SPEVAL Software User Manual

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a Abstract

This is the SPEVAL (SPacecraft EVALuation) User Manual. SPEVAL is a Motif Window based system developed at ESOC. It supports operational users to monitor the long-term behaviour of spacecraft housekeeping parameters and provides Graphical and Alphanumeric output of the data. The projects supported by SPEVAL are ERS-1, ERS-2, ISO and CLUSTER.

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PAGE	PARAGRAPH	REASON FOR CHANGE
All	All	Display File Selection Boxes Activation Buttons in figures. Tutorial Sections changed to use File Selection Boxes.
page 33	3.11	Loading User Data Sets into PV-Wave : New Tutorial
page 40	4.1	Caution about reloading proforma after recompile
page 41	4.1.1	COMPILE : The /LINES and /TICKS qualifiers are now accepted for Graphical Proforma. /DATABASE_TIME: new command line argument. Black disallowed.
page 57	4.4	SPEVAL File Selection Boxes : New section.
page 64	4.6	Commands menu: new options
page 69ff	4.6.4	Job Control Window : New section.
page 72ff	4.6.5	SPEVAL Control - Direct Load of UDS : New section
page 74ff	4.7	Save Case Definer Window : improved descriptions, new functions
page 166	4.9.1	TM (Alphanumeric List) Window : Data,Time,Validity Quality shown as colours and character codes. (Also visible in Alphanumeric Display Window)
page 184	4.12	PV-Wave SPEVAL procedures : New Section
page 185	4.12.1	GRPH_LOAD_UDS : New Section
page 187	4.12.2	GRPH_MATCH_DATA : New Section
page 190	4.13	Hex Dump : New utility program
page 195	4.14	X_Clear : New command
page 196	Appendix A	SPEVAL file types : New Appendix
page 197	Appendix B	SPEVAL PV-Wave Variables : New PV-Wave variables

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1 Introduction

1.1 Intended readership

This document applies to Spacecraft Analysts and Spacecraft Controllers on ERS-1, ERS-2, ISO and CLUSTER.

It is assumed that the User has some experience with Window systems. I.e. the User should know the basic terminologies like “Mouse”, “Menu” etc.

SPEVAL is not a very complicated system. The Window items contains self-explanatory text and functionalities, and the Reference section contains entries covering the items.
It is, however recommended (even for experienced Window system Users) to have a glance through the examples in the Instruction section. Certain items, e.g. how to list SPEVAL specific files are explained here.

1.2 Applicability statement

This SUM applies to SPEVAL Version 3.0. See section 1.7 on page 2 of how to find out the current SPEVAL Version number.

1.3 Purpose

SPEVAL is an integrated archive, retrieval and display system for spacecraft housekeeping data (TM, OOL), and may be used for short and long term analysis of events and trends. This Software User Manual covers the complete SPEVAL system.

1.4 How to use this document

This document is divided into the following sections:

- Introduction. This section covers the overall structure of the User Manual. It describes the intended Users, SUM Conventions etc. The section is stand-alone.
- Overview. This section describes the fundamental principles of SPEVAL. It describes central terminologies used in the User Manual. The section is stand-alone.
- Instruction. This section contains a number of Tutorial sections, intended for all Speval Users. The tutorials provide quick “tours” through different SPEVAL operations. Items referenced in this section (e.g a Window name) may be found in the Reference section.
- Reference. This section contains look-up sections of all the SPEVAL Window items (e.g Buttons, Windows etc.). It also contains a reference to the off-line SPEVAL Proforma Editor Utilities. Each section contains a list of the possible error messages which are associated with the item. The error messages are listed alphabetically in Appendix C.
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- Appendix B contains the SPEVAL variables which are exported to PV-Wave. This section is useful for persons using PV-Wave to process SPEVAL generated data.

- Appendix C contains an alphabetical list of the SPEVAL messages which are output to the screen. This section relates to the Reference section, because the actual error message meaning and recovery procedures are described here.
- Appendix D contains a Glossary list of the terminologies used in this User Manual.
- Appendix E contains an Index list of SPEVAL items and operations. This section refers to both the Instruction and Reference sections.

1.5 Related documents

Using DECwindows Motif for OpenVMS
This Manual describes the DEC Session Manager and terminal windows. It also gives an introduction to typical Motif Window terminologies. The manual exists on line and may be invoked from the *DEC Session Manager* | *Application* | *Bookreader.* It is found under the entry *Programming Tools and Languages > DECwindows Motif <1.2> for OpenVMS VAX*.

PV-Wave Command Language Programming and User Guide.
These Manuals explain the PV-Wave programming language.

Cluster Command History Display User Guide.
This User Manual describes the Cluster Command History (CHF) display.

1.6 Conventions

The following conventions are used in this User Manual:

- SPEVAL Window related item names appear in *italic* typeface. One example is:
  Save Case - Load , which identifies an item contained in the *Save Case Definer* Window (here the Load Push Button).
- SPEVAL output messages are shown in the `Courie`r typeface. One example is "`File not Found`"
- Command Line input messages are shown in **`bold Courier`** typeface. One example is
  `CSPEVL $ DIR *.*`
  which identifies that the input expected is "DIR *.*".

1.7 Problem Reporting Instructions

The last pages of this manual contains the SPEVAL Software Problem Report (SPR) form as well as an example form. If you encounter a problem with SPEVAL, please fill in the form as indicated (non-shaded fields only) and mail it to the SPEVAL maintenance team.

Note that if relevant, you should save the Save Case definitions used when the problem was encountered and refer it in the SPR form. This is of great importance to the Software maintenance team when reproducing the problem. See section 4.6.3 on page 68 on how to get the current SPEVAL release number.

2 Overview

SPEVAL stands for SPacecraft EVALuation system. It is an integrated archive, retrieval and display system for spacecraft housekeeping data (TM, TC, OOL and log files), and may be used for short and long term analysis of events and trends.

The archive portion of SPEVAL consists of the data automatically received from the Control Centre and the data sets produced by SPEVAL. SPEVAL produced data sets may be divided into two types: the Summary which is produced automatically on a daily basis, and User Data Sets which are produced in response to User requests.

User requests for retrieval are made in the form of a Save Case. This is a retrieval and display strategy that a User must define in order to retrieve and display data. Save Cases are defined by the Save Case Definer.

The Save Case Definer is the main User input for SPEVAL. It allows the user to define the data source, the type of data, the processing required on the data and the display types once the retrieval has completed. The definition for the required processing involves proforma; these are compiled lists of parameters, which once loaded into the Save Case may have time, data and statistics filters applied to them. Once the Save Case has been submitted by the User, the remainder of the retrieval and display processing is driven automatically by SPEVAL.

TM data may be displayed in the following formats:- Alphanumeric List, Alphanumeric Display and Graph. In addition to these display types, there are dedicated displays for Statistics and Totals. Finally, retrieved data may be exported from the Graph task into a third party analysis and display tool called PV-Wave. This tool supports its own command language which may be further used to define additional processing and displays.

3 Instruction

3.1 Starting SPEVAL

Functional Description

This section describes how to start the SPEVAL system. The SPEVAL User Interface displays on any computer supporting the standard X-11 protocol, and it will not be explained in detail how to set up the connection between your terminal (or X-Server) and the host computer.
There exists two standard possibilities to start SPEVAL:

- Starting SPEVAL from the *DECWindows Session Manager*. If you run SPEVAL from a PC (supporting eXceed), your PC should have been configured so that when login in to the Spacecraft host computer, the DECWindows Session Manager appears on your terminal screen.
- Starting SPEVAL from the DCL Command line. If you run SPEVAL from a SUN (e.g. via Telnet), this is probably the way you would activate SPEVAL.

Cautions and Warnings

There exists known problems with some X-server protocol software. E.g. eXceed is not always stable and there have been incidents where the X-connection crashes the server. You should therefore ensure that all applications on your terminal (e.g. Text Editors) are in a recoverable state before starting SPEVAL.

Procedures

Starting SPEVAL from the Session Manager

For this startup, the DECWindow Session Manager should appear on your terminal as shown in Figure 1.

Figure 1DECWindow Session Manager (host is CSPEVL)

1. Start SPEVAL by Selecting the *Applications > SPEVAL* option from the *Application Pull-Down Menu*, then wait some seconds. The SPEVAL Session Control window should be displayed as indicated in Figure 2 on page 6. If the Application Menu does not have any entries called SPEVAL, contact Software Support.

Starting SPEVAL from the DCL Command line

For this startup, it is not required that the Session Manager is displayed on your terminal.

1. Before logging onto the Project computer (here CSPEVL), you must ensure that your terminal will accept an X-request from the host computer. On Unix systems, this might be done via the xhost command:

   ```
   <Unix>: xhost CSPEVL
   ```

   After having set up the privileges, log in as follows:

   ```
   <prompt>: telnet CSPEVL
   ```

You will be prompted for the username and password. If the login fails, telnet will issue an error.

2. If successfully logged into the host, you must set the host DISPLAY variable to your terminals address, specified as an IPC address (here “131.176.73.11”) or a LAT address (here “LAT_08002B3AEA90”

```
<CSPEVL>: SET DISPLAY/CREATE/NODE=131.176.73.11/TRANS=TCPIP (IP-address)
<CSPEVL>: SET DISPLAY/CREATE/NODE=LAT_08002B3AEA90/TRANS=LAT (LAT-address)
```

3. Start SPEVAL by typing the following command:

```
<CSPEVL>: SPEVAL
```

Wait some seconds. The SPEVAL Session Control window should be displayed as indicated in Figure 2 on page 6.

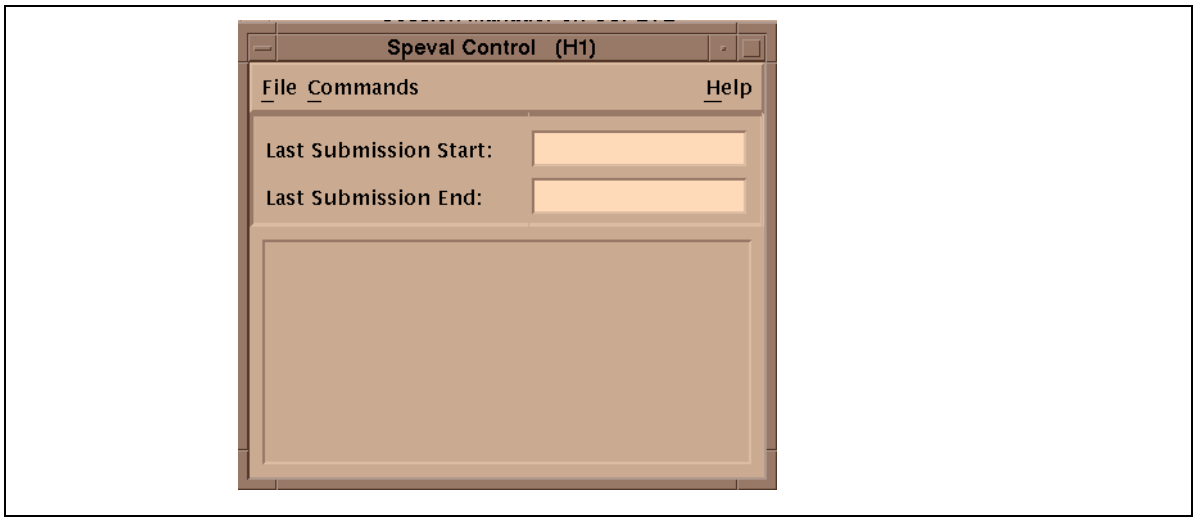


Figure 2SPEVAL Control

Possible Errors and their Causes

SPEVAL Control Window doesn’t display on the terminal.

If you have started SPEVAL via the DCL command line, check that the IPC or LAT display you have specified is correct by typing the command:

```
<CSPEVL>: SHOW DISPLAY
```

If the display name is in correspondence with the terminal address, check that your terminal have been set up to accept the X-connection from the host. On Unix systems this might be done by typing the command line:

```
<Unix>: xhost
```

which lists all the hosts which the terminal accepts an X-connection from.

If you have started SPEVAL via the Session Manager, SPEVAL Control should always be

displayed. In this case, contact Software Support.

SPEVAL Control shows unreadable fonts

Your X-terminal doesn’t supply the standard fonts used by SPEVAL. Contact Software Support.

3.2 Exiting SPEVAL

Functional Description

This section describes how to exit the SPEVAL system.

Cautions and Warnings

You will not be warned about unsaved data (e.g. in the *Save Case Definer*) when exiting SPEVAL. You should therefore ensure that any valuable Save Case definitions have been saved before exiting the task.

