 00		
			P333d	50° α: OBES index 6 0/10	TV	11 32 20	11 33 00	008	
		R333e				11 35 00	11 35 40		
			P333e	30° α: OBES index 3 30/0	TV	11 35 00	11 35 40	010	
		R333f				11 35 50	11 36 35		
			P333f	25° α: OBES index 10 0/90	TV	11 35 50	11 36 35	010	
		R333g				11 39 00	11 39 40		
			P333g	50° α: OBES index 4 20/0	TV	11 39 00	11 39 40	011	
		R333h				11 41 45	11 42 25		
			P333h	40° α: OBES index 4 20/0	TV	11 41 45	11 42 25	011	
		R333i				11 44 35	11 45 40		
			P333i	50° α: OBES index 7 0/20	TV	11 44 35	11 45 40	012	
		R333j				11 45 45	11 46 05		
			P333j	40° α: OBES index 7 0/20	TV	11 45 45	11 46 05	012	

ANSER Flt334

Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
334	10-31-95			**Aero Research**					IAALRTC, BETA_JOE, IY now available, AAP not available **LEX Fence OFF**
		R334a		<u>Strake Extension</u>		13 48 20	13 49 00		
			P334a	40° α: OBES index 1 90/0	TV	13 48 20	13 49 00	013	
		R334b				13 49 03	13 49 40		
			P334b	40° α: OBES index 2 60/0	TV	13 49 03	13 49 40	013	
		R334c				13 53 30	13 54 27		
			P334c	40° α: OBES index 10 0/90	TV	13 53 30	13 54 27	014	
		R334d				13 54 30	13 55 15		
			P334d	40° α: OBES index 9 0/60	TV	13 54 30	13 55 15	014	
		R334e				13 59 45	14 00 25		
			P334e	50° α: OBES index 14 20/20	TV	13 59 45	14 00 25	015	
		R334f				14 00 27	14 01 00		
			P334f	40° α: OBES index 5 30/0	TV	14 00 27	14 01 00	015	
		R334g				14 01 05	14 01 40		
			P334g	40° α: OBES index 6 0/30	TV	14 01 05	14 01 40	015	

ANSER Flt335 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
335	11-02-95			**Aero Research**					IAALRTC, BETA_JOE, IY now available AAP not available **LEX Fence OFF**
		R335a		30° α: Closed-Loop Lat PID		8 40 45	8 41 05		
			P335a	OBES index 28	TV	8 40 45	8 41 05	002	
		R335b				8 41 20	8 42 05		
			P335b	OBES index 23	S	8 41 20	8 42 05	002	
		R335c		Strake Extension Maneuver		8 48 28	8 49 03		
			P335c	30° α: OBES index 1 90/0	TV	8 48 28	8 49 03	003	
		R335d				8 49 09	8 49 50		
			P335d	35° α: OBES index 1 90/0	TV	8 49 09	8 49 50	003	
		R335e				8 54 50	8 55 35		
			P335e	30° α: OBES index 10 0/90	TV	8 54 50	8 55 35	004	
		R335f				8 55 40	8 56 22		
			P335f	35° α: OBES index 10 0/90	TV	8 55 40	8 56 22	004	
		R335g				9 26 05	9 26 35		
			P335g	50° α: OBES index 5 10/0	TV	9 26 05	9 26 35	005	
		R335h				9 26 48	9 27 25		
			P335h	30° α: OBES index 3 30/0 Full Pedal SHSS	TV	9 26 48	9 27 25	005	
		R335i				9 39 15	9 39 55		
			P335i	30° α: OBES index 8 0/30 Full Pedal SHSS	TV	9 39 15	9 39 55	006	
		R335j				9 41 55	9 42 35		
			P335j	30° α: OBES index 1 90/0 Full Pedal SHSS	TV	9 41 55	9 42 35	007	

ANSER Flt335 (Cont'd.) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R335k				10 11 20	10 11 55		
			P335k	50° α: OBES index 3 30/0	TV	10 11 20	10 11 55	009	
		R335ℓ				10 14 36	10 15 08		
			P335ℓ	50° α: OBES index 8 0/30	TV	10 14 36	10 15 08	010	
		R335m				10 18 07	10 18 42		
			P335m	50° α: OBES index 13 25/15	TV	10 18 07	10 18 42	011	
		R335n				10 18 44	10 19 10		
			P335n	50° α: OBES index 14 20/20	TV	10 18 44	10 19 10	011	
		R335o				10 21 00	10 21 34		
			P335o	50° α: OBES index 15 15/20	TV	10 21 00	10 21 34	012	
		R335p				10 23 25	10 24 00		
			P335p	50° α: OBES index 2 60/0	TV	10 23 25	10 24 00	013	
		R335q				10 52 08	10 52 41		
			P335q	50° α: OBES index 9 0/60	TV	10 52 08	10 52 41	014	
		R335r				10 52 54	10 53 31		
			P335r	40° α: OBES index 1 90/0	TV	10 52 54	10 53 31	014	
		R335s				10 57 22	10 57 58		
			P335s	50° α: OBES index 12 30/10	TV	10 57 22	10 57 58	015	
		R335t				10 58 05	10 58 41		
			P335t	50° α: OBES index 16 10/30	TV	10 58 05	10 58 41	016	
		R335u				11 02 28	11 03 28		
			P335u	50° α: OBES index 1 90/0 $\rightarrow$ 45° α: OBES index 1 90/0	TV	11 02 28	11 03 28	017	

ANSER Flt335 (Cont'd.) Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R335v				11 28 25	11 29 27		
			P335v	50° α: OBES index 10 0/90 → 45° α: OBES index 10 0/90	TV	11 28 25	11 29 27	018	
		R335w				11 35 12	11 35 50		
			P335w	50° α: OBES index 11 35/5		11 35 12	11 35 50	019	
		R335x				11 36 45	11 37 15		
			P335x	50° α: OBES index 17 5/35		11 36 45	11 37 15	019	
		R335y		<u>40° α: Open-Loop Lat PID</u>		11 39 28	11 40 33		
			P335y1	OBES index 20 Ail/Rud	TV	11 39 28	11 39 45	021	
			P335y2	OBES index 21 YTV/DST	TV	11 40 00	11 40 21	021	
			P335y3	OBES index 22 Multi	TV	11 40 25	11 40 33	021	
		R335za		<u>45° α: Closed-Loop Lat PID</u>		11 43 00	11 43 55		
			P335za1	OBES index 29	TV	11 43 00	11 43 28	022	
			P335za2	OBES index 24	S	11 43 30	11 43 55	022	Downmode
		R335zb				11 45 52	11 46 05		
			P335zb	Repeat 335za2		11 45 52	11 46 05	022	Downmode
		R335zc				11 48 05	11 48 25		
			P335zc	Threepeat 335za2		11 48 05	11 48 25	022	Downmode
		R335zd				11 49 50	11 50 10		
			P335zd	Fourpeat 335za2		11 49 50	11 50 10	022	Downmode

ANSER Flt336 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
336	11-07-95			**Aero Research**					IAALRTC, BETA_JOE, IY now available, AAP not available **LEX Fence OFF**
		R336a		<u>Strake Extension Maneuver</u>		8 43 40	8 44 22		
			P336a	30° α: OBES index 5 10/0	TV	8 43 40	8 44 22	002	
		R336b				8 44 30	8 45 00		
			P336b	20° α: OBES index 1 90/0	TV	8 44 30	8 45 00	002	
		R336c				8 54 14	8 55 50		
			P336c1	30° α: OBES index 6 0/10	TV	8 54 14	8 54 52	003	
			P336c2	20° α: OBES index 10 0/90		8 55 09	8 55 50	003	
		R336d				8 57 50	8 59 01		
			P336d1	30° α: OBES index 3 30/0	TV	8 57 50	8 58 22	004	
			P336d2	30° α: OBES index 8 0/30		8 58 26	8 59 01	004	
		R336e				9 00 50	9 02 34		
			P336e1	30° α: OBES index 9 0/60	TV	9 00 50	9 01 25	005	
			P336e2	30° α: OBES index 10 0/90		9 01 32	9 02 34	005	
		R336f				9 05 06	9 06 16		
			P336f1	40° α: OBES index 5 10/0	TV	9 05 06	9 05 38	006	
			P336f2	30° α: OBES index 4 20/0		9 05 42	9 06 16	006	
		R336g				9 08 22	9 09 17		
			P336g	40° α: OBES index 6 0/10 → 30° α: OBES index 7 0/20	TV	9 08 22	9 09 17	007	Knock-off
		R336h				9 10 35	9 11 03		
			P336h	Repeat 2nd manvr in 336g 30° α: OBES index 7 0/20	TV	9 10 35	9 11 03	007	

ANSER Flt336 (Concl'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R336i				9 13 36	9 14 03		
			P336i	50° α: OBES index 1 90/0		9 13 36	9 14 03	008	
		R336j				9 14 10	9 14 40		
			P336j	50° α: OBES index 10 0/90		9 14 10	9 14 40	008	

ANSER Flt337 **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
337	11-07-95			**Aero Research**					IAALRTC, BETA_JOE, IY now available; AAP not available Raw data files retrieved and Processed files created but **not** plotted to put in notebook library **LEX Fence OFF**
		R337a		<u>Strake Extension Maneuver</u>		13 32 40	13 33 15		
			P337a	50° α: OBES index 4 20/0	TV	13 32 40	13 33 15	009	
		R337b				13 33 37	13 34 14		
			P337b	40° α: OBES index 12 30/10	TV	13 33 37	13 34 14	009	
		R337c				13 38 22	13 39 02		
			P337c	50° α: OBES index 7 0/20	TV	13 38 22	13 39 02	010	
		R337d				13 39 32	13 40 13		
			P337d	40° α: OBES index 17 5/35	TV	13 39 32	13 40 13	010	
		R337e				13 44 54	13 45 32		
			P337e	50° α: OBES index 3 30/0	TV	13 44 54	13 45 32	011	
		R337f				13 45 36	13 46 40		
			P337f	50° $\alpha \rightarrow$40° α: OBES index 11 35/5	TV	13 45 36	13 46 40	011	
		R337g				13 51 42	13 52 20		
			P337g	50° α: OBES index 8 0/30	TV	13 51 42	13 52 20	012	
		R337h				13 52 35	13 53 48		
			P337h	50° α: OBES index 9 0/60 $\rightarrow$ 40° α: OBES index 14 20/20	TV	13 52 35	13 53 48	012	

ANSER Flt338

Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
338	11-08-95			**Aero Research** **Maneuver times determined but data files not retrieved and processed; log filed in notebook library**					IAALRTC, BETA_JOE, IY now available; AAP not available **LEX Fence OFF**
				Strake Extension Maneuver					
				50° $\alpha \rightarrow 40° \alpha$: OBES index 13 25/15	TV	9 08 37	9 09 44	002	
				50° $\alpha \rightarrow 40° \alpha$: OBES index 15 15/25	TV	9 15 50	9 16 55	003	
				40° α: OBES index 10 0/90	TV	9 18 50	9 19 34	003	Broke alpha vane with tanker hose; RTB

ANSER Flt339 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
339	11-21-95			**Aero Research** **Maneuver times determined but data files not retrieved and processed; log filed in notebook library**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.** **LEX Fence OFF**
				Strake Extension Maneuver					
				$50°\ \alpha \rightarrow 40°\ \alpha \rightarrow$ SHSS: OBES index 16 10/30	TV	8 53 16	8 54 50	003	
				$50°\ \alpha\alpha$: OBES index 2 60/0 $\rightarrow$ OBES index 17 5/35	TV	8 59 10	9 00 08	004	Downmode
				$50°\ \alpha$: OBES index 7 0/20	TV	9 01 48	9 02 22	004	
				$30°\ \alpha$: OBES index 10 0/90 $\rightarrow$ SHSS		9 08 16	9 09 20	005	
				$40°\ \alpha$: OBES index 10 0/90 $\rightarrow$ SHSS		9 11 35	9 12 13	005	

ANSER Flt340

Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
340	11-21-95			**Aero Research** **Maneuver times determined but data files not retrieved and processed; log filed in notebook library**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.** **LEX Fence OFF**
				<u>Strake Extension Maneuver</u>					
				40° α: OBES index 3 30/0 → SHSS	TV	11 10 35	11 11 15	006	
				40° α: OBES index 8 0/30 → SHSS	TV	11 11 22	11 12 00	006	
				50° α: SHSS Lt → SHSS Rt	TV	11 15 55	11 16 35	007	
				<u>Strake Extension Maneuver</u>					
				50° α: OBES index 14 20/20 → SHSS Lt → SHSS Rt	TV	11 19 32	11 20 26	008	
				50° α: OBES index 11 35/5 → SHSS Lt → SHSS Rt	TV	11 23 18	11 24 12	009	
				50° α: OBES index 17 5/35 → SHSS Lt → SHSS Rt	TV	11 27 28	11 28 26	010	
				40° α: OBES index 1 90/0 → SHSS Rt → SHSS Lt → 0/0 → SHSS Lt	TV	11 31 00	11 32 10	011	

ANSER Flt341 **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
341	11-21-95			**Aero Research** **Maneuver times determined but only data files R341b and R341d retrieved and processed; log filed in notebook library**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.** **LEX Fence OFF**
				Strake Extension Maneuver					
				40° α: OBES index 10 0/90 → SHSS Lt → SHSS Rt	TV	13 07 35	13 08 34	012	
		R341b	P341b	50° α: OBES index 1 90/0 → SHSS Lt	TV	13 11 17	13 11 55	013	
				50° α: OBES index 1 90/0 → SHSS Rt	TV	13 14 52	13 15 32	013	
		R341d	R341d	50° α: OBES index 10 0/90 → SHSS Lt → SHSS Rt	TV	13 18 30	13 19 25	014	
				50° α → 60° α: 0/0	TV	13 22 40	13 24 00	015	
				55° α: OBES index 1 90/0	TV	13 27 20	13 27 49	016	
				55° α: OBES index 10 0/90	TV	13 27 53	13 28 17	016	

ANSER Flt342

Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
342	11-28-95			**Aero Research** **Maneuver times determined but only PID data files retrieved and processed; log filed in notebook library**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files. LEX Fence OFF**
				Strake Extension Maneuver					
				60° α: OBES index 4 20/0	TV	8 49 56	8 50 31	002	
				60° α: OBES index 7 0/20	TV	8 53 27	8 54 02	002	
				60° α: OBES index 3 30/0	TV	8 57 45	8 58 23	003	
				60° α: OBES index 8 0/30	TV	9 00 45	9 01 23	003	
				60° α: OBES index 2 60/0	TV	9 35 40	9 36 17	004	
				60° α: OBES index 9 0/60	TV	9 40 00	9 40 35	004	
				60° α: OBES index 1 90/0 → SHSS Rt	TV	9 43 02	9 43 42	005	
				Repeat	TV	9 47 10	9 47 54	005	

ANSER Flt342 (Concl'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				<u>Strake Extension Maneuver</u>					
				Threepeat	TV	9 50 32	9 51 10	005	
				60° α: OBES index 10 0/90 → SHSS Rt	TV	9 53 37	9 54 14	006	
				Repeat	TV	10 17 40	10 18 22	006	
				<u>PID Maneuver</u>					
		R342ℓ	P342ℓ	Open-Loop Lateral 40° α: OBES index 22	TV	10 21 45	10 22 10	007	
		R342m	P342m	Closed-Loop Lat/Dir 45° α: OBES index 24	S	10 24 50	10 25 10	008	Downmode
		R342n	P342n	Repeat P342m	S	10 26 15	10 26 30	008	Downmode
		R342o	P342o	Closed-Loop Lat/Dir 60° α: OBES index 30	TV	10 29 00	10 29 26	009	
		R342p	P342p	Closed-Loop Lat/Dir 60° α: OBES index 25	S	10 31 45	10 32 15	009	
				<u>Strake Extension Maneuver</u>					
				65° α: OBES index 1 90/0	TV	10 54 35	10 55 20	010	
				65° α: OBES index 10 0/90	TV	10 58 38	10 59 16	010	

ANSER Flt342 (Concl'd) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				<u>Strake Extension Maneuver</u>					
				0.4 Mach, 30° α: OBES index 1 90/0	TV	11 02 40	11 03 10	011	
				0.4 Mach, 30° α: OBES index 10 0/90	TV	11 06 30	11 07 02	012	
				0.4 Mach, 40° α: OBES index 10 0/90	TV	11 20 38	11 21 02	013	
				0.4 Mach, 40° α: OBES index 1 90/0	TV	11 25 33	11 26 02	014	
				0.4 Mach, 50° α: Roll Rt OBES index 1 90/0	TV	11 29 10	11 29 33	015	Downmode?
				Repeat: Roll Lt	TV	11 31 20	11 31 52	015	

ANSER Flt343 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
343	11-30-95			**Aero Research** **Maneuver times determined but data files not retrieved and processed; log filed in notebook library**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files. LEX Fence OFF**
				<u>Strake Extension Maneuver</u>					
				40° α decel → 50° α	TV	8 45 15	8 46 40	002	
				50° α: OBES index 9 0/60	TV	8 49 48	8 50 30	003	
				50° α: OBES index 12 30/10	TV	8 53 12	8 53 51	003	Downmode
				60° α: OBES index 5 10/0	TV	8 56 20	8 56 55	004	Downmode
				Repeat	TV	9 19 55	9 20 32	004	
				60° α: OBES index 6 0/10	TV	9 23 08	9 23 42	004	
				30° α: OBES index 2 60/0 accel → 25° α	TV	9 25 55	9 26 55	005	
				0.4 Mach, 50° α: OBES index 10 0/90	TV	9 30 40	9 31 05	006	

ANSER Flt343 (Concl'd)

Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				<u>Strake Extension Maneuver</u>					
				Repeat	TV	9 34 50	9 35 20	006	
				0.55 Mach, 30° α: OBES index 1 90/0	TV	9 40 10	9 40 40	007	
				0.55 Mach, 30° α: OBES index 10 0/90	TV	10 01 10	10 01 40	008	
				0.55 Mach, 40° α: OBES index 1 90/0	TV	10 06 45	10 07 20	009	

V151.1 LEX Fence ON ANSER Flt344 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
344	12-01-95			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.**
				BFM					
		R344a	P344a	Offensive Spiral	TV	14 15 05	14 15 40	002	
		R344b	P344b	Repeat P344a	TV	14 20 20	14 20 55	002	
				ACM					
		R344c	P344c	1 v 1 Side-by-side	TV	14 27 05	14 28 10	003	Got α too high
		R344d	P344d	1 v 1 Side-by-side	STV	14 32 35	14 33 35	003A	
		R344e	P344e	1 v 1 Side-by-side	S	14 38 05	14 38 55	003B	Limited engagement

V151.1 LEX Fence ON ANSER Flt345 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
345	12-05-95			**STEMS Evaluation**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.**
		R345a	P345a	STEMS 1: Tracking during high α sweep	TV	8 56 50	8 57 36	002	
		R345b	P345b	STEMS 1: Tracking during high α sweep	STV	9 01 40	9 02 35	002A	
		R345c	P345c	Repeat 345b	STV	9 07 35	9 08 20	002A	
		R345d	P345d	STEMS 2: High α tracking	TV	9 32 15	9 33 20	003	
		R345e	P345e	STEMS 2: High α tracking	STV	9 38 40	9 39 33	003A	
		R345f	P345f	STEMS 3: 45° α Lat gross acq	TV	9 57 50	9 58 10	004	
		R345g	P345g	STEMS 3: 45° α Lat gross acq	STV	10 02 35	10 02 50	004A	TV Recover
		R345h	P345h	Repeat 345g	STV	10 04 55	10 05 20	004A	

ANSER Flt345 (Concl'd.) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R345i	P345i	STEMS 4: Dual attack - 250kts	TV	10 12 30	10 13 05	005	
		R345j	P345j	STEMS 4: Dual attack - 150kts	TV	10 18 35	10 19 05	005	
		R345k	P345k	STEMS 8: Crossing target acq	STV	10 24 15	10 24 55	008	

V151.1 LEX Fence ON ANSER Flt346 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
346	12-05-95			**STEMS Evaluation**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.**
		R346a	P346a	STEMS 4: Dual attack - 250kts	STV	12 24 15	12 24 50	005A	
		R346b	P346b	STEMS 4: Dual attack - 150kts	TV	12 29 05	12 29 37	005A	Knock-off - altitude, downmode
		R346c	P346c	STEMS 7: Nose-up θ capture - 250kts	TV	12 35 25	12 36 00	006	
				Tanker					Broke α-vane