Procedures

1. Exit SPEVAL by Selecting the *File* | *Exit* option from the *SPEVAL Control Pull-Down Menu*, then wait some seconds. The SPEVAL Session Control window and all open *Save Case Definers* and *Output Windows* should disappear.

Possible Errors and their Causes

SPEVAL Control Window doesn't disappear.

If the SPEVAL Control Message are shows the message
`" Some tasks are still starting - retry in a minute or so "`SPEVAL is still initialising. Wait some time and retry the operation again. If the Window still fails to exit, you should contact Software Support.

3.3 Retrieving Long Term Archival TM Data

Functional Description

This section describes how to retrieve Long Term Archival (LTA) Telemetry data and to display it in *Graphical* and *Alphanumeric* Windows. SPEVAL retrieves data via the Save Case Definer window, and the retrieval definitions which this tutorial creates will be saved for later use.

Cautions and Warnings

None.

Procedures

Set Up

It is assumed that you have started SPEVAL and that the Session Control Window is displayed on your terminal. If the *Session Control Window* is iconified, de-iconify it by double-clicking on the icon.
There must also have been defined at least one *Graphical Proforma* for your Spacecraft computer in the standard SPEVAL Proforma directories. You may check this by on the DCL Command line typing the following command (here the spacecraft is ERS-2) by typing:

```
CSPEVL: DIR SPVL_PROFORMA_DIR:ERS2*.GRAPH
```

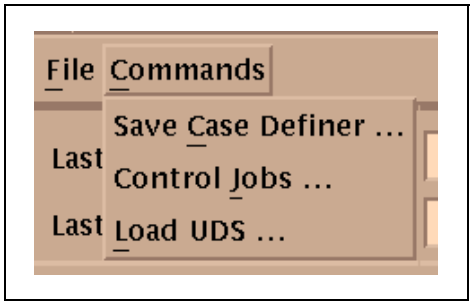
For ISO, you type

```
CSPEVL: DIR SPVL_PROFORMA_DIR:ISO*.GRAPH
```

and so on.
If no file names are listed, the tutorial cannot be performed. In this case, contact Software Support. Otherwise, note the file name of at least one Proforma. E.g. if a file name displays ERS2_TR01.GRAPH, the text “TR01” should later be entered in the Save Case Definer.

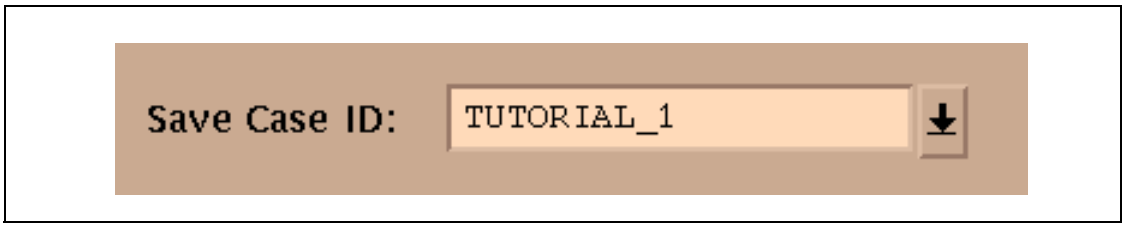
Input Operations

1. Start the Save Case Definer Window by choosing *Commands* | *Save Case Definer* option from the *Commands* Pull Down Menu. An initialised Save Case Definer Window will be displayed on the Screen.



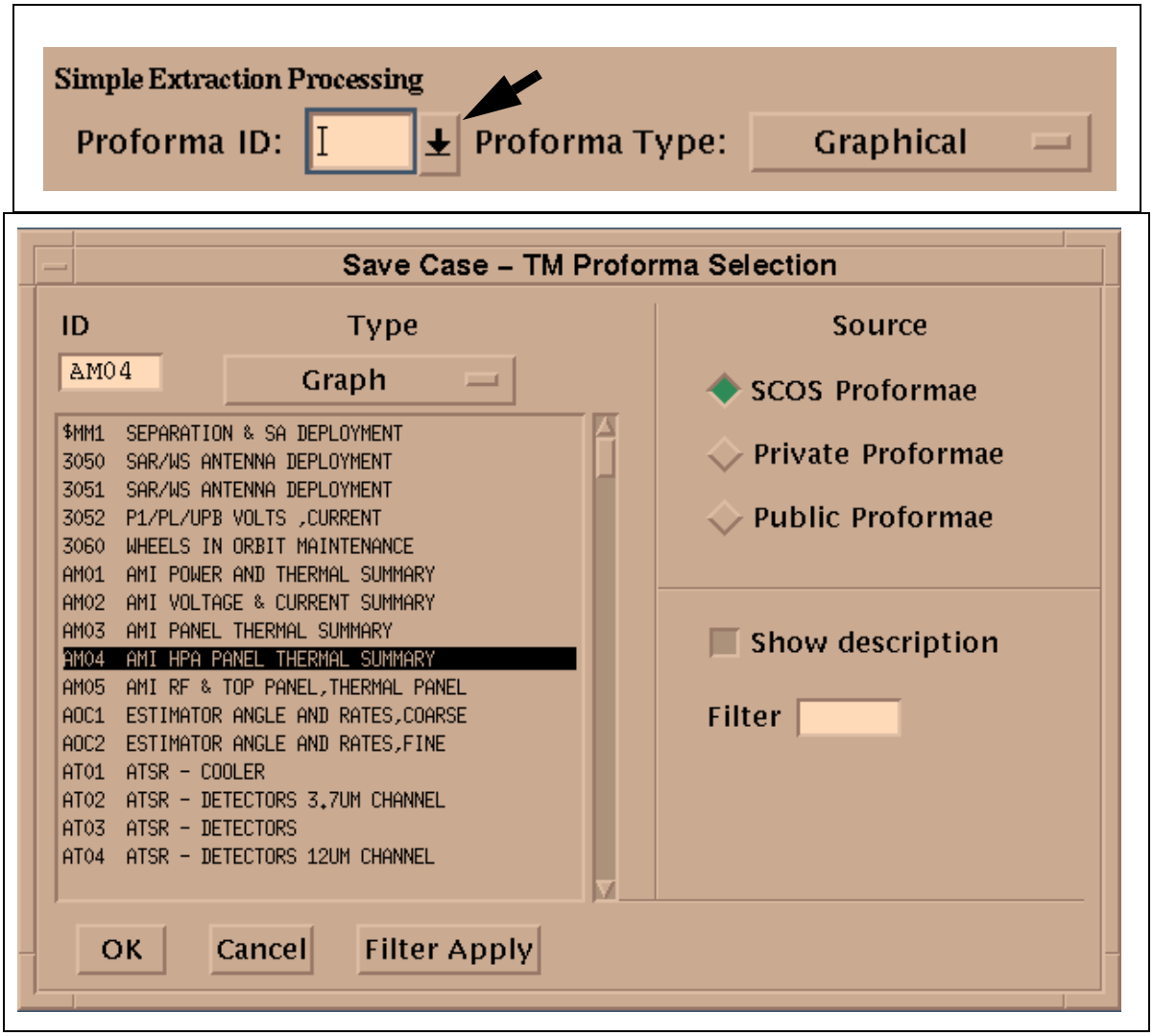
2. The *Save Case - EDEF- Spacecraft* should by default have been set to the project Spacecraft. If not, set it to the correct Spacecraft (e.g. ERS2).

3. Enter the name “TUTORIAL_1” in the *Save Case - EDEF - Save Case ID* text field as indicated below. (‘EDEF’ is the User Manual shortening for “External Definition”). The string will, together with the Spacecraft ID define the file name of the Save Case Definitions..



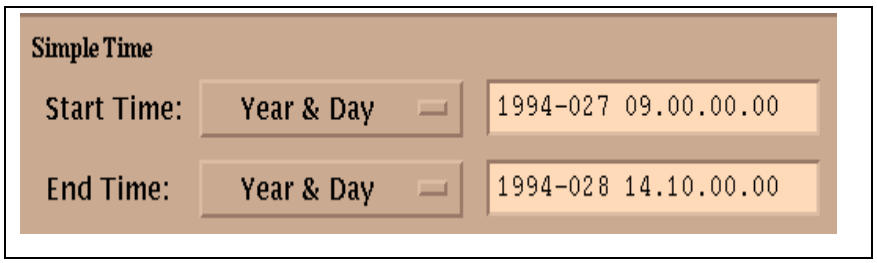
4. Specify the Graphical TM Proforma name to use for the retrieval in the *Save Case - Simple Extraction Processing (SEP)* Form by single-clicking on the File Box Selector Button. The Proforma File Selection Box will pop up, by default displaying all the Graphical Proforma

in the SCOS Proforma directory

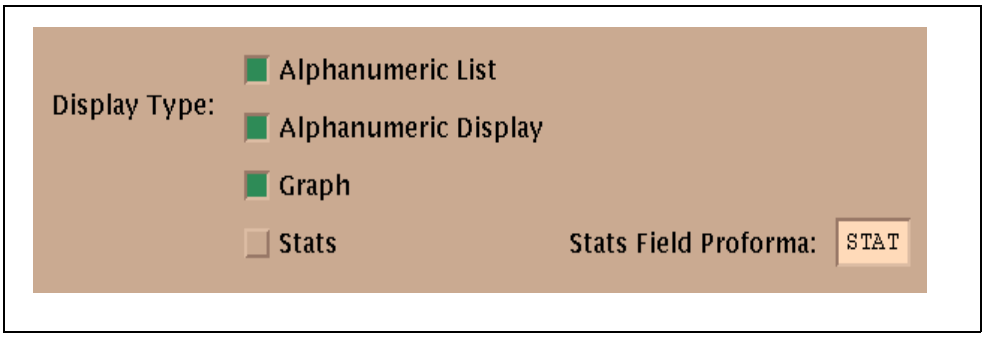


5. Optionally, you can click on the *Show Description* radio Button. The Proforma List will be updated to show the description for each Proforma. Note however that the List update might take some time because SPEVAL must open each Proforma file in order to get the description. Select a Proforma from the list by double-clinking on a Proforma ID in the list. The File Selection Box disappears and the Proforma ID you selected appears in the *Save Case - Simple Extraction Processing (SEP) form.*

6. Enter the *Start Time* and *End Time* for the retrieval. If the spacecraft is different from ERS-2, it is assumed that you have some knowledge about which time period the Parameters in the Proforma provided data. If SPEVAL fails to retrieve data for this time period, a failure message will be displayed and no Output Windows will be created. The time you have to wait depends on the amount of data which have been requested for retrieval. For e.g. a time span of one year, you must expect to wait a considerable time before the *SPEVAL Control Window* displays the Retrieval exit status. For ERS-2, you may use the time-span as indicated below. Ensure that the Start and End Times are entered correctly.



7. Navigate to the *Save Case - Output* form. Since this retrieval does not support statistics information, the Stats radio Button must be set neutral (one click with Mouse Button 1) as indicated. NOTE: If the *Stats* radio Button is invisible, it is probably because the Save Case Definer Window has been re-sized. In this case, make the Save Case Definer Window larger by clicking MB1 on the Window borders, then dragging MB1 vertically.



8. The Save Case Definition should now be syntactically valid. Press the *Save Case - Validate* Button. The *SPEVAL Control* Window will be displayed in the front of the Save Case Definer window. If the validation was successful, the message displayed will be
   `"Validation completed - no errors found"`
   If another message is displayed, the Save Case definitions are in error. In this case, consult the alphabetical message section in Appendix C on page 201. After correcting any syntax errors, start from step 8. again.
9. Optionally, you can now view all the Parameters defined in the Proforma by pressing the *Save Case - TM Extraction Processing Options* Button. The *TM Extraction Processing Window* will in this case display a list of all the Parameters. After inspecting the window, click OK.
10. Save the Save Case Definitions permanent to file by choosing the *Save Case - Save* Button. The *SPEVAL Control* Window will display a message something like
    `"Save Case saved to file - ERS2_TUTORIAL_1.SVC"`
    Note that you can submit an unsaved Save Case for retrieval.
11. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message
    `"Save Case submitted for retrieval"`
    If this is not the case, and the Save Case can be validated, issue a SPR and exit SPEVAL.
12. SPEVAL will now retrieve the data. The retrieval success message is
    `" << Loading retrieved data << "`
    If the message displayed is
    `" No data was found for this retrieval ",`

you should increase the retrieval time range (step 6.), then save and submit the Save Case again. Otherwise, consult the Error Messages in Appendix C on page 201.

13. If the retrieval was successful, SPEVAL will display the retrieved data in the 3 windows. See the "Standard Alphanumeric List Windows" on page 162, "Alphanumeric Display Window" on page 176 and "Graphical Window" on page 178 for description of the display windows and how to navigate in them.

Possible Errors and their Causes

Retrieval initialises but no display Windows come up.

The most plausible reason is that SPEVAL is still retrieving the data. If you don't see any messages after the " `Save Case submitted for retrieval` " message, this will be the case.

Retrieval fails.

If the message displays " `No data was found for this retrieval` " you should increase the retrieval time range (step 6.), then save and submit the Save Case again. Otherwise, consult the Error Messages in Appendix C on page 201.

3.4 Loading a Save Case

Functional Description

This section describes how to load an already existing Save Case. The tutorial assumes that you have at least saved one Save Case before.

Cautions and Warnings

None.

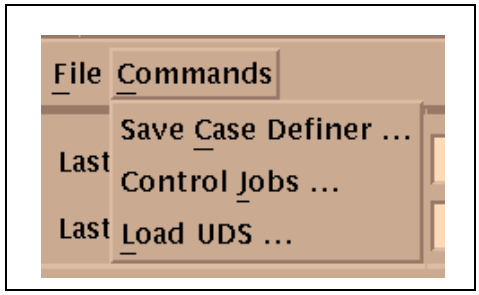
Procedures

Set Up

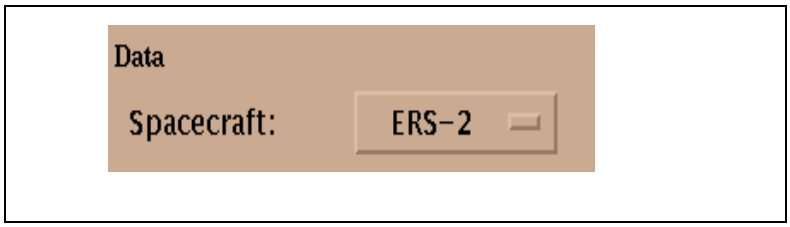
It is assumed that you have started SPEVAL and that the Session Control Window is displayed on your terminal. If the *Session Control Window* is iconified, de-iconify it by double-clicking on the icon.

Input Operations

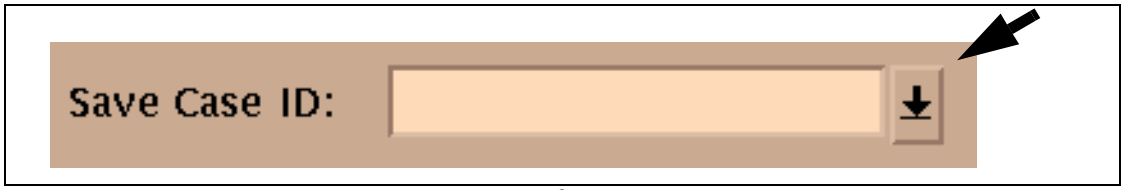
1. Start the Save Case Definer Window by choosing *Commands* | *Save Case Definer* option from the *Commands* Pull Down Menu. An initialised Save Case Definer Window will be displayed on the Screen.



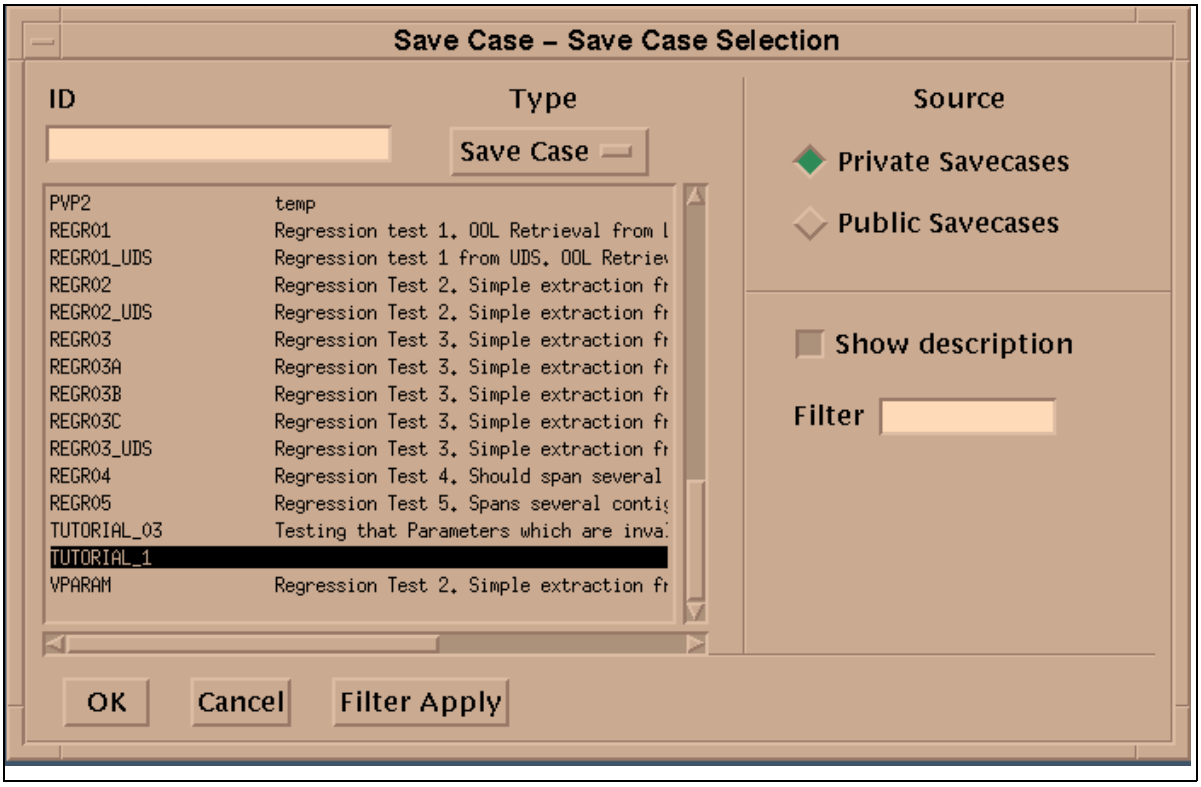
2. The *Save Case - EDEF- Spacecraft* should by default have been set to the project Spacecraft. If not, set it to the correct Spacecraft (e.g. ERS2).



3. Navigate to the File Selection Box Button to the right of the *Save Case - EDEF - Save Case ID* field, then single click on the button.



The File Selection Box will appear, by default displaying all Save Cases in your private Save Case directory.



4. Optionally, you can click on the *Show Description* radio Button. The Save Case List will be updated to show the first line of the description for each Save Case. Note however that the List update might take some time because SPEVAL must open each Save Case file in order to get the description. Select a Save Case from the list by double-clinking on an item in the list. The File Selection Box disappears and the Save Case ID you selected appears in the *Save Case - EDEF - Save Case ID* text field.

5. Press the *Save Case - Load Button*. The Save Case Definer Window will be update with the contents of the Save Case you've specified.

Possible Errors and their Causes

No Save Case is Loaded.

The only reason for this error should be that the combination of the Spacecraft and the Save Case ID have produced a file name not found in the SPVL_SAVE_CASE_DIR. Check the state of these items.

3.5 Filtering Retrievals

Functional Description

This section describes how to use the SPEVAL Retrieval filter utilities. SPEVAL offers the possibilities to filter TM data in several ways, and a subset of these operations are shown here.

- *Time filtering* of TM data. The retrieved data will be filtered to only include every second sample of each data point.
- Filter out BDQ (Bad Data Quality) data.
- For one Status Parameter, only retrieve the value when equal to a specific status. (E.g only retrieve the value when the Status is “OFF”). Note that you can only use this option for status parameters having a corresponding Status Text Set. E.g. specifying “1” for a one-bit Status Parameter without any Status Text Sets would retrieve 0 values.
- For one numerical or analogue Parameters, only retrieve the data immediately before and after each time the *Hard High Limits* and *Hard Low Limits* are crossed.

The output of the filtered retrieval will be shown in the *Alphanumeric Display Window* and *TM (Alphanumeric List) Window* .

It is assumed that you have defined a basic TM Save Case as described in the tutorial in section 3.3 on page 9. This Save Case will be used as the basis for the Save Case “TUTORIAL_2” defined in this section.

Cautions and Warnings

None.

Procedures

Set Up

It is assumed that you have started SPEVAL and that the *Save Case Window* is displayed on your terminal. There must also have been defined at least one *Alphanumeric Proforma* for your Spacecraft computer in the standard SPEVAL Proforma directories. You may check this by on the DCL Command line typing the following command (here the spacecraft is ERS-2) by typing:

```
CSPEVL: DIR SPVL_PROFORMA_DIR:ERS2*.ALPHA
```

For ISO, you type

```
CSPEVL: DIR SPVL_PROFORMA_DIR:ISO*.ALPHA
```

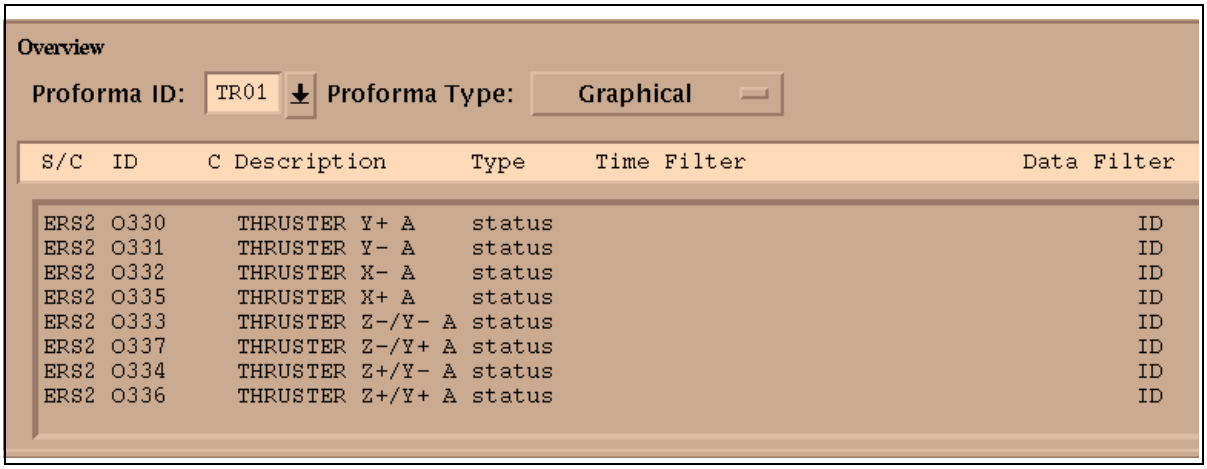
and so on.

If no file names are listed, the tutorial cannot be performed. In this case, contact Software Support. Otherwise, note the file name of at least one Proforma. E.g. if a file name displays ERS2_TR01.ALPHA, the text “TR01” should later be entered in the Save Case Definer.

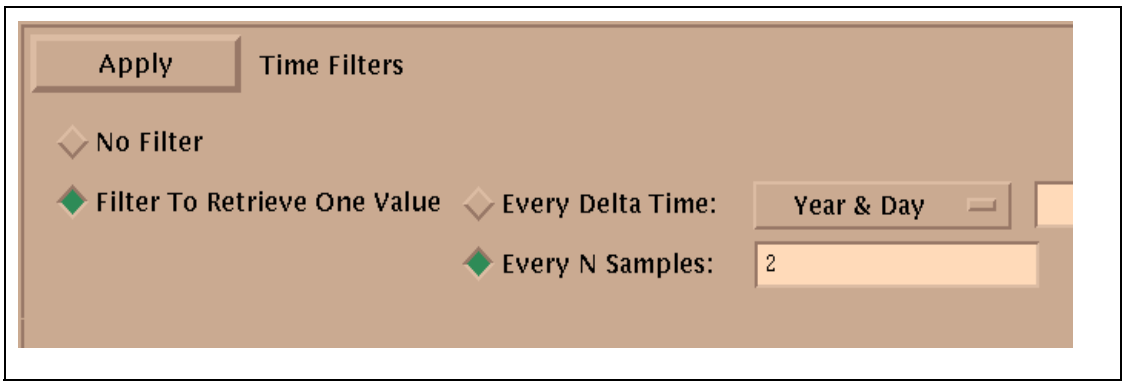
NOTE: Ideally, you should choose a Proforma containing both *Status* and *Numerical* Parameters. If the Proforma contains only one of the types, not all the filters may be applied.