V151.1 LEX Fence ON ANSER Flt347 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
347	12-06-95			**STEMS Evaluation**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.**
				STEMS 7: Nose-up θ capture					
		R347a	P347a	150 kts	TV	9 48 55	9 49 10	002	
		R347b	P347b	200kts	STV	9 53 45	9 54 05	002A	
		R347c	P347c	150kts	STV	9 59 45	10 00 35	002A	
				STEMS 15: Minimum time 180° heading change					
		R347d	P347d	Split-S	STV	10 03 40	10 04 05	006	
		R347e	P347e	Nose-low slice-back	STV	10 28 20	10 28 50	006	
				STEMS 17: J-Turn					
		R347f	P347f	Full aft, full lat stk	STV	10 32 05	10 32 40	007	
		R347g	P347g	Stick as req'd	STV	10 35 05	10 35 35	007	
		R347h	P347h	STEMS 5: Rolling defense	STV	10 39 15	10 39 43	008	

ANSER Flt347 (Concl'd.) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R347i	P347i	STEMS 6: Max pitch pull	STV	10 43 00	10 43 32	009	
		R347j	P347j	STEMS 9: Pitch rate reserve	STV	10 47 10	10 47 32	010	
		R347k	P347k	Repeat 347k	STV	11 09 05	11 09 25	010	
		R347ℓ	P347ℓ	STEMS 13: High-α roll & capture	STV	11 15 00	11 15 35	005	TV recover
		R347m	P347m	STEMS 13: High-α roll reversal, rt, then lt	STV	11 21 22	11 21 45	011	TV recover
		R347n	P347n	Repeat 347m - lt, then rt	STV	11 24 50	11 25 20	011	TV recover
		R347o	P347o	Repeat 347ℓ	STV	11 28 40	11 29 15	005	
		R347p	P347p	STEMS 14: Min speed for 80° pitch	STV	11 32 55	11 33 10	012	
		R347q	P347q	Repeat 347p	STV	11 34 25	11 34 40	012	
				STEMS 16: Full stk pushover					
		R347r	P347r	Mil pwr	STV	11 37 50	11 38 10	013	
		R347s	P347s	Max A/B	STV	11 41 20	11 41 37	013	

V151.1 LEX Fence ON ANSER Flt348 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
348	12-07-95			**STEMS Evaluation**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.**
		R348a	P348a	STEMS 10: 45° α gross acq	TV	8 40 48	8 41 23	002	α high
		R348b	P348b	Repeat 348a	TV	8 44 35	8 45 05	002	
		R348c	P348c	STEMS 10: 45° α gross acq	STV	8 48 24	8 48 50	002A	α high
		R348d	P348d	Repeat 348c	STV	8 51 20	8 51 50	002A	
		R348e	P348e	STEMS 8: Crossing target acq	STV	9 12 15	9 12 50	003	
		R348f	P348f	Repeat 348e	STV	9 16 35	9 17 25	003	
		R348g	P348g	Threepeat 348e	STV	9 21 30	9 22 10	003	
		R348h	P348h	STEMS 4: Dual attack - 250kts	STV	9 24 20	9 24 45	004	TV Recover

ANSER Flt348 (Concl'd.) **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R348i	P348i	Repeat 348h	STV	9 26 50	9 27 20	004	
		R348j	P348j	STEMS 4: Dual attack - 150kts	STV	9 32 45	9 33 10	004	
		R348k	P348k	Fourpeat 348e	STV	9 37 45	9 38 25	003	
		R348ℓ	P348ℓ	Fivepeat 348e	STV	9 41 35	9 42 20	003	

V151.1 **LEX Fence ON** **ANSER Flt349** **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
349	12-07-95			**STEMS Evaluation**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.**
		R349a	P349a	STEMS 8: Crossing target acq	STV	12 09 00	12 09 30	008	
		R349b	P349b	STEMS 1: Tracking during high α sweep	STV	12 17 15	12 17 55	002A	
		R349c	P349c	STEMS 2: High α tracking	STV	12 23 25	12 23 45	003A	α too high
		R349d	P349d	Repeat 349c	STV	12 27 00	12 27 25	003A	TV recover
		R349e	P349e	STEMS 3: 45° α Lat gross acq	STV	12 39 15	12 39 35	004A	TV recover
		R349f	P349f	STEMS 4: Dual attack - 250kts	STV	12 46 40	12 47 05	005A	
		R349g	P349g	STEMS 4: Dual attack - 150kts	STV	12 48 30	12 48 50	005A	

V151.1 LEX Fence ON ANSER Flt350 Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
350	12-14-95			**STEMS Evaluation**					IAALRTC, BETA_JOE, IY now available; AAP not available **STPR failed. Use RSRLA, RSRLB in inches from the raw files or STRKAR, STRKBR in degrees from the processed files.**
		R350a	P350a	STEMS 7: Nose-up θ capture - 230kts	STV	8 45 20	8 45 40	002	Could not acquire
		R350b	P350b	Repeat 350a	STV	8 47 25	8 47 50	002	Could not acquire
		R350c	P350c	STEMS 7: Nose-up θ capture - 150kts	STV	9 01 20	9 01 40	002	
				<u>STEMS 15: Minimum time 180° heading change</u>					
		R350d	P350d	Split-S	STV	9 36 08	9 36 50	011	
		R350e	P350e	Nose-low slice-back	STV	9 39 20	9 40 05	011	
		R350f	P350f	STEMS 10: 45° α crossing acq	TV	9 45 05	9 45 50	009	
		R350g	P350g	STEMS 13: High-α roll & capture	STV	9 55 40	9 56 15	010	

ANSER Flt350 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R350h	P350h	STEMS 17: J-Turn, full aft, full lat stk	STV	10 02 01	10 02 31	012	buffet, oscillations
		R350i	P350i	Repeat 350h	STV	10 21 37	10 22 10	012	
				<u>STEMS 5: Rolling defense</u>					
		R350j	P350j	lt turn/roll rt	STV	10 28 00	10 28 20	013	TV recover
		R350k	P350k	Repeat 350j, rt turn/roll lt	STV	10 30 07	10 30 45	013	
		R350ℓ	P350ℓ	STEMS 6: Max pitch pull	STV	10 33 50	10 34 10	014	
		R350m	P350m	STEMS 9: Pitch rate reserve	STV	10 37 40	10 38 10	015	
		R350n	P350n	Repeat 350m	STV	10 41 07	10 41 40	015	
		R350o	P350o	STEM 12: High α roll reversal	TV	10 47 00	10 47 30	016	
		R350p	P350p	STEMS 14: Min speed for 80° pitch	STV	10 51 38	10 51 55	017	
				<u>STEMS 16: Full stk pushover</u>					
		R350q	P350q	Mil pwr	STV	10 54 45	10 55 20	018	
		R350r	P350r	Max A/B	STV	10 55 50	10 56 20	018	
		R350s	P350s	Threepeat 350a	STV	11 02 33	11 02 50	002	

V151.1 LEX Fence OFF ANSER Flt351 Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
351	3-15-96			**Aero Research**					IAALRTC, BETA_JOE, IY now available; AAP not available **Time jumps appear in all files so plots were made with the Xplot rungap option**(type: **rungap 2) before reading processed file into Xplot**
				<u>Strake Extension Maneuver</u>					
		R351a	P351a	40° α: OBES index 4 20/0	TV	12 58 48	13 00 03	002	
		R351b1 R351b2	P351b1 P351b2	50° α: OBES index 6 0/10	TV	13 05 03 13 05 44	13 05 41 13 05 54	003A	Time jump in data during mnvr
		R351c	P351c	60° α: OBES index 3 30/0	TV	13 06 03	13 06 48	003D	
				<u>Flow-Viz Strake Exten Mnvr</u>					
		R351d	P351d	50° α: OBES index 10 90/0	TV	13 15 43	13 16 28	008	
				50° α: OBES index 8 30/0	TV			006	Smoke gen failed

V152 LEX Fence OFF ANSER Flt352 Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
352	3-19-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
				<u>C/L PID</u>					
		R352a	P352a	5° α: Longitudinal, OBES index 21	TV	8 42 40	8 43 25	002-A	
		R352b	P352b	5° α: Lat/Dir, OBES index 26	TV	8 44 25	8 44 55	002-C	
		R352c	P352c	20° α: Longitudinal, OBES index 22	TV	8 46 55	8 47 35	003-A	
		R352d	P352d	20° α: Lat/Dir, OBES index 27	TV	8 49 28	8 49 58	003-C	
				<u>Strake Extension Maneuver</u>					
		R352e	P352e	40° α: OBES index 2 10/10	TV	8 52 15	8 53 25	004	
		R352f	P352f	30° α: OBES index 1 15/5	TV	8 56 00	8 56 35	005-A	
		R352g	P352g	30° α: OBES index 3 5/15	TV	8 57 25	8 58 00	005-C	
		R352h	P352h	40° α: OBES index 1 15/5	TV	9 00 20	9 00 50	006-A	
		R352i	P352i	40° α: OBES index 3 5/15	TV	9 02 45	9 03 25	006-C	

ANSER Flt352 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				<u>Strake Extension Maneuver</u>					
		R352j				9 05 43	9 06 50	007	
			P352j1	50° α: OBES index 6 35/25	TV	9 05 43	9 06 15	007-A	
			P352j2	50° α: OBES index 8 25/35	TV	9 06 20	9 06 50	007-C	
		R352k				9 09 45	9 10 55	008	
			P352k1	50° α: OBES index 5 40/20	TV	9 09 45	9 10 20	008-A	
			P352k2	50° α: OBES index 9 20/40	TV	9 10 25	9 10 55	008-C	

V151.1 LEX Fence ON ANSER Flt353 Pilot: Brown

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
353	3-19-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
		R353a	P353a	α-Capture: 60° α → 10° α	TV	13 52 20	13 52 50	002	
				<u>360° Full-Stick Roll</u>					
		R353b	P353b	35° α Lt	701E	13 55 30	13 56 00	003	
		R353c	P353c	35° α Lt	TV	13 58 35	13 59 05	004	
		R353d	P353d	35° α Lt	S	14 01 25	14 01 45	005	TV recover
		R353e	P353e	Repeat 353d Rt	S	14 03 20	14 03 45	005	
		R353f	P353f	Threepeat 353d Lt	S	14 06 00	14 06 40	005	
		R353g	P353g	55° α Lt	TV	14 08 20	14 09 00	006	
		R353h	P353h	55° α Lt	S	14 10 40	14 11 20	007	
				<u>Loaded Roll: ϕ = -60°→ 90°</u>					
		R353i	P353i	35° α	TV	14 14 05	14 14 30	008	
		R353j	P353j	35° α	S	14 16 05	14 16 25	009	TV recover

ANSER Flt353 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				Loaded Roll (Cont'd)					
		R353k	P353k	Repeat 353j	S	14 17 45	14 18 10	009	
		R353ℓ	P353ℓ	Repeat 353i	TV	14 19 25	14 20 00	008	

V151.1 LEX Fence ON ANSER Flt354 Pilot: Griffith

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
354	3-22-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
				<u>360° Full-Stick Roll</u>					
		R354a	P354a	35° α	701E	9 13 40	9 14 20	002	
		R354b	P354b	35° α	TV	9 16 00	9 16 30	003	
		R354c	P354c	55° α	TV	9 18 50	9 19 20	004	
		R354d	P354d	55° α	S	9 21 00	9 21 40	005	
		R354e	P354e	65° α	TV	9 23 30	9 24 05	006	
		R354f	P354f	45° α: Long/Lat tracking	TV	9 28 20	9 29 00	007	
		R354g	P354g	Scissors	TV	9 32 10	9 33 00	008	
		R354h	P354h	Repeat 354g	TV	9 34 40	9 35 25	008	
		R354i	P354i	J=Turn	TV	9 39 15	9 40 10	009	
		R354j	P354j	Repeat 354i	TV	9 44 15	9 45 00	009	

V151.1 **LEX Fence OFF** **ANSER Flt355** **Pilot: Brown**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
355	3-22-126			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
		R355a	P355a	Aggressive alpha capture, 1 g, -45° $\phi \rightarrow$ 60° α	TV	11 56 45	11 57 10	002	
				30° α: Long/Lat tracking					
		R355b	P355b		TV	12 01 35	12 02 25	003	
		R355c	P355c	Low gain set	TV	12 05 15	12 06 05	004	
		R355d	P355d		S	12 08 45	12 09 50	006	
				Flow-Viz					
		R355e	P355e	30° α: OBES index 10 0/90	TV	12 14 50	12 15 35	011	
		R355f	P355f	30° α: OBES index 1 90/0	TV	12 19 30	12 20 15	012	
		R355g	P355g	35° α: 360° Roll	S	12 23 10	12 25 05	013	TV recover; smoke depleted

V151.1 **LEX Fence OFF** **ANSER Flt356** **Pilot: Stucky**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
356	3-28-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
				360° Roll					
		R356a	P356a	35° α	TV	9 35 20	9 35 50	003	
		R356b	P356b	55° α	TV	9 39 30	9 39 50	004	
		R356c	P356c	55° α	S	9 42 10	9 42 40	005	TV recover
				Flow-Viz Research					
		R356d	P356d	35° α: 360° Roll	S	9 47 37	9 48 12	009	TV recover
		R356e	P356e	Alpha sweep 20° $\alpha \rightarrow$ 65° $\alpha \rightarrow$ 20°α: OBES index 1 90/0	TV	9 53 00	9 53 40	009	Practice - no smoke
		R356f	P356f	Repeat 356e w/smoke	TV	9 56 40	9 57 20	010	
		R356g	P356g	Alpha sweep 20° $\alpha \rightarrow$ 65° $\alpha \rightarrow$ 20°α: OBES index 10 0/90	TV	10 00 15	10 00 50	011	

V152 LEX Fence OFF ANSER Flt357 Pilot: Stucky

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
357	3-29-96			**Aero Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
				<u>Strake Extension Mnvr</u>					
		R357a	P357a	50°α: OBES index 4 45/15	TV	9 10 33	9 11 04	002-A	
		R357b	P357b	50°α: OBES index 10 15/45	TV	9 11 08	9 11 52	002-C	
		R357c	P357c	50°α: OBES index 7 30/30	TV	9 15 05	9 16 10	003	
				Controls Research					
		R357d	P357d	J-Turn	TV	9 19 40	9 20 20	004	Downmode
		R357e	P357e	Repeat 357d	TV	9 24 10	9 25 10	004	
				<u>Closed-Loop PID</u>					
		R357f				9 28 15	9 29 35	005	
			P357f1	30°α: Longitudinal, OBES index 23	TV	9 28 15	9 28 55	005-B	
			P357f2	30°α: Lat/Dir, OBES index 28	TV	9 29 05	9 29 35	005-D	
		R357g				9 32 15	9 33 40	006	
			P357g1	45°α: Longitudinal, OBES index 24	TV	9 32 15	9 32 55	006-A	
			P357g2	45°α: Lat/Dir, OBES index 29	TV	9 33 10	9 33 40	006-C	

V152 LEX Fence OFF ANSER Flt358 Pilot: Stucky

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
358	4-2-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
		R358a	P358a	45° α Capture	TV/S /STV	13 52 05	13 53 05	002	
				<u>45° α Long/Lat Tracking</u>					
		R358b	P358b		TV	13 56 40	13 57 45	003	α low
		R358c	P358c		S	14 02 20	14 03 20	004	α low
				<u>Closed-Loop PID</u>					
		R358d	P358d	60°α Longitudinal: OBES index 25	TV	14 08 20	14 09 05	005-A	
		R358e	P358e	60°α Lateral: OBES index 30	TV	14 11 15	14 11 50	005-C	
				<u>Strake Extension Mnvrs</u>					
		R358f	P358f	60°α: OBES index 6 35/25	TV	14 14 50	14 15 30	006-A	
		R358g	P358g	60°α: OBES index 8 25/35	TV	14 17 55	14 18 55	006-C	

V152 LEX Fence ON ANSER Flt359 Pilot: Stucky

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
359	4-4-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
				<u>360° Closed-Loop Rolls</u>					
		R359a	P359a	45° α Right (partial), then Left	S	13 17 30	13 18 10	002-A	TV recover
		R359b	P359b	Repeat 45° α Left	S	13 21 10	13 21 55	002-A	TV recover
		R359c	P359c	50° α Right	S	13 22 36	13 23 26	002-C	TV recover
		R359d			STV	13 25 20	13 26 40	003	
			P359d1	45° α Left	STV	13 25 20	13 26 15	003-A	
			P359d2	50° α Right	STV	13 26 15	13 26 40	003-C	
		R359e	P359e	50° α Left	S	13 29 00	13 29 55	004-A	TV recover
		R359f	P359f	50° α Right	S	13 30 50	13 31 35	004-C	
		R359g	P359g	30° α Long/Lat Tracking	S	13 37 10	13 38 32	005	

V152 **LEX Fence ON** **ANSER Flt360** **Pilot: Stucky**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
360	4-9-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available **NO processed files** **Broken airspeed probe** **Subset of data retrieved and plotted.**
				Spins					
		R360a		Max yaw rate = 50 deg/sec	701E	10 38 45	10 39 45	002	RFCS off
		R360b		Repeat 360a	701E	10 47 55	10 48 50	002	RFCS off

V152 LEX Fence ON ANSER Flt361 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
361	4-16-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available
				Symm Strk Eval Mnvrs					
		R361a	P361a	45 α: Long/lat tracking	S	10 11 10	10 11 45	002	α low; no QIDS
		R361b	P361b	Repeat 361a	S	10 14 05	10 14 50	002	α low; no QIDS
		R361c	P361c	Threepeat 361a	S	10 16 55	10 17 35	002	α low; no QIDS
		R361d	P361d	35 α: Loaded roll, $-60° \phi \rightarrow 90° \phi$	S	10 22 25	10 22 50	003	
				Open-Loop PID					
		R361e			TV	10 25 30	10 26 52	006	
			P361e1	40° α: Lat PID, OBES index 16	TV	10 25 30	10 26 05	006-A	
			P361e2	35° α: Lat PID, OBES index 16	TV	10 26 18	10 26 52	006-C	
		R361f	P361f	50° α: Lat PID, OBES index 17	TV	10 29 02	10 29 37	007-A	
		R361g	P361g	50° α: Lat PID, OBES index 18	TV	10 33 00	10 33 30	007-C	Downmode
		R361h	P361h	Repeat 361g	TV	10 34 22	10 34 45	007-C	

V151.1 **LEX Fence OFF** **ANSER Flt362** **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
362	4-19-96			**Controls Research**					IAALRTC, BETA_JOE, IY now available; AAP not available ayvtr added
				Flow-Viz					
		R362a	P362a	40° α: Strk ext mnvr, OBES index 10 0/90	TV	8 12 30	8 13 25	002	Practice - no smoke
		R362b	P362b	Repeat 362a w/smoke	TV	8 18 45	8 20 00	002	
		R362c	P362c	50° α: Strk ext mnvr, OBES index 10 0/90	TV	8 25 10	8 25 55	003	Practice - no smoke
		R362d	P362d	Repeat 362c w/smoke	TV	8 31 10	8 31 59	003	
		R362e	P362e	35° α: 360° Roll	S	8 35 50	8 36 45	004	Practice - no smoke
		R362f	P362f	Repeat 362e w/smoke	S	8 40 50	8 42 32	004	

V151.1 **LEX Fence ON** **ANSER Flt363** **Pilot: Walker**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
363	4-19-96			**Controls Research**					IY now available; but AAP is not; **ayvtr** added **STPR failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF & DFSSYM** not available
				<u>270° Roll Captures: from -90° ϕ</u>					
		R363a	P363a	35° α	701E	11 25 10	11 25 50	002	
		R363b	P363b	35° α	TV	11 28 35	11 29 05	003	
		R363c	P363c	55° α	TV	11 31 20	11 31 40	004	
		R363d	P363d	55° α	S	11 34 50	11 35 25	005	
		R363e	P363e	65° α	TV	11 37 25	11 37 45	006	
		R363f	P363f	30° α: Long/Lat Tracking	TV	11 42 00	11 43 00	007	Larger reticule
		R363g	P363g	Scissors	TV	11 47 25	11 48 00	008	Incorrectly started not at co-altitude
		R363h	P363h	J-Turn	TV	11 51 50	11 52 30	009	
		R363i	P363h	Xing target acq: STEMS 8	TV	11 55 40	11 56 30	010	

V151.1 **LEX Fence OFF** **ANSER Flt364** **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
364	4-23-96			**Flow-Viz**					IY now available; but AAP is not; **ayvtr** added **STPL failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF &** **DFSSYM** not available
				Strake Extension Mnvr					
		R364a	P364a	40° α: OBES index 1 90/0	TV	9 18 00	9 19 00	002	
		R364b	P364b	30° α: OBES index 10 0/90	TV	9 25 50	9 26 47	003	
		R364c	P364c	50° α: OBES index 1 90/0	TV	9 32 45	9 33 45	004	