Input Operations

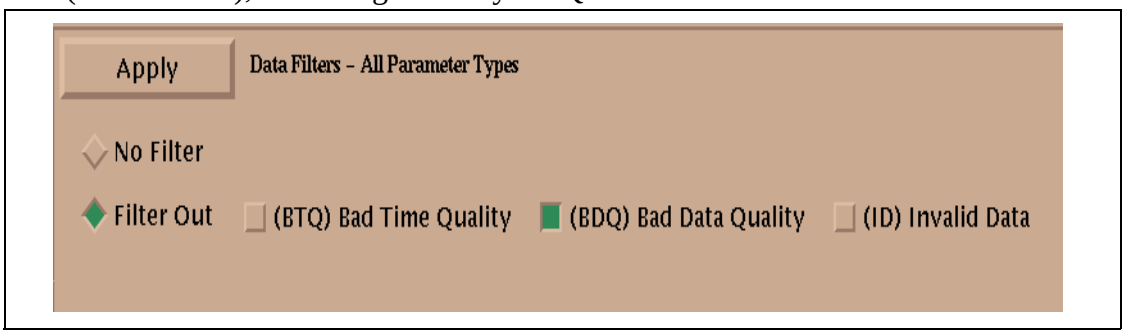
1. Load an existing Save Case, e.g. “TUTORIAL_1”. (see section 3.4 on page 13).
2. Press the *Save Case - TM Extraction Processing Options* Button. The *Save Case - TM Extraction (TME)* Window will display at the terminal screen, obscuring the Save Case Definer Window. The *Save Case - TME - Parameter List* should display all the Parameters currently defined in the Save Case Proforma. Note that the *Save Case - TME - Proforma ID* Text field will display the currently existing Proforma ID. If no filters have previously been defined for this Save Case, the Parameter filter characteristics are generated from the Proforma specifications. If the Proforma (or any Parameter in the Proforma) have specified the MODE_DEPENDENT Flag, the list will indicate that only Invalid Data (ID) are filtered out from the retrieval.
3. If you started of with “TUTORIAL_1”, the *Save Case - TME - Proforma ID* will display the Proforma ID for this tutorial and the *Save Case - TME - Proforma Type* is set to “Graphical”. In this case, enter the Proforma ID of an Alphanumeric Proforma and change the Proforma Type to “Alphanumeric”. Then press the *Save Case - TME - Load Proforma* button. The *Save Case - TME - Parameter List* will be updated to display the new Proforma definitions. Note that this definitions will not be copied to the main Save Case Definer window unless you press the *Save Case - TME - OK* or *Save Case - TO - Commit* buttons (described in step 15.).



4. Move the pointer to the *Save Case - TME - Time Filters* form. Use the rectangular *Pane* in the bottom right of the form to display all the fields if necessary.
5. Set up the time filter as indicated, then press the Apply Button. All the Parameters in the list will be updated to display “every 2 samples”, indicating that only each 2’nd sample of the Parameter is retrieved.

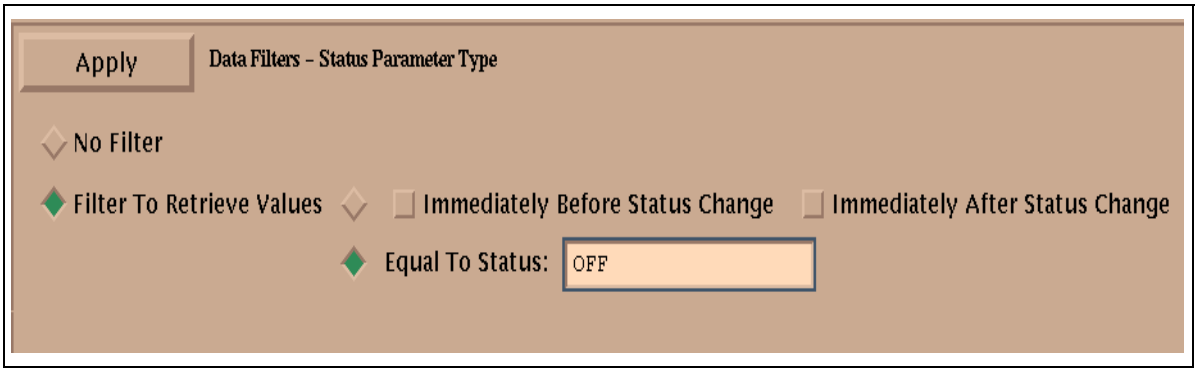


6. Select *one single* parameter by pressing MB1 on an arbitrary row.
7. Move the pointer to the *Save Case - TME - Data Filters (all)* form. Use the rectangular *Pane* in the bottom right of the form to display all the fields if necessary.
8. Set up the General TM filter as indicated, then press the *Apply* Button. The single highlighted Parameter in the list will be updated to display “BDQ” (Bad Data Quality) but no “ID” (Invalid Data), indicating that only BDQ data is filtered out in the retrieval.



9. Select *one single* Status parameter by holding the <CNTRL> key, then pressing MB1 on an arbitrary row (this deselects any previously selected parameters: pressing MB1 without <CNTRL> selects the new parameter in addition to previously selected ones. See “Row Selection Modes” on page 62. for a full description of SPEVAL row selection. If the Parameter list does not display any Status Parameters, you cannot apply the Status filters. In this case, start from step 12.
10. Move the pointer to the *Save Case - TME - Data Filters (status)* form. Use the rectangular *Pane* in the bottom right of the form to display all the fields if necessary.
11. Set up the Status filter as indicated, then press the *Apply* Button. The single highlighted Parameter in the list will be updated to display “`Equal to Status OFF`”. This means that only samples of the Parameter will be retrieved which are OFF. NOTE however that SPEVAL will not complain if the *Status Text Set* for the Parameter doesn’t have any entry

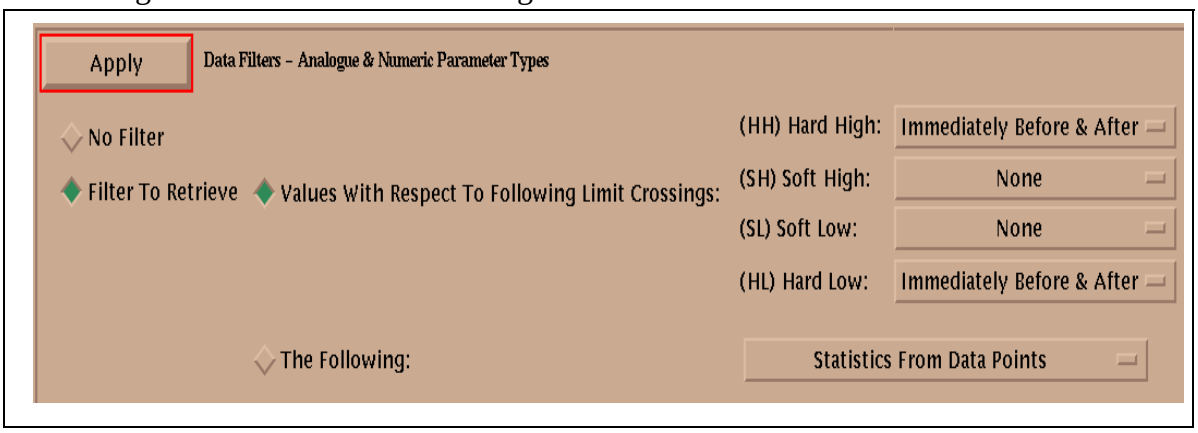
for OFF. In this case, no values for the Parameter would be retrieved.



12. Select *one single* numerical parameter by pressing MB1 on an arbitrary row. If the Parameter list does not display any numerical Parameters, you cannot apply the these filters. In this case, start from step 15.

13. Move the pointer to the *Save Case - TME - Data Filters (analogue)* form. Use the rectangular *Pane* in the bottom right of the form to display all the fields if necessary.

14. Set up the Numeric filter as indicated, then press the *Apply* Button. The single highlighted Parameter in the list will be updated to display `"Limits: HHB,HHB,HLB,HLA"`. This means that SPEVAL only retrieves samples of the Parameter immediately before and after a Hard High or Hard Low Limit crossing.



15. Press the *Save Case - TME - OK* Button. The Window will disappear, bringing you back to the Save Case Definer.

16. Define the name of the new Save Case by entering a name (e.g. "TUTORIAL_2") in the *Save Case - EDEF - Save Case ID* field.

17. Save the Save Case Definitions permanent to file by choosing the *Save Case - Save* Button. The *SPEVAL Control* Window will display a message something like
`"Save Case saved to file - ERS2_TUTORIAL_2.SVC"`
Note that you can submit an unsaved Save Case for retrieval.

18. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message
`"Save Case submitted for retrieval"`
If this is not the case, see the error messages reference in Appendix C on page 201.

19. SPEVAL will now retrieve the data. The time you have to wait depends on the amount of data which have been requested for retrieval. If the retrieval was successful, SPEVAL will display the retrieved data in the 3 windows.

Possible Errors and their Causes

Retrieval starts but no display Windows come up.

The most plausible reason is that SPEVAL is still retrieving the data. If you don't see any messages after the " `Save Case submitted for retrieval` " message, this will be the case.

Retrieval fails.

If the message displays " `No data was found for this retrieval` " you should increase the retrieval time range (step 6.), then save and submit the Save Case again. Otherwise, consult the Error Messages in Appendix C on page 201.

3.6 Generating Statistics

Functional Description

This section describes how to use the SPEVAL Retrieval statistics utilities. On request, SPEVAL offers the possibilities to generate statistics for the TM data (done at retrieval time) and to display the Statistical Information in a Statistics Window . A description of the Statistics Window and itsfields may be found in section 4.9.2 on page 168.

Since SPEVAL only provides statistics for Numerical and Analogue Parameters, the Proforma used for this tutorial must reference at least one Numerical or Analogue Parameter.

It is assumed that you have defined a basic TM Save Case as described in the tutorial in section 3.3 on page 9. This Save Case will be used as the basis for the Save Case “TUTORIAL_3” defined in this section.

Cautions and Warnings

None.

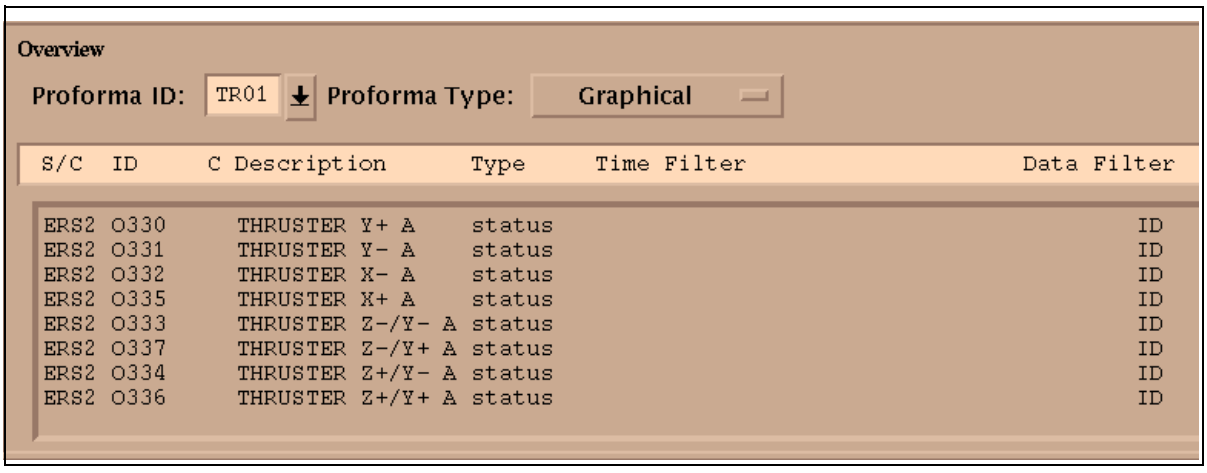
Procedures

Set Up

It is assumed that you have started SPEVAL and that the *Save Case Window* is displayed on your terminal. There must also have been defined at least one *Alphanumeric or Graphical Proforma* for your Spacecraft computer in the standard SPEVAL Proforma directories. Moreover, the Proforma used MUST contain a reference to at least one numerical Parameter.