V154 **LEX Fence OFF** **ANSER Flt365** **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
365	4-26-96			**ASE Research**					IY now available; but AAP is not; **ayvtr** added **STPL failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF & DFSSYM** not available Qcfilter1,Qcfilter2 replaced by **Lat_pilot_cmd** and **Dir pilot cmd**
		R365a	P365a	5° α: Schroeder Sweep OBES index 16	TV	12 33 35	12 34 50	002-B	
		R365b	P365b	5° α: Impulsive Sine OBES index 17	TV	12 36 20	12 37 55	002-D	
		R365c	P365c	10° α: Schroeder Sweep OBES index 16	TV	12 39 30	12 40 50	003-B	
		R365d	P365d	10° α: Impulsive Sine OBES index 17	TV	12 40 55	12 42 25	003-D	
		R365e	P365e	20° α: Schroeder Sweep OBES index 16	TV	12 44 10	12 45 50	004- B	
		R365f	P365f	20° α: Impulsive Sine OBES index 17	TV	12 45 52	12 46 45	004-D	Downmode
		R365g	P365g	20° α: Impulsive Sine OBES index 17	TV	12 47 10	12 48 40	004-D	

ANSER Flt365 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				Flow-Viz Research					
		R365h	P365h	30° α: Strake Sweep OBES index 8	TV	12 52 25	12 53 35	005	
		R365i	P365i	40° α: Strake Sweep OBES index 8	TV	12 58 10	12 59 05	006	
		R365j	P352j	35° α: 360° Roll	S	13 03 20	13 04 10	007-C	TV recover
		R365k	P352k	Repeat 365j	S	13 04 15	13 04 40	007-C	TV recover

V153 **LEX Fence ON** **ANSER Flt366** **Pilot: Smolka**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
366	4-30-96			**PID Research**					IY now available; but AAP is not; **ayvtr** added **STPL failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF & DFSSYM** not available
		R366a	P366a	5° α: C/L PID, Long OI, OBES index 7	TV	9 12 38	9 13 16	002-B	
		R366b	P366b	20° α: C/L PID, Long OI, OBES index 8	TV	9 15 24	9 16 02	002-D	
		R366c	P366c	30° α: C/L PID, Long OI, OBES index 9	TV	9 18 02	9 18 40	003-B	
		R366d	P366d	30° α: O/L PID, Lat OI, OBES index 23	TV	9 19 08	9 19 31	003-D	
		R366e	P366e	30° α: O/L PID, Lat OI, OBES index 24	TV	9 21 17	9 21 40	004- B	
		R366f	P366f	30° α: O/L PID, Lat OI, OBES index 25	TV	9 21 54	9 22 22	004-D	
		R366g	P366g	Repeat 366g	TV	9 25 49	9 26 18	004-D	

ANSER Flt366 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R366h	P366h	40° α: O/L PID, Lat OI, OBES index 29	TV	9 50 57	9 51 20	005-B	
		R366i	P366i	40° α: O/L PID, Lat OI, OBES index 30	TV	9 51 38	9 52 05	005-D	
		R366j	P366j	45° α: C/L PID, Long OI, OBES index 10	TV	9 55 00	9 55 13	006-B	Downmode
		R366k	P366k	Repeat 366j	TV	9 57 35	9 58 13	006-B	
		R366ℓ	P366ℓ	50° α: O/L PID, Lat OI, OBES index 27	TV	10 01 44	10 02 08	007-B	
		R366m	P366m	50° α: O/L PID, Lat OI, OBES index 28	TV	10 02 16	10 02 43	007-D	
		R366n	P366n	60° α: C/L PID, Long OI, OBES index 11	TV	10 06 40	10 07 18	008	
		R366o	P366o	60° α: O/L PID, Lat OI, OBES index 26	TV	10 10 54	10 11 17	009	
		R366p	P366p	Repeat 366i	TV	10 14 26	10 14 55	005-D	
		R366q	P366q	Threepeat 366i	TV	10 17 08	10 17 36	005-D	

V153 **LEX Fence OFF** **ANSER Flt367** **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
367	4-30-96			**PID Research**					IY now available; but AAP is not; **ayvtr added** **STPL failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF & DFSSYM** not available
		R367a	P367a	5° α: C/L PID, Long FS, OBES index 12	TV	12 42 37	12 43 17	002-B	
		R367b	P367b	20° α: C/L PID, Long FS, OBES index 13	TV	12 44 55	12 45 30	002-D	
		R367c	P367c	30° α: C/L PID, Long FS, OBES index 14	TV	12 48 18	12 49 00	003-B	
		R367d	P367d	30° α: C/L PID, Lat FS, OBES index 17	TV	12 49 03	12 49 44	003-D	
		R367e	P367e	30° α: C/L PID, Lat FS, OBES index 20	TV	12 49 50	12 50 30	003-F	
		R367f	P367f	30° α: C/L PID, Lat OI, OBES index 4	TV	12 52 24	12 52 54	004	
		R367g	P367g	30° α: C/L PID, Lat OI, OBES index 1	TV	12 53 14	12 53 40	005	

ANSER Flt367 (Cont'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R367h	P367h	45° α: C/L PID, Long FS, OBES index 15	TV	12 55 50	12 56 25	006-B	
		R367i	P367i	45° α: C/L PID, Lat FS, OBES index 18	TV	12 56 34	12 57 16	006-D	
		R367j	P367j	45° α: C/L PID, Lat FS, OBES index 21	TV	13 16 25	13 17 05	006-F	
		R367k	P367k	45° α: C/L PID, Lat OI, OBES index 5	TV	13 17 10	13 17 20	007	Downmode
		R367ℓ	P367ℓ	Repeat 367k	TV	13 20 05	13 20 32	007	TV Recover
		R367m	P367m	Threepeat 367k	TV	13 22 16	13 22 44	007	
		R367n	P367n	45° α: C/L PID, Lat OI, OBES index 2	TV	13 24 27	13 24 39	008	TV Recover
		R367o	P367o	Repeat 367n	TV	13 27 18	13 27 24	008	TV Recover
		R367p	P367p	60° α: C/L PID, Long FS, OBES index 16	TV	13 29 00	13 29 40	009	
		R367q	P367q	Repeat 367p	TV	13 31 50	13 32 30	009	

ANSER Flt367 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
		R367r	P367r	60° α: C/L PID, Lat FS, OBES index 19	TV	13 34 28	13 35 07	010	
		R367s	P367s	60° α: C/L PID, Lat OI, OBES index 6	TV	13 52 17	13 52 45	011	
		R367t	P367t	60° α: C/L PID, Lat OI, OBES index 3	TV	13 55 08	13 55 36	012	
		R367u	P367u	60° α: C/L PID, Lat FS, OBES index 22	TV	13 59 30	14 00 10	013	
		R367v	P367v	Repeat 367h	TV	14 02 15	14 02 55	006-B	
		R367w	P367w	Repeat 367b	TV	14 04 27	14 05 06	002-D	
		R367x	P367x	Threepeat 367n	TV	14 07 22	14 07 30	008	TV Recover
		R367y	P367y	Fourpeat 367n	TV	14 09 28	14 09 44	008	TV Recover
		R367z	P367z	Repeat 367c	TV	14 11 30	14 12 10	003-B	

V153 LEX Fence ON ANSER Flt368 Pilot: Peer

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
368	5-01-96			**Controls Research**					IY now available; but AAP is not; **ayvtr** added **STPL failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF & DFSSYM** not available
				360° Roll Captures: from -90° ϕ					
		R368a	P368a	35° α	TV	14 33 45	14 34 20	003	
		R368b	P368b	55° α	TV	14 36 05	14 37 10	004	
		R368c	P368c	55° α	S	14 39 25	14 40 15	005	
		R368d	P368d	65° α	TV	14 42 50	14 43 30	006	
		R368e	P368e	45° α: Long/Lat Tracking	TV/ STV	14 50 00	14 51 00	007	Did not reach 45° α; switched to STV mode during track.
		R368f	P368f	J-Turn	TV	14 55 45	14 56 20	009	Downmode

V154 LEX Fence OFF ANSER Flt369 Pilot: Smolka

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
369	5-3-96			**PID Research**					IY now available; but AAP is not; **ayvtr** added **STPL failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF** & **DFSSYM** not available Qcfilter1,Qcfilter2 replaced by **Lat_pilot_cmd** and **Dir pilot cmd**
		R369a	P369a	5° α: C/L PID, Lat FS, OBES index 4	TV	9 09 45	9 10 22	002-B	
		R369b	P369b	5° α: C/L PID, Rud FS, OBES index 6	TV	9 11 23	9 12 02	002-D	
		R369c	P369c	20° α: C/L PID, Lat FS, OBES index 5	TV	9 13 35	9 14 13	003-B	
		R369d	P369d	20° α: C/L PID, Rud FS, OBES index 7	TV	9 14 37	9 15 15	003-D	
				Flow-Viz Research					
		R369e	P369e	35° α: Strake Sweep OBES index 8	TV	9 18 40	9 19 25	004	
		R369f	P369f	50° α: Strake Sweep OBES index 8	TV	9 23 50	9 24 50	005	
		R369g	P369g	30° α: Lat tracking	S	9 29 45	9 30 15	006	

ANSER Flt369 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				ASE Research					
		R369h	P369h	30° α: Schroeder Sweep OBES index 16	TV	9 34 54	9 36 06	007-B	
		R369i	P369i	30° α: Impulsive Sine OBES index 17	TV	9 36 15	9 37 35	007-D	
		R369j	P352j	40° α: Schroeder Sweep OBES index 16	TV	9 40 48	9 42 00	008-B	

V154 **LEX Fence ON** **ANSER Flt370** **Pilot: Schneider**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
370	5-3-96			**PID and ASE Research**					IY now available; but AAP is not; **ayvtr** added **STPL failed.** Use RSRLA, RSRLB inches from the raw files or STRKAR, STRKB deg from the processed files. STPL broken; thus, **DFSDIF & DFSSYM** not available Qcfilter1,Qcfilter2 replaced by **Lat_pilot_cmd** and **Dir_pilot_cmd**
		R370a	P370a	30° α: C/L PID, Lat OI, OBES index 1	STV	12 08 29	12 08 57	002	
		R370b	P370b	40° α: Impulsive Sine OBES index 17	TV	12 11 44	12 13 05	004-D	
		R370c	P370c	40° α: C/L PID, Lat OI, OBES index 2	STV	12 14 50	12 15 50	005	
		R370d	P370d	60° α: C/L PID, Lat OI, OBES index 3	STV	12 17 57	12 18 53	006	
		R370e	P370e	50° α: Schroeder Sweep OBES index 16	TV	12 21 30	12 22 42	007-B	
		R370f	P370f	50° α: Impulsive Sine OBES index 17	TV	12 25 38	12 26 59	007-D	
		R370g	P370g	60° α: Schroeder Sweep OBES index 16	TV	12 31 55	12 33 07	008	

V154 LEX Fence ON ANSER Flt371 Pilot: Smith

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
371	5-8-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
		R371a	P371a	α-Capture: 60° α → 10° α	TV	8 40 25	8 40 45	002	
				<u>360° Full-Stick Roll</u>					
		R371b	P371b	35° α Lt	TV	8 44 05	8 44 35	003	
		R371c	P371c	35° α Lt	S	8 47 10	8 47 30	004	TV recover
				<u>Spin</u>					
		R371d	P371d	40 deg/sec limit	701E	8 55 25	8 55 50	005	
		R371e	P371e	60 deg/sec limit	701E	9 00 35	9 01 15	006	
				<u>360° Full-Stick Roll</u>					
		R371f	P371f	55° α Lt	TV	9 03 45	9 04 15	007	
		R371g	P371g	55° α Lt	S	9 07 00	9 07 40	008	
				<u>Loaded Roll: ϕ = -60°→ 90°</u>					
		R371h	P371h	35° α	TV	9 09 45	9 10 15	009	
		R371i	P371i	35° α	S	9 12 05	9 12 15	010	Downmode

V152 LEX Fence ON ANSER Flt372 Pilot: Stucky

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
372	5-8-96			**Yaw-Rate Expansion**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				Spin					
		R372a	P372a	70 deg/sec limit	701E	11 41 55	11 42 25	008	
		R372b	P372b	Repeat 372a	701E	11 48 25	11 49 00	008	
				PID Research					
				O/L PID					
		R372c	P372c	5° α: Long OI, OBES index 11	TV	11 50 37	11 51 05	002-A	
		R372d	P372d	5° α: Long OI, OBES index 12	TV	11 52 08	11 52 40	002-C	
		R372e	P372e	5° α: Lat OI, OBES index 13	TV	11 53 02	11 53 27	002-E	
		R372f	P372f	5° α: Lat OI, OBES index 14	TV	11 54 46	11 55 14	003-A	
		R372g	P372g	5° α: Lat OI, OBES index 15	TV	11 55 26	11 55 54	003-C	

ANSER Flt372 (Concl'd)

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
				O/L PID (Cont'd)					
		R372h	P372h	45° α: Lat OI, OBES index 17	TV	11 57 38	11 58 10	004-A	
		R372i	P372i	45° α: Lat OI, OBES index 18	TV	11 58 11	11 58 33	004-C	
		R372j	P372j	50° α: Lat OI, OBES index 19	TV	12 01 14	12 01 37	005-A	
		R372k	P372k	50° α: Lat OI, OBES index 20	TV	12 03 58	12 04 26	005-C	
				Agility Research					
		R372ℓ	P372ℓ	35° α: 180° Roll-under capture, ϕ = 90°→ -90°	TV	12 07 05	12 07 25	006	
		R372m	P372m	Repeat 372ℓ	TV	12 09 50	12 10 10	006	

V152 LEX Fence ON ANSER Flt373 Pilot: Fenton

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
373	5-10-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				<u>360° Roll Captures</u>					
		R373a	P373a	35° α	TV	8 46 00	8 46 25	002	
		R373b	P373b	55° α	TV	8 48 00	8 48 40	003	
		R373c	P373c	55° α	S	8 50 30	8 51 15	004	
		R373d	P373d	55° α	STV	8 53 50	8 54 25	005	
		R373e	P373e	65° α	TV	8 56 20	8 56 50	006	
		R373f	P373f	Scissors	TV	9 00 20	9 01 05	007	
		R373g	P373g	45° α: Long/Lat Tracking	TV	9 04 10	9 05 05	008	
		R373h	P373h	J-Turn	TV	9 08 55	9 09 40	009	
		R373i	P373i	Rolling scissors	TV	9 13 20	9 14 00	010	

V152 LEX Fence ON ANSER Flt374 Pilot: Roth

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
374	5-10-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				<u>360° Roll Captures</u>					
		R374a	P374a	35° α	TV	11 17 10	11 17 40	002	
		R374b	P374b	55° α	TV	11 19 40	11 20 10	003	
		R374c	P374c	55° α	S	11 21 50	11 22 25	004	
		R374d	P374d	55° α	STV	11 25 15	11 25 55	005	
		R374e	P374e	65° α	TV	11 28 25	11 28 36	006	Downmode
		R374f	P374f	Scissors	TV	11 32 50	11 33 15	007	
		R374g	P374g	J-Turn	TV	11 36 20	11 36 55	008	
		R374h	P374h	45° α: Long/Lat Tracking	TV	11 41 15	11 41 50	009	
		R374i	P374i	45° α: Long/Lat Tracking	S	11 45 20	11 45 55	010	

V152 **LEX Fence OFF** **ANSER Flt375** **Pilot: Stucky**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
375	5-14-96			**Aero Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				Strake Extension Mnvr					
		R375a	P375a	40°α: OBES index 2 10/10 SHSS Rt	TV	8 38 40	8 39 30	002	
		R375b	P375b	60°α: OBES index 5 40/20	TV	8 42 40	8 43 25	003-A	
		R375c	P375c	60°α: OBES index 9 20/40	TV	8 46 05	8 46 45	003-C	
		R375d	P375d	60°α: OBES index 4 45/15 SHSS Rt	TV	8 49 55	8 50 55	004	
		R375e	P375e	60°α: OBES index 10 15/45 SHSS Rt	TV	8 53 40	8 54 34	005	
		R375f	P375f	60°α: OBES index 7 30/30 SHSS Rt	TV	8 57 09	8 57 50	006	
		R375g	P375g	Repeat 375b	TV	9 00 24	9 01 05	003-A	

V154 LEX Fence OFF ANSER Flt376 Pilot: Smith

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
376	5-15-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
		R376a	P376a	Aggressive alpha capture, 1 g, -45° $\phi \rightarrow$ 45° α	TV	8 37 20	8 37 40	002	Attempted 50° α instead of 45° α
				<u>Long/Lat tracking</u>					
		R376b	P376b	30° α	TV	8 41 15	8 41 30	003	
		R376c	P376c	30° α	S	8 44 40	8 45 10	004	
		R376d	P376d	45° α	TV	8 49 00	8 49 30	005	
				<u>Flow-Viz</u>					
		R376e	P376e	40° α: OBES index 10 sweep 10 +/- 90	TV	8 54 20	8 55 15	006	
		R376f	P376f	50° α: OBES index 12 sweep 20 +/- 90	TV	8 59 35	9 00 30	007	
		R376g	P376g	55° α: 360° Roll	S	9 03 40	9 05 20	008	

V154 **LEX Fence ON** **ANSER Flt377** **Pilot: Smith**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
377	5-15-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
		R377a	P377a	60° α: Long/Lat tracking	TV	11 57 10	11 57 30	009	
				<u>45° α: Lat Gross Acquisition</u>					
		R377b	P377b		TV	12 01 40	12 02 07	010	
		R377c	P377c	Repeat 377b	TV	12 04 25	12 04 50	010	
		R377d	P377d		S	12 09 15	12 09 35	011	TV Recover
		R377e	P377e		STV	12 12 10	12 12 30	012	TV Recover
		R377f	P377f	Repeat 377e	STV	12 14 45	12 15 15	012	
				<u>J-Turn</u>					
		R377g	P377g		TV	12 23 15	12 23 55	013	
		R377h	P377h		STV	12 27 10	12 27 52	015	

V154 LEX Fence ON ANSER Flt377 Pilot: Smith

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
377	5-15-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
		R377a	P377a	60° α: Long/Lat tracking	TV	11 57 10	11 57 30	009	
				45° α: Lat Gross Acquisition					
		R377b	P377b		TV	12 01 40	12 02 07	010	
		R377c	P377c	Repeat 377b	TV	12 04 25	12 04 50	010	
		R377d	P377d		S	12 09 15	12 09 35	011	TV Recover
		R377e	P377e		STV	12 12 10	12 12 30	012	TV Recover
		R377f	P377f	Repeat 377e	STV	12 14 45	12 15 15	012	
				J-Turn					
		R377g	P377g		TV	12 23 15	12 23 55	013	
		R377h	P377h		STV	12 27 10	12 27 52	015	

V154 LEX Fence ON ANSER Flt378 Pilot: Brown

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
378	5-17-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				<u>30° α: Long/Lat Tracking</u>					
		R378a	P378a	Range 1500 ft	TV	9 01 20	9 02 35	002	
		R378b	P378b	Range 3000 ft	TV	9 06 35	9 07 35	003	

		R378c	P378c	Aggressive alpha capture, 1 g, -45° $\phi \rightarrow$ 45° α	TV	9 11 35	9 11 50	004	
				<u>45° α: Lat Gross Acquisition</u>					
		R378d	P378d		TV	9 16 40	9 17 00	005	
		R378e	P378e		S	9 20 10	9 20 25	006	TV Recover
		R378f	P378f	Repeat 378e	S	9 24 15	9 24 40	006	TV Recover
		R378g	P378g		STV	9 28 05	9 28 40	007	

				BFM					
		R378h	P378h	J-Turn	TV	9 32 15	9 33 05	08	

V154 LEX Fence ON ANSER Flt379 **Pilot: Brown**

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
379	5-17-96			**BFM**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				J-Turn					
		R379a	P379a		S	12 52 20	12 52 30	009	TV recover and downmode
		R379b	P379b	Repeat 379a	S	12 58 30	12 59 20	009	Phil did not like mnvr.
		R379c	P379c	Threepeat 379a	S	13 04 50	13 05 40	009	
				Controls Research					
				45° α: Long/Lat Tracking					
		R379d	P379d		TV	13 10 35	13 11 35	011	
		R379e	P379e		S	13 16 20	13 17 20	012	

		R379f	P379f	45° α: Longitudinal Gross Acq	TV	13 21 20	13 21 40	013	

V151.1 LEX Fence ON ANSER Flt380 Pilot: McMurtry

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
380	5-21-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				<u>360° Rolls</u>					
		R380a	P380a	35° α	TV	8 46 15	8 46 40	002	
		R380b	P380b	55° α	TV	8 49 35	8 50 00	003	
		R380c	P380c	55° α	S	8 51 35	8 52 20	004	
				<u>Spin</u>					
		R380d	P380d	50 deg/sec limit	701E	8 59 45	9 00 10	005	
		R380e	P380e	70 deg/sec limit	701E	9 06 35	9 07 15	006	
				<u>J-Turns</u>					
		R380f	P380f		TV	9 09 50	9 10 40	007	Knock-off
		R380g	P380g	Repeat 380f	TV	9 12 05	9 12 30	007	
		R380h	P380h	Threepeat 380f	TV	9 15 05	9 15 35	007	
		R380i	P380i	65° α: 360° Roll	TV	9 18 05	9 18 30	008	