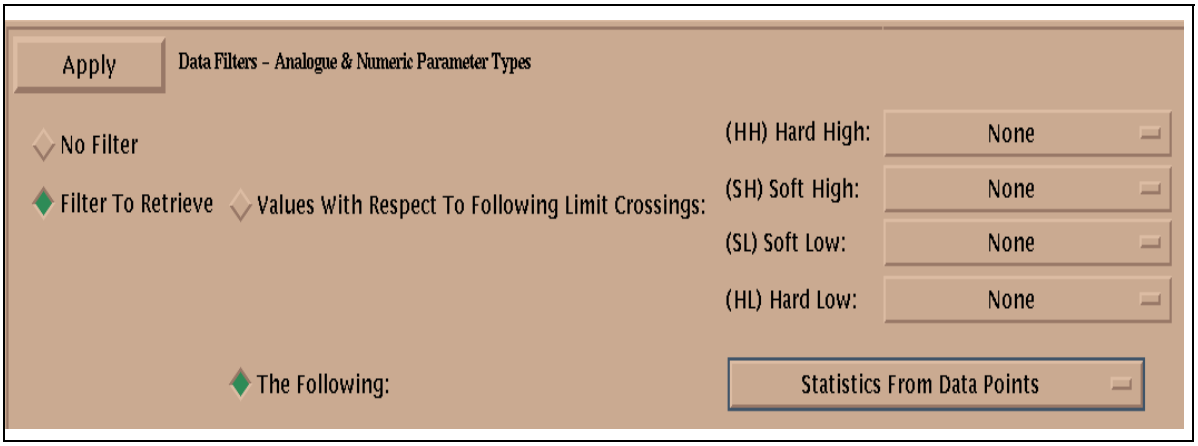
Input Operations

1. Load an existing Save Case, e.g. “TUTORIAL_1”. (see 3.4 on page 13).
2. Press the *Save Case - TM Extraction Processing Options* Button. The Save Case - TM Extraction (TME) Window will display at the terminal screen, obscuring the Save Case Definer Window. The *Save Case - TME - Parameter List* should display all the Parameters currently defined in the Save Case Proforma. Note that the *Save Case - TME - Proforma ID* Text field will display the currently existing Proforma ID.
   .

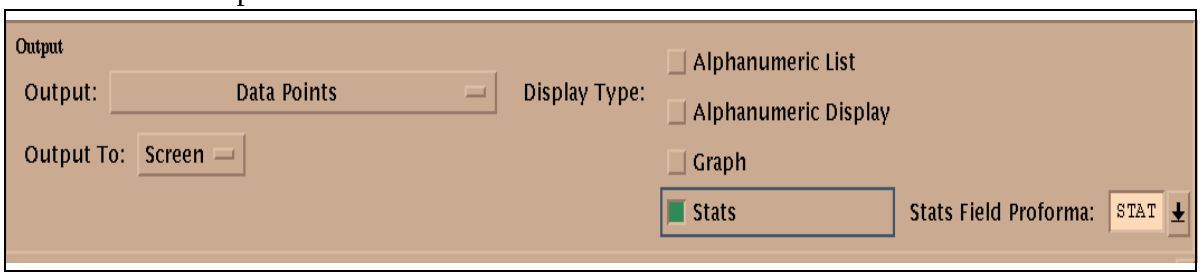


3. Enter the name of an existing Proforma containing numerical parameters in the *Save Case - TME - Proforma ID* field and set the Proforma Type accordingly.

4. Press the Load Proforma Button. The *Save Case - TME - Parameter List* will be updated with the Parameters defined in the Proforma. Note that at least one Parameter should display "numeric" as the Parameter type. This definitions will not be copied to the main Save Case Definer window unless you press the *Save Case - TME - OK* or *Save Case - TO - Commit* buttons.
5. Move the pointer to the *Save Case - TME - Data Filters (analogue)* form. Use the rectangular *Pane* in the bottom right of the form to display all the fields if necessary.
6. Set up the Numeric filter as indicated, then press the *Apply* Button. All the numerical Parameters in the list will be updated to display `"Statistics From Data Points"`. This means that SPEVAL generates statistics for the Parameters at retrieval time.



7. Press the *Save Case - TME - OK* Button. The Window will disappear, bringing you back to the Save Case Definer. Note that the Proforma Id and Proforma Type in the *Save Case - Simple Extraction Processing (SEP)* form now will be updated.
8. In the Save Case Definer Window, set up the *Save Case - Output* Form to only include statistics in the output.



9. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message
   `"Save Case submitted for retrieval"`
   If this is not the case, and the message displayed is " `No stats data is expected for Stats display since no parameters have stats filters` ", it indicates that none of the Parameters in the Proforma were of type numerical. In this case, you must select a new Proforma, starting from step 3.. For other error messages, see Appendix C on page 201.
10. SPEVAL will now retrieve the data. The time you have to wait depends on the amount of data which have been requested for retrieval. If the retrieval was successful, SPEVAL will display the retrieved data in the statistic windows and any other window you have specified.

Possible Errors and their Causes

Retrieval initialises but no display Windows come up.

The most plausible reason is that SPEVAL is still retrieving the data. If you don't see any messages after the " `Save Case submitted for retrieval` " message, this will be the case.

Retrieval fails.

If the message displays " `No data was found for this retrieval` " you should increase the retrieval time range, then save and submit the Save Case again. Otherwise, consult the Error Messages in Appendix C on page 201.

3.7 Using Multiple Time Windows

Functional Description

SPEVAL offers the possibility to specify a range of time windows used when retrieving the data. This options is especially useful for retrievals spanning a long time period (say a month), but only data for particular times are of interest.

This tutorial shows how to retrieve data for a one week time period. The data is retrieved between 22.00 and 23.00 on a daily basis.

Cautions and Warnings

None.

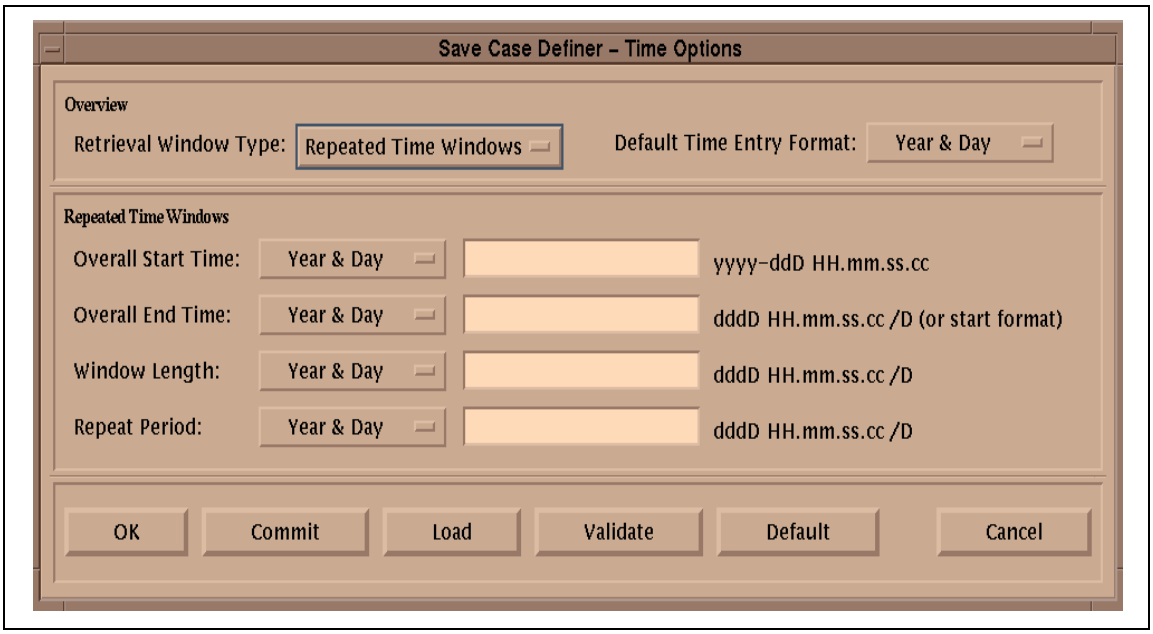
Procedures

Set Up

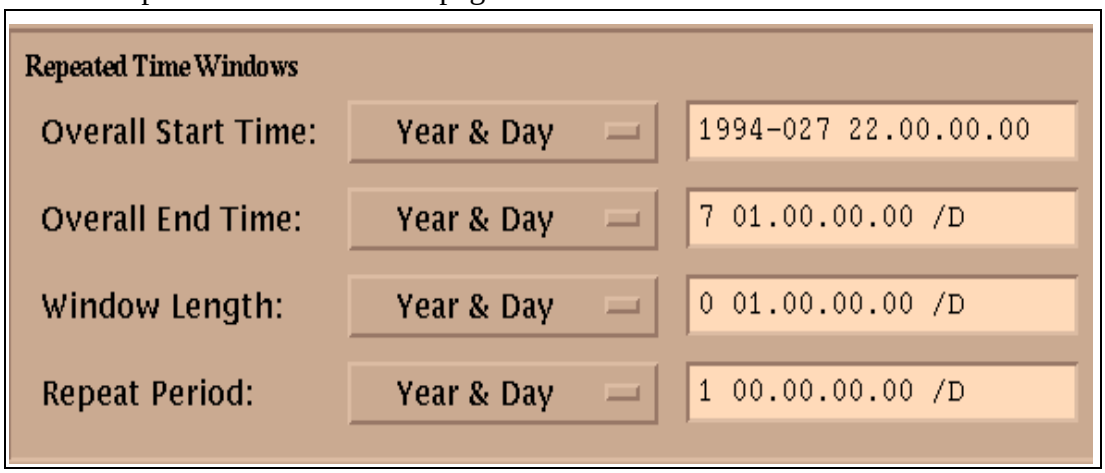
It is assumed that you have started SPEVAL and that the *Save Case Window* is displayed on your terminal. There must also have been defined at least one *Alphanumeric or Graphical Proforma* for your Spacecraft computer in the standard SPEVAL Proforma directories

Input Operations

1. Load an existing Save Case, e.g. “TUTORIAL_1”. (see 3.4 on page 13).
2. Press the *Save Case - Time Options Button* Button. The *Save Case - Time Options (TO) Window* will be displayed at the terminal screen, obscuring the Save Case Definer Window. The window will display one time window with the same time period as specified in the *Save Case - Simple Time* window.
3. Set the *Save Case - TO - Retrieval Window Type* to “Repeated Time Windows”. The window will change layout as shown below. For details about the fields and push-buttons see “Save Case - Time Options (TO) Window” on page 145.



4. Fill in the form as indicated below. This defines a retrieval starting on day 27, 22.00, ending at day 34, 23:00. The data will only be retrieved on a daily basis, between 22.00 and 23.00 for one week. I.e. the Window Length is 1 hour and the Repeat Period is 7 days. The "/D" qualifier means "Delta Time". For a detailed description of the SPEVAL time field syntax, see "Time Specification Fields" on page 52.



5. Press the *Validate* Button in the *Time Options Window*. The *SPEVAL Control* window should display the message
   `"Time validation completed - no errors found"`
   If this is not the case, the expected time syntax is incorrect. See Appendix C on page 201 for an alphabetical list of the error messages. After correcting the errors start from step 5. again.
6. Press the *OK* Button. The Time Options Window will disappear, and the Save Case will have been updated with the new time window specification. Note that the *Save Case - Simple Time* window now displays the text: `"Repeated time windows have been defined. See Time Options ...."`.
7. Define the name of the new Save Case by entering a name (e.g. "TUTORIAL_3") in the *Save Case - EDEF - Save Case ID* field.
8. Save the Save Case Definitions permanent to file by choosing the *Save Case - Save* Button. The *SPEVAL Control* Window will display a message something like
   `"Save Case saved to file - ERS2_TUTORIAL_3.SVC"`
   Note that you can submit an unsaved Save Case for retrieval.
9. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message
   `"Save Case submitted for retrieval"`
   If this is not the case, see the error messages reference in Appendix C on page 201.
10. SPEVAL will now retrieve the data. The time you have to wait depends on the amount of data which have been requested for retrieval. If the retrieval was successful, SPEVAL will display the retrieved data in the any of the windows which were specified.

Possible Errors and their Causes

Retrieval starts but no display Windows come up.

The most plausible reason is that SPEVAL is still retrieving the data. If you don't see any messages after the " `Save Case submitted for retrieval` " message, this will

be the case.

Retrieval fails.

If the message displays “ `No data was found for this retrieval` “ you should change the “Overall Start Time” time, (step 4.), then save and submit the Save Case again. For other messages, consult the Error Messages in Appendix C on page 201.