V151.1 LEX Fence ON ANSER Flt381 Pilot: Fullerton

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
381	5-22-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				<u>360° Rolls</u>					
		R381a	P381a	35° α	701E	8 10 45	8 11 15	002	
		R381b	P381b	55° α	TV	8 12 45	8 13 10	003	
		R381c	P381c	45° α: Long/Lat Tracking	TV	8 17 05	8 17 50	004	
				<u>Spin</u>					
		R381d	P381d	50 deg/sec limit	701E	8 26 15	8 26 50	005	
		R381e	P381e	70 deg/sec limit	701E	8 35 10	8 35 55	006	
				<u>J-Turns</u>					
		R381f	P381f		TV	8 41 35	8 42 20	007	Knock-off, chute temps
		R381g	P381g	Repeat 381f	TV	8 48 35	8 48 43	007	Downmode

		R381h	P381h	55° α: 360° Rolls	S	8 52 35	8 53 10	009	

V151.1 LEX Fence ON ANSER Flt382 Pilot: Purifoy

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
382	5-29-96			**Controls Research**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
				<u>360° Rolls</u>					
		R382a	P382a	55° α	TV	8 22 00	8 22 30	002	
		R382b	P382b	55° α	S	8 26 10	8 27 20	003	
		R382c	P382c	45° α: Long/Lat Tracking	TV	8 30 45	8 31 20	004	
				<u>Spin</u>					
		R382d	P382d	50 deg/sec limit	701E	8 38 40	8 39 30	005	
		R382e	P382e	70 deg/sec limit	701E	8 45 30	8 46 00	006	
		R382f	P382f	Repeat 382e	701E	8 52 10	8 52 50	006	

		R382g	P382g	J-Turn	TV	8 57 35	8 58 10	007	

V151.1 LEX Fence ON ANSER Flt383 Pilot: Schneider

Flt	Flt Date	Raw FCS File	Processed FCS File	Maneuver	Mode	Start	Stop	Card No.	Comments
383	5-29-96			**BFM**					**STPL failed.** Use LSRLA, RSRLA inches from the raw files or STRKAL, STRKARdeg from the processed files. STPL broken; thus, DFSDIF, DFSSYM not available; **RAMDIF,RAMSYM** calculated from STRKAL, STRKAR
		R383a	P383a	J-Turn	S	11 22 30	11 23 15	002	and downmode
		R383b	P383b	J-Turn	STV	11 27 35	11 28 20	003	
				Controls Research					
				Long/Lat Tracking					
		R383c	P383c	45° α:	TV	11 33 15	11 34 20	004	
		R383d	P383d	45° α:	S	11 37 40	11 38 10	005	TV recover
		R383e	P383e	60° α:	S	11 40 50	11 41 50	009	TV recover

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Appendix G
Maneuver Summary for ANSER Flights

Contents

Table G-I.- Key to abbreviations of maneuvers

Abbreviation	Description
Aero Exp	Aerodynamics Envelope Expansion
Loads Exp	Loads Envelope Expansion
Controls Exp	Controls Envelope Expansion
System Exp	System Envelope Expansion
Aero	Aerodynamics Research
Controls	Controls Research
Agility	Agility Research
Flow Viz	Flow Visualization
STEMS	Standard Test and Evaluation Maneuvers
OL PID	Open-Loop Parameter Identification
CL PID	Closed-Loop Parameter Identification
Prop Exp	Propulsion Envelope Expansion
BFM/ACM	Basic Fighter Maneuvers/Air Combat Maneuvers
ASE	Aerodynamic-Servo Elasticity

Table G-II.- ANSER Maneuver Summary.

Flight	Date	Aero Exp	Loads Exp	Ctrl Exp	Sys Exp	Aero	Controls	Agility	Flow Viz	STEMS	OL PID	CL PID	Prop Exp	BFM ACM	ASE
295	7/11/95			9	12										
296	7/11/95			9											
297	7/13/95			3			5								
298	7/13/95						6								
299	7/13/95			6			4								
300	7/21/95	7	2	12									8		
301	7/27/95	4													
302	7/27/95	8	2												
303	7/27/95	4	2												
304	8/3/95	Aborted	Flight												
305	8/3/95	5													
306	8/8/95	4	3												
307	8/8/95		6												
308	8/8/95		5												
309	8/10/95		14												
310	8/15/95		4		21										
311	8/16/95			16	4										
312	8/24/95		2	8			13					1			
313	8/24/95						10								
314	8/29/95						20	3				1			
315	8/30/95						26								
316	8/31/95						10								
317	8/31/95						10								
318	8/31/95	Aborted	Flight												
319	9/7/95					5	12								
320	9/19/95						7								
321	9/19/95						9								
322	9/21/95						13								
323	9/21/95						1						8		
324	10/3/95						8								
325	10/3/95						14								

Flight	Date	Aero Exp	Loads Exp	Ctrl Exp	Sys Exp	Aero	Controls	Agility	Flow Viz	STEMS	OL PID	CL PID	Prop Exp	BFM ACM	ASE
326	10/5/95						4					1			
327	10/6/95						10								
328	10/10/95							24							
329	10/12/95							13			3	8			
330	10/27/95					8						1			
331	10/27/95					6									
332	10/31/95					10						2			
333	10/31/95					10									
334	10/31/95					7									
335	11/2/95					23					4	6			
336	11/7/95					15									
337	11/7/95					9									
338	11/8/95					3									
339	11/21/95					5									
340	11/21/95					8									
341	11/21/95					7									
342	11/28/95					18					1	4			
343	11/30/95					12									
344	12/1/95													5	
345	12/5/95									11					
346	12/5/95									3					
347	12/6/95									19					
348	12/7/95									12					
349	12/7/95									7					
350	12/14/95									18					
351	3/15/96					3			1						
352	3/19/96					9						4			
353	3/19/96						12								
354	3/22/96						6							4	
355	3/22/96						4		3						
356	3/28/96						4		3						

Flight	Date	Aero Exp	Loads Exp	Ctrl Exp	Sys Exp	Aero	Controls	Agility	Flow Viz	STEMS	OL PID	CL PID	Prop Exp	BFM ACM	ASE
357	3/29/96					3						4		2	
358	4/2/96					2	3					2			
359	4/4/96						9								
360	4/9/96			2											
361	4/16/96						4				4				
362	4/19/96								6						
363	4/19/96						6			1				2	
364	4/23/96								3						
365	4/26/96								4						7
366	4/30/96										11	6			
367	4/30/96											26			
368	5/1/96						5							1	
369	5/3/96								3			4			3
370	5/3/96											3			4
371	5/8/96			2			7								
372	5/8/96			2				2			9				
373	5/10/96						6							3	
374	5/10/96						7							2	
375	5/14/96					7									
376	5/15/96						4		3						
377	5/15/96						6							2	
378	5/17/96						7							1	
379	5/17/96						3							3	
380	5/21/96			2			4							3	
381	5/22/96			2			4							2	
382	5/29/96			3			3							1	
383	5/29/96						3							2	
	Subtotals	32	40	76	37	170	289	42	26	71	32	73	16	33	14
	Grand Total	904													

Appendix H
GetFdas Recorded Data Times Used to Retrieve Raw Data Files

Contents

Definition of column heading for Table H

Heading	Definition
Flt	Flight number
Flt Date	Date of flight
show Start	Time of start of recorded data in GetFdas (**show times** command)
show Stop	Time of end of recorded data in GetFdas (**show times** command)
Time Jump	Interval for which recorded data is missing (if any) as indicated by GetFdas message while writing data files
Times Used	Intervals chosen for writing arm data files

Table H. - GetFdas data recorded times.

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F295	7-11-95	6 21 25	8 16 23	7 16 55 000 - 7 28 09 125	6 22 00 - 8 15 00
					6 22 00 - 7 16 50
					7 28 10 - 8 15 00
F296	7-11-95	9 15 17	10 37 05	9 06 47 000 - 9 21 05 013	9 15 18 - 10 37 04
				9 22 35 950 - 9 22 44 838	
				9 26 53 700 - 9 28 05 025	
				9 44 21 - 9 53 04 013	
					9 53 05 - 10 37 04
					9 21 06 - 9 22 35
					9 22 45 - 9 26 53
					9 28 06 - 9 44 20
F297	7-13-95	6 07 21	8 41 44	6 17 44 - 6 51 21 125	
				7 42 52 - 7 52 07 125	
					7 52 08 - 8 41 43
F298	7-13-95	9 32 05	11 02 00	10 03 02 - 10 12 52 125	9 32 06 - 11 01 59
				10 43 45 - 10 44 00 125	
					10 12 53 - 10 43 44
					10 44 01 - 11 01 59
F299	7-13-95	11 45 59	13 26 57	12 21 31 - 12 28 29	
					12 28 30 - 13 26 56

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F300	7-21-95	6 21 18	9 14 28	6 56 43 - 7 09 33 125	
					7 9 34 - 7 26 00
					7 48 00 - 8 09 00
					8 30 00 - 9 04 00
F301	7-27-95	6 19 29	8 17 48	6 22 16 - 6 40 03 125	
				7 01 34 - 7 09 57 125	7 09 58 - 8 05 50
				8 05 51 - 8 14 05 125	
F302	7-27-95	9 02 29	10 36 02	9 04 31 - 9 17 48 125	
				9 33 27 - 9 41 17 125	9 41 18 - 10 25 50
				10 25 51 - 10 33 11 125	
F303	7-27-95	11 34 39	12 57 50	11 36 20 - 11 43 33 125	
				11 52 28 - 11 53 46 125	
				11 57 31 - 12 04 41 125	12 04 42 - 12 47 26
				12 47 27 - 12 56 10 125	
F304	8-03-95	no data	retrieved	for this flight	
F305	8-03-95	10 13 40	11 45 56	10 43 03 875 - 10 43 09 500	10 44 00 - 11 45 00
F306	8-08-95	6 15 17	8 05 06	6 16 01 - 6 40 01 125	6 40 02 - 7 52 54
				7 52 55 - 8 00 28 125	