3.8 Out-of-Limits data

Functional Description

This section describes how to use the SPEVAL Out-of-Limits retrieval utility. SPEVAL displays OOL information for a specific time range in a standard *OOL (Out-of-Limits) Window* described in section 4.9.3 on page 171.

Cautions and Warnings

None.

Procedures

Set Up

It is assumed that you have started SPEVAL and that the *Save Case Window* is displayed on your terminal.

Input Operations

1. Load an existing Save Case, e.g. "TUTORIAL_1" (see 3.4 on page 13).
2. Set the *Save Case - Data - Data Type* to "Out Of Limits". The *Save Case - Simple Extraction Processing (SEP)* Form and the *Save Case - Output* Form will change layout, defaulting the OOL Display output.

3. Enter the *Start Time* and *End Time* for the retrieval. If SPEVAL fails to retrieve data for this time period, a failure message will be displayed and no Output Windows will be created.
4. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message `"Save Case submitted for retrieval"`

   For error messages, see Appendix C on page 201.
5. SPEVAL will now retrieve the data. The time you have to wait depends on the amount of data which have been requested for retrieval. If the retrieval was successful, SPEVAL will display the retrieved data in the OOL window.

Possible Errors and their Causes

Retrieval initialises but no display Windows come up.

The most plausible reason is that SPEVAL is still retrieving the data. If you don't see any messages after the " `Save Case submitted for retrieval` " message, this will be the case.

Retrieval fails.

If the message displays " `No data was found for this retrieval` " you should increase the retrieval time range (step 3.), then save and submit the Save Case again. Otherwise, consult the Error Messages in Appendix C on page 201.

3.9 Editing the Summary Save Case

Functional Description

This section describes how to update the (global) Summary Save Case. For the current SPEVAL release, there exist one Summary Save Case per spacecraft. The Summary Save Case defines the data to be regularly retrieved (currently once every day) into the Summary data area.
The Summary Save Case always have the name “SUMMARY”, and is stored in the public Save Case directory. The default TM Proforma used by the Save Case is called “SUMM” and is also stored in the public area.

If no SUMMARY Save Case has been defined in the public Save Case directory, the Tutorial shows how to define it and how to copy it to the public Save Case directory.

Cautions and Warnings

NOTE(1): If you have a Save Case named “SUMMARY” in the private Save Case directory, this definition will take precedence over the Save Case in the public area on load and save operations. Note however, that SPEVAL will never submit private “SUMMARY” Save Cases for retrieval. The same arguments yield for the “SUMM” Proforma file name.
NOTE (2): If you edit the Summary Save Case, it might interfere with other users, since there exist only one Summary Save Case per spacecraft.
NOTE(3): Always validate a SUMMARY Save Case before saving it and copying it to the public Save Case directory. Otherwise, SPEVAL will fail to submit the Save Case.

Procedures

Set Up

It is assumed that you have started SPEVAL and that the *Save Case Window* is displayed on your terminal.
Find out if a *public* SUMMARY Save Case has been defined by issuing the DCL command:

```
CSPEVL: DIR SPVL_PUBLIC_SAVE_CASES:*_SUMMARY.SVC
```

Find out if a *private* SUMMARY Save Case has been defined by issuing the DCL command:

```
CSPEVL: DIR SPVL_PRIVATE_SAVE_CASES:*_SUMMARY.SVC
```

Find out if a *public* SUMM Proforma has been defined by issuing the DCL command:

```
CSPEVL: DIR SPVL_PUBLIC_PROFORMAE:*_SUMM.PARAM
```

Find out if a *private* SUMM Proforma has been defined by issuing the DCL command:

```
CSPEVL: DIR SPVL_PRIVATE_PROFORMAE:*_SUMM.PARAM
```

If a SUMMARY Save Case exists both in the private and public area, you should rename the private version in order to avoid confusion. The same arguments yield for the SUMM Proforma.

Input Operations

When no public SUMM Proforma exists.

1. In this case, you must use the SPEVAL Proforma Editor to define and compile a SUMM Proforma. Use a Text Editor (e.g. LSE) to define a simple proforma. The example below defines a Summary Proforma for ERS-2 containing one Parameter which values are retrieved:

```
DEFINE PARAMETER_SET SUMM   "Summary " -
   /spacecraft=ERS_2
PARAMETER F102   -
   /mode_dependent /nocalibrated /commutation=SINGLE= 1
END
```

2. Save the Proforma definition to the file name: SUMM.PROFORMA
3. Issue the DCL command

   CSPEVL: **@PRJPROF:PROF_COMMANDS**

   This makes the "COMPILE" command available.
4. Compile the proforma and store it in the Public Proforma directory by typing:

   CSPEVL: **COMPILE SUMM.PROFORMA**

5. Copy the compiled proforma file to the public proforma directory by issuing:

   CSPEVL: **COPY ERS2_SUMM.PARAM -**
   _CSPEVL: **SPVL_PUBLIC_PROFORMAE:**

   The compiled proforma will now be accessed by the Public Summary Save Case.
6. Delete the local copy of the compiled proforma file by issuing:

   CSPEVL: **DELETE ERS2_SUMM.PARAM;***

   This deletes all versions of the compiled summary Proforma.

When no public Summary Save Case exist

1. In this Case, you must define a SUMMARY Save Case and copy it over to the public area. Set the *Save Case - EDEF - Save Case Nature* to "Summary" as indicated. Note that after the Save Case Nature has been set to Summary, the Save Case ID field will be set to "summary" and turns non-editable.

2. Edit the Save Case definitions as required.

3. Press the *Save Case - Validate* Button. If the validation fails, you should correct any errors and repeat the step. An invalid Summary Save Case should never be copied to the public area.
4. Save the Save Case definitions (in the private area) by pressing the *Save Case - Save* Button. A “DIR” on the SPVL_PRIVATE_SAVE_CASES directory should now display the private Save Case name.
5. From a DECTEM window, copy the private Save Case definition to the public area by typing:

   ```
   CSPEVL: COPY SPVL_PRIVATE_SAVE_CASES:ERS_SUMMARY.SVC -
   _CSPEVL: SPVL_PUBLIC_SAVE_CASES:
   ```

   This copies your private Save Case definition to the Public Save Case. This Save Case will now be used by Speval to retrieve the data on a regular basis.
6. Delete the private Save Case definition by entering:

   ```
   CSPEVL: DELETE SPVL_PRIVATE_SAVE_CASES:ERS_SUMMARY.SVC;
   ```

   This deletes ALL versions of the private summary Save Case.

When a Public Summary Save Case exist

1. In this case, you must rename any “Summary” Save Cases in the private area to another name. Enter e.g.:
   ```
   CSPEVL: RENAME SPVL_PRIVATE_SAVE_CASES:ERS_SUMMARY.SVC;* -
   _CSPEVL: SPVL_PRIVATE_SAVE_CASES:ERS_SUMMARY_OLD;*
   ```
2. Set the *Save Case - EDEF - Save Case Nature* to “Summary”. Note that after the Save Case Nature has been set to Summary, the Save Case ID field will be set to “summary” and turns non-editable.
3. Press the *Save Case - Load* Button. The public Summary Save Case will be loaded into the Save Case Definer. You can now inspect and edit the definitions, but you will not be allowed to submit the Save Case, since this is only done on a daily basis.
4. Press the *Save Case - Validate* Button. If the validation fails, you should correct any errors and repeat the step. An invalid Summary Save Case should never be copied to the public area.
5. Save the Save Case definitions (in the private area) by pressing the *Save Case - Save* Button.
6. From a DECTEM window, copy the private Save Case definition to the public area by typing:

   ```
   CSPEVL: COPY SPVL_PRIVATE_SAVE_CASES:ERS_SUMMARY.SVC -
   _CSPEVL: SPVL_PUBLIC_SAVE_CASES:
   ```

   This copies your private Save Case definition to the Public Save Case. This Save Case will now be used by Speval to retrieve the data on a regular basis.
7. Delete the private Save Case definition by entering:

```
CSPEVL: DELETE SPVL_PRIVATE_SAVE_CASES:ERS_SUMMARY.SVC;
```

This deletes ALL versions of the private summary Save Case.

8. A “DIR” on the SPVL_PRIVATE_SAVE_CASES directory should now NOT display any public Save Case names.

Possible Errors and their Causes

No public SUMMARY Save Case can be loaded even if “DIR” shows that there exists one.
The most plausible reason is that the Save Case Nature has not been set to summary. Otherwise, contact Software Support.

The SPEVAL Summary retrieval does not reflect the SUMM Proforma.
The most plausible reason is that the “SUMM” Proforma used by SPEVAL is different from the Proforma you have inspected. If any “SUMM” Proforma exists in the private Proforma directory, this Proforma will be displayed in the Save Case definer, but the Proforma used by Speval will be the public one. Rename all private “SUMM” Proforma files.

3.10 Producing User Data Set (UDS) Files

Functional Description

This section describes how to use the SPEVAL User Data Set (UDS) files. This utility allows you to save the data from retrievals into UDS file. Later on, you can retrieve the data from the UDS file for e.g. display or printing.

Cautions and Warnings

None.

Procedures

Set Up

It is assumed that you have started SPEVAL and that the *Save Case Window* is displayed on your terminal.

Input Operations

1. Load an existing Save Case, e.g. “TUTORIAL_1”. (see 3.4 on page 13).
2. Set the *Save Case - EDEF - Save Case Nature* to “User Data Set”. The *Save Case - Output* Form will change layout, prompting for a UDS file ID.

3. Enter the a string, e.g. “TUTORIAL_4” in the *Save Case - Output - User Data Set* field. The field specifies that the output from the retrieval should be a UDS file which have the filename “TUTORIAL_4.UDS”, directory “SPVL_USER_DATA_SET_DIR”.

4. Enter a new Save Case Name in the *Save Case - EDEF - Save Case ID* field, e.g. “TUTORIAL_4”. Then save the Save Case by pressing the *Save Case - Save* button.
5. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message `“Save Case submitted for retrieval”`

   For error messages, see Appendix C on page 201.
6. SPEVAL will now retrieve the data. The time you have to wait depends on the amount of data which have been requested for retrieval. If the retrieval was successful, SPEVAL will display a message similar to:

   ```
   User Data Set produced.File name: CLUV3$DKA100:[ME]TUTORIAL_4.UDS;0
   ```

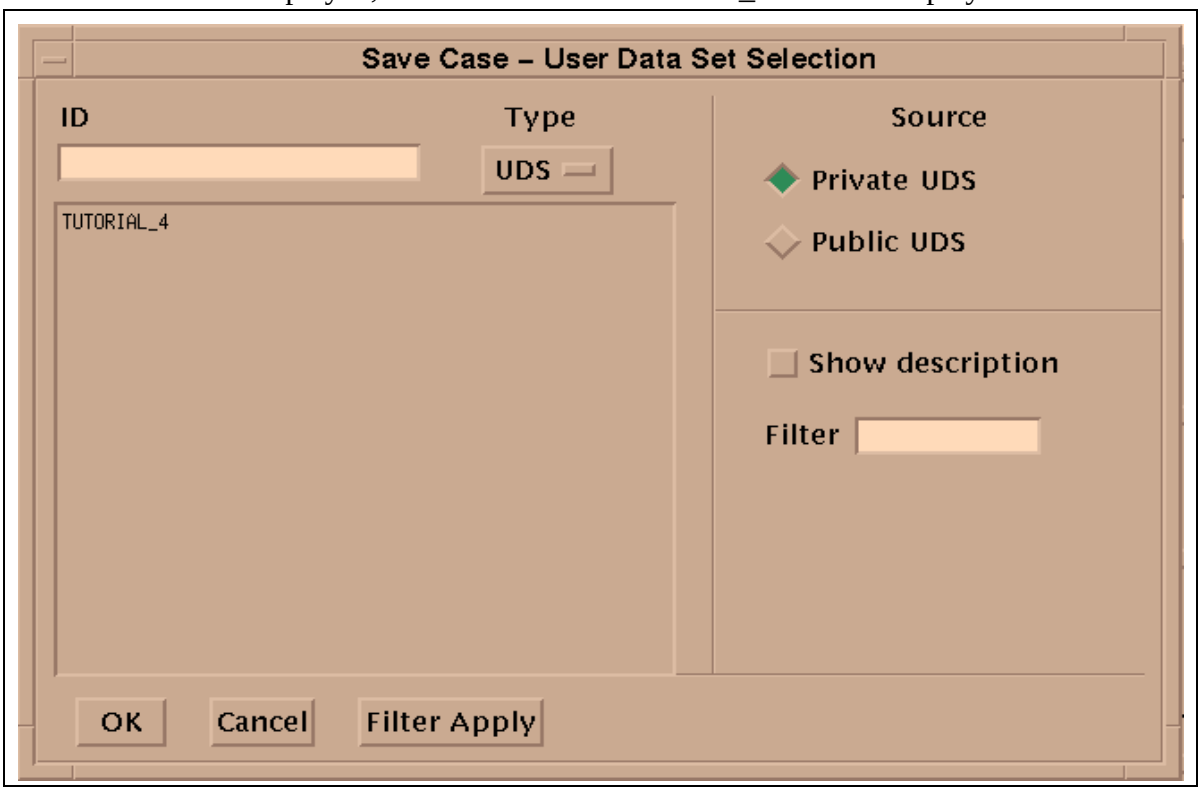
   The directory specifies the full path to the filename. The “;0” extension means that a new version of the UDS file has been created (i.e. no old versions have been overwritten). You have now permanently saved all the data from the retrieval in the UDS file. The next steps

will retrieve the data from the UDS files and display it in a Alphanumeric Display Window.

7. Re-load the original Save Case you used, (see step 1.) Note that in this case, the *Save Case - EDEF - Save Case Nature* should be “Display Output”, not “User Data Set”.

8. Set the *Save Case - Data - Data Source* to “User Data Set”. The *User Data Set ID* Text field will turn visible.

9. Press the Push Button to the right of the User Data Set ID text field. The Speval File Selection Box will be displayed, and the name “TUTORIAL_4” will be displayed in the list.



10. Double-click on the “TUTORIAL_4” item. The File Selection Box will disappear and the The *User Data Set ID* Text field displays the item you just selected.

11. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message `“Save Case submitted for retrieval”`

    For error messages, see Appendix C on page 201.

12. SPEVAL will now retrieve the data from the UDS file. The time you have to wait depends on the amount of data which have been requested for retrieval. If the retrieval was successful, SPEVAL will display the message `“Retrieved Data Loaded”` and the Output windows will display the data which were stored in the UDS file.

Possible Errors and their Causes

UDS Retrieval initialises but no display Windows come up.

The most plausible reason is that SPEVAL is still retrieving the data from the UDS file. If you don’t see any messages after the ” `Save Case submitted for retrieval` “

message, this will be the case.

Retrieval fails.

If the message displays " `No data was found for this retrieval` " you should increase the retrieval time range, then save and submit the Save Case again. Otherwise, consult the Error Messages in Appendix C on page 201.

3.11 Loading User Data Sets into PV-Wave

Functional Description

This section describes how to load SPEVAL generated User Data Set (UDS) files into interactive PV-Wave. It is assumed that you know how to produce User Data Sets. If not you should first perform the Tutorial “Producing User Data Set (UDS) Files” on page 30.

The Tutorial demonstrates how to use PV-Wave to “smooth” or “spike suppress” TM data by using the PV-WAVE SMOOTH function.

Cautions and Warnings

None.

Procedures

Set Up

It is assumed that you have produced a User Data Set file containing Telemetry Data. If you follow the steps described in Section 3.10, your output UDS file should contain TM data. Note the name of the UDS file which was produced.
You will also need to start a DECterm window. Do this by selecting the *Application > DECterm* item from the *Application* Menu in the *Session Manager.*

Input Operations

1. On the DECterm command line. type

   ```
   $ SET DEF SPVL_PRIVATE_USER_DATA_SETS:
   $ WAVE GRPH_USER
   ```

   The first line sets the current directory to your standard “Private” User Data Set directory, so that you do not need to enter the full file specification when loading a UDS file from PV-Wave. The second line starts up PV-Wave, displaying the standard PV-Wave prompt and compiling the SPEVAL PV-Wave procedures.
2. At the PV-Wave prompt, load the TM UDS file which you previously have produced. E.g. if the UDS file name is “TUTORIAL_4”, enter the following:

   ```
   WAVE > GRPH_LOAD_UDS, 'TUTORIAL_4.UDS'
   ```

   PV-Wave will now call SPEVAL procedures to load the contents of the UDS into internal PV-Wave variables. If the operation is successful, you should expect to see the following:

   ```
   Loading TUTORIAL_4.UDS
   % Compiled module: GRPH_READ_PTVS_DATA.
   WAVE >
   ```

   If not, consult “GRPH_LOAD_UDS” on page 185 for possible error messages and their cause.
3. Use the PRINT command to pick out a TM parameter of interest by issuing:

```
WAVE > PRINT, PARAMETER.NAME
```

PV-Wave prints out all the TM parameter names which existed in the UDS file.

4. Pick out the TM Parameter of interest, e.g. ‘C1234’ which data is to be spike suppressed. Then preprocess the data by issuing:

```
WAVE > GRPH_MATCH_DATA, SELECT='C1234',/MATCH,/AFTER
```

This command creates the NEW_DATA structure, containing only the C1234 data. The /MATCH qualifier specifies that all times before the first occurrence of the parameter should be neglected. A new time array, NEW_TIME is produced. The /AFTER qualifier specifies that the data should be extrapolated. I.e. for points in time where no data exists, the corresponding datum is filled with the previous existing datum.

5. Use PV-Wave to spike-suppress the data by issuing

```
WAVE > TMP = SMOOTH(NEW_DATA._C1234,5)
```

This constructs a new, smoothed data array TMP. The smoothing window is of size 5 elements.

6. Plot the smoothed data against time by issuing:

```
WAVE > PLOT, NEW_TIME, TMP, XTYPE=2
```

PV-Wave will now plot the smoothed data against the matching time array. Note that we must use the NEW_TIME array since the /MATCH qualifier was specified.

Exit the PV-Wave by typing

```
WAVE > EXIT
```

Possible Errors and their Causes

Wave fails to call GRPH_LOAD_UDS and GRPH_LOAD_DATA.

You are probably starting PV-Wave from a user account which has not been registered by SPEVAL. I.e. the SPEVAL procedures are unknown to PV-Wave. Contact Software Support to register as a SPEVAL user.

3.12 Using Graphics output with PV-Wave

Functional Description

This section describes how to use the SPEVAL interface with PV-Wave. SPEVAL allows you to dump all the data in a Graphical Window in a PV-Wave readable format. You can later use the powerful PV-Wave command language to analyse the data, generating new data and re-plot the data in new configurations.

The tutorial will show a simple PV-Wave application. Two numerical Telemetry Parameters will be extracted from the Long Term Archive (LTA) and plotted in the Graphical Window . The Parameters (and time) will be dumped, and we will use PV-Wave to construct a new graph given as

$$y(t) = P1(t)^2 + P2(t)^2$$

where *P1* and *P2* are the original Telemetry values (as a function of time) and *y* is the resulting dependent variable. Since we cannot assume that both parameters contain data for all the unique times, we will use the SPEVAL function GRPH_MATCH_DATA to match the two data arrays to the unique times as follow:

- Find the first time for which both P1 and P2 have at least had one valid data point.
- For all subsequent times, extrapolate from the last valid data points in order to obtain data points for all the remaining unique times.

Cautions and Warnings

None.

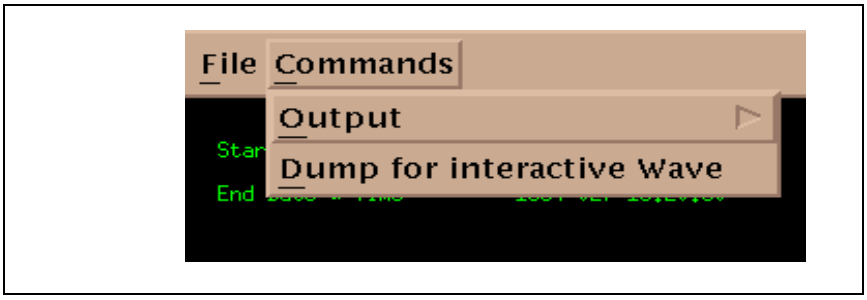
Procedures

Set Up

It is assumed that you have started SPEVAL and that the *Save Case Window* is displayed on your terminal. There must also have been defined at least one *Graphical Proforma* for your Spacecraft computer in the standard SPEVAL Proforma directories. Moreover, the Proforma used MUST contain a reference to at least two numerical Parameters.

Input Operations

1. Load the existing Save Case, e.g. “TUTORIAL_1”. (see 3.4 on page 13).
2. Submit the Save Case for retrieval by pressing the *Save Case - Submit* Button. The *SPEVAL Control* Window should display the message
   `“Save Case submitted for retrieval”`
   SPEVAL will now retrieve the data. The time you have to wait depends on the amount of data which have been requested for retrieval. If the retrieval was successful, SPEVAL will display the retrieved data in the Graphics windows and any other window you have specified.
3. Choose the *Commands | Dump for Interactive Wave* Push Button in the top left of the *Graphical Window* as shown in the figure below. The *SPEVAL Control* Window will display a message, confirming that the data has been numbed to a specific file (here called SPVL_OUTPUT_DIR:SPVL_H0_01_GRPH.DUMP



4. Bring up a DECTERM Window (via the Session Manager).
5. On the command line, type (not including the prompt)

   ```
   CSPEVL $ WAVE GRPH_USER
   ```

   Pv-Wave will now start up and you get the PV-Wave prompt (normally “WAVE> ”).
6. Type

   ```
   WAVE> restore,filename='spvl_output_dir:spvl_h0_01_grph.dump'
   ```

   This will load the PV-Wave variables which have been generated with the *Commands* | *Dump for Interactive* option.
7. Type

   ```
   WAVE> INFO
   ```

   PV-Wave will display all the SPEVAL generated user variables (arrays and scalars) as follows (see Appendix B on page 197)

   TIME - contains all the discrete times in the plot.
   DISPLAY - Contains the display information for the dumped plot.
   PARAMETER - Contains all the Parameter names, type, etc. for the dumped plot.
   DATA - Contains the actual values for the current plot.
   TIMES - Contains indexes into the TIME array.
   GRAPH - Contains the Graph plotting information.
   TEXT_TABLE - Contains all the text tables (used by Status Parameters).
8. Get a list of all the Parameters in the plot and their types by typing

   ```
   WAVE > PRINT,PARAMETER.NAME,PARAMETER.DATATYPE
   ```

   You can also get a detailed description of all the PARAMETER structure members by typing e.g.

   ```
   WAVE > INFO,PARAMETER(0), /STRUCT
   ```

   This shows all the structure fields for the first parameter in the list.
9. Pick out two of the REAL Parameters (here arbitrary called “P1” and “P2”). Then match the data arrays by the following command:

```
WAVE > GRPH_MATCH_DATA,/MATCH,SELECT=['P1','P2'],/AFTER
```

10. Define the function y as follows (note the underline character "_" in front of the parameter):

```
WAVE > Y = NEW_DATA._P1^2 + NEW_DATA._P2^2
```

11. Plot the function *y* against time by entering the following:

```
WAVE > PLOT,NEW_TIME,Y, XTYPE=2
```

PV-Wave will plot the function y against time and display it in a simple graphical Window.

Possible Errors and their Causes

Retrieval initialises but no display Windows come up.

The most plausible reason is that SPEVAL is still retrieving the data. If you don't see any messages after the " `Save Case submitted for retrieval` " message, this will be the case.

Retrieval fails.

If the message displays " `No data was found for this retrieval` " you should increase the retrieval time range, then save and submit the Save Case again. Otherwise, consult the Error Messages in Appendix C on page 201.

Interactive PV Wave does not display graph of y.

Check that the PV-Wave Graphics Window is not obscured by other windows (this Window does not always pop up to the front of the Workstation screen).

4 Reference

4.1 Proforma Editor

Description

The SPEVAL Proforma Editor allows you to define Proforma defining the Parameters to be retrieved, their display characteristics and layout. By using a normal Text Editor utility (e.g LSE), you enter the Proforma definitions which are compiled using the SPEVAL Proforma Compiler.

Proforma Types

The Proforma Editor defines the following types of Proforma:

- Alphanumeric Proforma. These Proforma defines the layout for TM Parameters in Alphanumeric Display and Alphanumeric List Windows. The binary file extension is ".ALPHA".
- Graphics Proforma. These Proforma defines the layout for TM Parameters in Graphical Windows as well as in Alphanumeric Display and Alphanumeric List Windows. The binary file extension is "GRAPH".
- Parameter Proforma. These Proforma may not be used to display any data. They are only used in order to define the Parameters which are retrieved. You would define a Parameter Proforma if the output from the retrieval was the Summary or a UDS (User Data Set) file. The binary file extension is "PARAM".
- Field Proforma. This Proforma defines the column layout in the *Statistics Window* , the *OOL (Out-of-Limits) Window* and the *Totals Window* . The binary file extension is "FIELD".