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F307	8-08-95	8 49 13	10 17 36	8 50 07 - 9 02 37 125	
				9 16 49 - 9 25 38 125	9 25 39 - 10 07 36
				10 07 37 - 10 15 02 125	
F308	8-08-95	11 18 03	12 57 47	11 20 11 - 11 39 16 125	
				11 53 59 - 11 59 57 125	11 59 58 - 12 45 22
				12 45 21 - 12 55 27 125	
F309	8-10-95	6 05 02	8 55 30		7 00 00 - 7 30 00
					8 15 00 - 8 55 30
F310	8-15-95	6 05 43	7 53 37		7 00 00 - 7 40 00
F311	8-16-95	6 04 16	7 54 47		7 00 00 - 7 40 00
F312	8-24-95	6 34 16	9 13 02		7 35 00 - 8 55 00
F313	8-24-95	10 01 28	11 11 35		10 40 00 - 10 50 00

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F314	8-29-95	6 07 49	8 57 16	6 41 14 - 6 41 21	
				6 57 42 750- 6 57 44 125	
				7 12 26 250 - 7 12 31 250	
				7 12 33 625 - 7 12 41 875	
				7 12 41 875 - 7 12 44 250	7 13 00 - 8 57 00
		8 57 16	9 23 15		9 15 00 - 9 23 14
		9 23 15	10 06 08		9 23 15 - 9 30 52
				9 30 52 125 - 9 30 54 125	9 30 55 - 9 50 00
F315	8-30-95	7 43 32	10 08 38		8 43 00 - 9 00 00
		10 08 38	11 05 37		9 27 00 - 9 53 00
					10 16 00 - 10 48 00
F316	8-31-95	6 04 59	8 05 45		7 16 00 - 7 47 00
F317	8-31-95	8 47 24	10 27 38		9 38 00 - 10 08 00
F318	8-31-95			Flight Aborted	
F319	9 07-95	7 30 45	10 18 51		8 35 00 - 8 50 00
					9 21 00 - 9 41 00
					10 04 00 - 10 18 51
		10 18 51	10 44 39		10 18 51 - 10 36 00
		10 44 39	11 40 32		10 59 00 - 11 23 00

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F320	9-19-95	7 48 22	10 28 33		8 53 00 - 10 09 00
F321	9-19-95	11 15 26	13 45 16		12 10 00 - 13 30 00
F322	9-21-95	7 47 24	10 41 57		no arm file (MDM flt cards)
F323	9-21-95	11 27 47	13 50 13		no arm file (MDM flt cards)
F324	10-03-95	7 34 46	9 27 45		8 39 00 - 9 12 00
F325	10-03-95	10 16 37	12 51 06		11 10 00 - 11 32 00
					11 58 00 - 12 35 00
F326	10-05-95	12 00 47	13 57 02		13 07 00 - 13 39 00
		13 00 13	13 45 13		
F327	10-06-95	9 29 05	10 21 59		9 36 00 - 10 16 00
F328	10-10-95	11 11 03	13 56 15		12 07 00 - 12 26 00
					12 44 00 - 12 55 00
					13 06 00 - 13 38 00

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F329	10-12-95	7 45 58	10 26 49		8 41 00 - 9 01 00
					9 19 00 - 9 29 00
					9 39 00 - 10 09 00
F330	10-27-95	7 59 42	10 03 43		9 15 00 - 9 47 00
F331	10-27-95	10 27 44	12 09 08		11 28 00 - 11 54 00
F332	10-31-95	7 35 06	9 18 59		8 33 00 - 9 01 00
F333	10-31-95	10 30 14	12 07 45		11 22 00 - 11 47 00
F334	10-31-95	12 46 02	14 35 38		13 48 00 - 14 30 00
F335	11-02-95	7 36 32	9 30 00		8 40 00 - 9 00 00
		9 30 00	11 30 00		9 25 00 - 9 50 00
		11 30 00	12 12 52		10 08 00 - 10 25 00
					10 50 00 - 11 05 00
F336	11-07-95	7 36 56	9 32 41		8 41 00 - 9 16 00
					11 35 00 - 11 52 00
F337	11-07-95	11 50 05	14 05 20		13 28 00 - 14 02 00
		14 05 20	14 11 04		

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F338	11-08-95	9 00 15	10 08 30		9 08 00 - 9 22 00
F339	11-21-95	8 34 12	9 30 35		8 40 00 - 9 03 00
					9 07 00 - 9 14 00
F340	11-21-95	11 03 28	11 49 25		11 08 00 - 11 34 00
F341	11-21-95	13 00 26	13 46 30		13 06 00 - 13 30 00
F342	11-28-95	8 43 04	10 15 00		8 47 00 - 9 03 00
		10 15 00	11 51 10		9 33 00 - 9 56 00
					10 16 00 - 11 09 00
					11 18 00 - 11 35 00
F343	11-30-95	8 36 52	10 32 00		8 43 00 - 8 58 00
					9 18 00 - 9 43 00
					10 00 00 - 10 10 00
F344	12-01-95	14 07 30	14 46 55		14 12 00 - 14 22 00
					14 24 00 - 14 42 00
F345	12-05-95	7 51 31	10 36 18		8 55 00 - 9 10 00
					9 31 00 - 9 42 00
					9 48 00 - 9 55 00
					9 55 00 - 10 07 00
					10 10 00 - 10 30 00

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F346	12-05-95	11 20 15	12 58 34		12 22 00 - 12 52 00
F347	12-06-95	9 41 32	10 50 00		9 47 00 - 10 05 00
		10 50 00	11 53 05		10 27 00 - 10 49 00
		9 41 32	11 51 41		11 08 00 - 11 43 00
F348	12-07-95	8 33 09	9 59 40		8 39 00 - 8 53 00
					9 10 00 - 9 45 00
F349	12-07-95	11 12 57	13 06 09		12 06 00 - 12 50 00
F350	12-14-95	7 42 06	10 00 00		8 44 00 - 9 03 00
		9 55 00	11 21 12		9 35 00 - 10 00 00
					9 55 01 - 10 03 00
					10 21 00 - 11 04 00
F351	3-15-96	11 39 10	13 16 48	excessive time jumps	12 58 48 - 13 00 36
		11 39 20	13 16 48		13 03 43 250 - 13 05 41 675
					13 05 44 - 13 06 01 250
					13 06 03 - 13 07 51
					13 15 43 - 13 16 48
F352	3-19-96	7 55 09	9 27 39		8 42 00 - 9 12 00

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F353	3-19-96	12 46 59	14 22 01		13 50 00 - 13 54 00
					13 54 00 - 14 22 01
F354	3-22-96	8 14 41	10 06 50		9 12 00 - 9 46 00
F355	3-22-96	10 56 38	12 48 32		
		11 50 00	12 34 15		11 56 00 - 12 22 00
					12 20 00 - 12 30 00
F356	3-28-96	8 31 49	10 20 00		9 34 00 - 10 02 00
F357	3-29-96	8 12 02	9 53 24		9 10 00 - 9 19 00
		8 12 02	9 53 25		9 19 00 - 9 35 00
F358	4-02-96	12 59 01	14 37 14		13 51 00 - 14 10 00
F359	4-04-96	12 16 02	13 51 51		13 15 00 - 13 40 00
F360	4-09-96	10 24 45	11 05 00		10 24 45 125 - 11 05 00
F361	4-16-96	10 00 55	10 42 15		10 10 00 - 10 36 00
F362	4-19-96	8 05 00	8 47 50		8 05 00 - 8 47 50

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F363	4-19-96	11 19 05	12 00 40		11 25 00 - 11 57 00
F364	4-23-96	9 07 30	9 41 06		9 17 00 - 9 35 00
F365	4-26-96	11 14 30	13 20 23		12 25 00 - 13 10 00
F366	4-30-96	9 06 55	10 30 20		9 12 00 - 9 27 00
		9 39 26	10 34 53		9 50 30 - 10 18 00
F367	4 -30-96	12 36 25	14 20 56		12 42 00 - 12 58 00
					13 16 00 - 13 36 00
					13 51 30 - 14 13 00
F368	5-01-96	13 20 34	15 13 09		14 30 00 - 15 05 00
F369	5-03-96	9 03 40	9 49 20		9 09 00 - 9 43 00
F370	5-03-96	12 02 45	12 39 40		12 08 00 - 12 34 00
F371	5-08-96	8 33 25	9 19 00		8 33 25 - 9 19 00
F372	5-08-96	11 29 55	12 19 32		11 29 55 - 12 19 32
F373	5-10-96	8 38 45	9 22 55		8 45 00 - 9 15 00

Flt	Flt Date	show Start	show Stop	Time Jump	Times Used
F374	5-10-96	11 10 10	11 52 55		11 16 00 - 11 47 00
F375	5-14-96	8 30 55	9 06 40		8 35 00 - 8 50 00
					8 48 00 - 8 52 00
					8 52 00 - 9 02 00
F376	5-15-96	8 30 25	9 12 00		8 36 00 - 9 08 00
F377	5-15-96	11 49 05	12 35 35		11 56 00 - 12 30 00
F378	5-17-96	8 50 37	9 39 30		9 00 00 - 9 34 00
		8 51 09	9 38 14		
		8 52 55	9 39 20		
F379	5-17-96	12 43 20	13 27 20		12 51 00 - 13 23 00
F380	5-21-96	8 39 10	9 25 30		8 45 00 - 9 20 00
		8 43 42	9 25 39		
F381	5-22-96	8 05 50	9 00 00		8 10 00 - 8 54 00
F382	5-29-96	8 13 00	9 06 10		8 21 00 - 9 00 00
F383	5-29-96	11 14 35	11 55 50		11 21 00 - 11 43 00

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13. ABSTRACT *(Maximum 200 words)*

Under the NASA High-Alpha Technology Program the High Alpha Research Vehicle (HARV) was used to conduct flight tests of advanced control effectors, advanced control laws, and high-alpha design guidelines for future super-maneuverable fighters. The High-Alpha Research Vehicle (HARV) is a pre-production F/A-18 airplane modified with a multi-axis thrust-vectoring system for augmented pitch and yaw control power and Actuated Nose Strakes for Enhanced Rolling (ANSER) to augment body-axis yaw control power. Flight testing at the Dryden Flight Research Center (DFRC) began in July 1995 and continued until May 1996. Flight data will be utilized to evaluate control law performance and aircraft dynamics, determine aircraft control and stability derivatives using parameter identification techniques, and validate design guidelines. To accomplish these purposes essential flight data parameters were retrieved from the DFRC data system and stored on the Dynamics and Control Branch (DCB) computer complex at Langley. This report describes the multi-step task used to retrieve and process this data and documents the results of these tasks. Documentation includes software listings, flight information, maneuver information, time intervals for which data were retrieved, lists of data parameters and definitions, and example data plots.

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