Proforma directories

SPEVAL searches 3 different directories in order to find the binary Proforma definitions which are specified in a Save Case definitions (in the following order):

- SPVL_SCOS_PROFORMAE. This directory contains all the Proforma as imported from SCOS. The Proforma are automatically imported by SPEVAL.
- SPVL_PRIVATE_PROFORMA. This directory contains the user defined Proforma binaries. The Proforma defined here cannot be accessed by other Users. Note that this directory takes precedence of the Public Proforma directory.
- SPVL_PUBLIC_PROFORMA. This directory contains Proforma which are shared by several users. An example of Proforma which are stored in this directories are the standard Field Proforma.

SPEVAL Proforma Commands

The Proforma Editor consists of three DCL commands. These are made available to your process by executing

```
@PRJPROF:PROF_COMMANDS
```

The commands are

- The **COMPILE** command compiles a file containing a text definition of a proforma into a binary form usable by SPEVAL software.
- The **EXTRACT** command converts a binary proforma definition into a readable text file, which can also be compiled again. This allows an existing proforma to be modified even if

the original source description no longer exists -- it is also useful if a new proforma is to be based on one imported from SCOS.

- The **TRANSLATE** command is reserved for use by SPEVAL software. It translates Proforma held in SCOS derived database format into text format suitable for processing by the COMPILE command.

Cautions and Warnings

If you create a save case containing a proforma, and then update the proforma and re-compile it, the new definition will NOT be imported automatically into the save case. To use the updated version of the proforma, you must reload it into the save case (e.g. as described in section 4.7.14.11 on page 143.)

Syntax

For the Proforma Text File syntax, see section 4.1.1 on page 41.

Examples

Not Applicable.

Possible Errors

See the relevant sub-sections.

Cross Reference

Item
4.1.1 COMPILE page 41
4.1.3 EXTRACT page 51
4.1.2 Field Proformae page 50

4.1.1 COMPILE

Description

This command converts a proforma source file into a binary proforma. The source file can be created using a text editor; the syntax is described below.

Syntax: **COMPILE filename [/DATABASE_TIME = <date-time>]**

filename

File name of source proforma file. By convention, proforma source files have an extension of ”**.proforma”** and a file name which corresponds to the proforma name. It is possible to define more than one proforma in a single source file, but they must all be for the same spacecraft.

/DATABASE_TIME

This qualifier allows you to specify the database to use for the Proforma compilation. The default is “NOW” which uses the latest existing database for the compilation.

The result of compilation is one binary file for **each** proforma defined in the source file. The output file name has the form

sc_id.type

where

sc

identifies the spacecraft (e.g. ERS2, CLU4, ISO_)

id

is the 1-4 character proforma identifier

type

is one of ALPHA, GRAPH, PARAM, FIELD for alphanumeric, graphic, parameter, set, and field proformae respectively.

Remember that the output filename(s) incorporate the **proforma** id(s), regardless of the name of the input file.

Cautions and Warnings

Not applicable.

Syntax

Proforma Source Format

A proforma definition consists of a DEFINE statement, followed by one or more PARAMETER statements, optionally one or more GRAPH statements for graphic proformae only, and finally an END statement.

```
DEFINE proforma-type proforma-id "title" /SPACECRAFT=sc-id
[/MODE_DEPENDENT] [/GRAPHS=n] [/DEFAULT_COLOUR=colour] [/SCOS]
```

proforma-type

is one of the keywords ALPHANUMERIC_PROFORMA,

GRAPHIC_PROFORMA, PARAMETER_SET, FIELD_PROFORMA. Alphanumeric and graphic proformae specify a set of parameters and details of how they should be displayed to the user. Parameter sets only specify a set of parameters, and can be used to retrieve data into user data sets, but not directly to display. Field proformae are special proformae which specify the layout of statistics, out-of-limits, and totals displays. The parameters applicable to field proformae are described in section 4.1.2 on page 50.

proforma-id

is an identifier of up to 4 characters. Any of the characters A-Z, 0-9, $, _ (underscore), - (hyphen) may be used.

title

is the display title, containing up to 32 characters. It should be enclosed in double quotes (").

/SPACECRAFT=sc-id

specifies the spacecraft for which the proforma applies. Valid options are ISO, ERS_2, ERS_1, KIRUNA_2, KIRUNA_1, CLUSTER_1, CLUSTER_2, CLUSTER_3, CLUSTER_4, SCS.

/[NO]MODE_DEPENDENT

specifies default mode-dependency for parameters which are supplied without an explicit mode-dependency qualifier. The default is /MODE_DEPENDENT. Note that if this option is specified, SPEVAL will be defaulted not to retrieve ID (Invalid Data) for the specified Parameters.

/GRAPHS=n

(only applicable to graphic proformae) specifies the number of graphs on an graphic display, in the range 1-4.

/DEFAULT_COLOUR=colour

(only applicable to graphic proformae) the default colour to be used for parameter plots and graph axes, if no colour is explicitly given. The default is WHITE.

/SCOS

This qualifier is reserved for use by SPEVAL software. It indicates that a proforma has been imported from a SCOS spacecraft database.

```
PARAMETER param-id [/[NO]CALIBRATED]
[/COMMUTATION=commutation_option] [/[NO]MODE_DEPENDENT]
[/[NO]ALPHANUMERIC]  [/DISPLAY_FIELD=n] [/LIST-FIELD=n]
[/FORMAT=format] [/BACKGROUND=colour] [/FOREGROUND=colour]
[/GRAPH=graph_number] [/ON_X_AXIS] [/COLOUR=colour]
[/LINE=line_style] [/SYMBOL=symbol] [/SCALING=scaling]
[/SHOW_LIMITS] [/STEPPED_PLOT] [/NUMERIC_LABELS]
```

param-id

the parameter id as held in the spacecraft database.

General qualifiers: applicable to alphanumeric and graphic proformae and to parameter sets.

/[NO]CALIBRATED

specifies that the parameter is to be calibrated. This is the default; to prevent cali-

bration, specify /NOCALIBRATED. This parameter is ignored for parameters which cannot be calibrated. For status parameters, use the FORMAT qualifier to determine whether status strings or numeric values are displayed.

/COMMUTATION={ALL | SINGLE=number}

By default, all commutations of all commutated parameters are retrieved. **Note:** unlike SCOS proformae, it is not possible to specify that different commutations of one parameter are displayed in different positions. If more than one commutation of a parameter is specified in a proforma definition, all occurrences are changed by the proforma compiler to retrieve ALL commutations. This qualifier is only relevant for retrievals from the long-term archive: commutated values are not identified as such in user data sets or in the summary.

/[NO]MODE_DEPENDENT

specifies that the parameter should, or should not, be mode-dependent, i.e. if the parameter has a validity parameter, it will only be retrieved when the value of the validity parameter is True. If no validity parameter is available, the qualifier is ignored and the parameter data is retrieved. If neither /MODE_DEPENDENT nor /NOMODE_DEPENDENT is specified, the default is determined by the value given in the DEFINE command. Note that if MODE_DEPENDENT is specified, SPEVAL will be defaulted not to retrieve ID (Invalid Data) for the specified Parameters.

Alphanumeric qualifiers: applicable to alphanumeric and graphic proformae.

/[NO]ALPHANUMERIC

specifies whether a parameter should or should not appear in the alphanumeric display and alphanumeric list. The default is /ALPHANUMERIC for alphanumeric and graphic proformae. The main use of /NOALPHANUMERIC is in graphic proformae, if a single parameter is to be plotted more than once (e.g. as an X and a Y parameter), to prevent it from appearing more than once in the alphanumeric windows.

/DISPLAY_FIELD=n

the field position in the alphanumeric display at which the parameter should be shown. Fields are numbered 1-32 from top to bottom in the left-hand column, and 33-64 from top to bottom in the right-hand column (like SCOS 64-parameter ANDs.) If this position is not specified, the parameter is placed in the next field after the previous parameter. If it is not specified for any parameter, they are placed in consecutive fields starting from field 1 (top left.)

/LIST_FIELD=n

the column position in the alphanumeric list to display the parameter. Columns are numbered 1-64 from left to right. If the column is not specified, the parameter is placed in the next field after the previous parameter. If it is not specified for any parameter, they are placed in consecutive columns starting from column 1 (leftmost column.)

/FORMAT={DECIMAL | HEXADECIMAL | OCTAL | BINARY | STRING | FIXED:n | ENGINEERING | SHORTEST | DEFAULT}

Alphanumeric display format for the parameter. **FIXED:n** specifies fixed-point format with n decimal places (default is 2). **SHORTEST** displays the data either in fixed or exponential (engineering) format, whichever allows more precision. Specify **STRING** (or **DEFAULT**) to display status parameter data as status strings. The default format, if **DEFAULT** or no format is specified, depends on the parameter type as defined in the spacecraft database at the time the proforma is compiled.

/BACKGROUND=colour

Not supported for this release.

/FOREGROUND=colour

Not supported for this release.

Graphic qualifiers: applicable to graphic proformae only.

/GRAPH=graph_number

specifies the graph on which the parameter is to be plotted. This must be at least 1, and no higher than the number of graphs given in the preceding DEFINE statement. This qualifier must be provided in order to plot a parameter; if it is not present, the parameter will only appear in the alphanumeric windows. If a parameter is to appear on more than one graph, with other attributes the same, specify e.g. /GRAPH=(1,4).

/[NO]ON_X_AXIS

identifies the independent parameter for a parameter-vs- parameter plot. This may only be used for one parameter per graph, but each graph in a graphic display may have a different x-axis parameter. Parameter-vs-parameter graphs may be mixed with parameter-vs-time graphs on a single graphic display. The default is /NOON_X_AXIS.

/COLOUR=colour

specifies the colour to plot a parameter. Valid colours are WHITE, YELLOW, MAGENTA, CYAN, BLUE, GREEN, RED (but not black since the background is black!). If no colour is specified, the default provided in the DEFINE statement is used; if this was also not specified, the default colour is WHITE.

/LINE=style

defines the line style used to connect data points. Valid options are NONE, SOLID, LONG_DASHES, DASHED, DOTTED, DOT_DASH. The default is SOLID.

/SCALING= {AUTOMATIC | (MINIMUM=n, MAXIMUM=n)}

define axis scaling policy. If AUTOMATIC (the default) is specified, an axis scale is chosen which includes all the data points. I explicit minimum and maximum values are given, this scale is used even if some data points are off the axis and therefore not displayed.

/[NO]SHOW_LIMITS

plots the hard and soft limits for the parameter, if they are defined and fit within the range plotted. Limits are plotted in the same colour as the parameter data, with fixed line styles of DOTTED for soft limits and DASHED for hard limits. **Note** (i) automatic scaling is based only on the parameter values, so if a parameter is within limits, the limits will normally not be visible on the graph; (ii) for this release, only fixed limits will be plotted. Limits based on relational parameters are not yet supported by SPEVAL. The default is /NOSHOW_LIMITS

/SYMBOL=symbol

(positional) defines the symbol used to mark each parameter data point. Valid symbol names are PLUS, ASTERISK, DOT, DIAMOND, TRIANGLE, SQUARE, X.. The default is no symbol.

/[NO]NUMERIC_LABELS

for status parameters, displays the y-axis labels as numerical values (max range is 0-255) rather than the actual status string values. The default is /NONUMERIC_LABELS

/[NO]STEPPED_PLOT

Not supported for this release.

```
GRAPH graph_number [/COLOUR=colour]
[/LINES=n] [/TICKS=n] [/[NO]STACK_PARAMETERS]
[/[NO]MERGE_Y_AXES][/X_AXIS_TIME_WIDTH=n]
[/TEN_CM_TIME_WIDTH]
```

GRAPH graph_number

Identifies the Graph for which the definitions should yield. graph_number is in the range 1-4, but must not exceed the number specified in the Proforma GRAPHS qualifier.

/COLOUR=colour

specifies the colour to plot the graph axes. Valid colours are WHITE, YELLOW, MAGENTA, CYAN, BLUE, GREEN, RED, BLACK. The default is WHITE.

/LINES=(x=n,y=m)

specificies the number of gridlines for the x and y axis.

/TICKS=(x=n,y=m)

specifies the number of ticks on the x and y axis.

/[NO]STACK_PARAMETERS

specifies whether the parameter in the graph should have their y-axis stacked on top of each other or not. If /NOSTACK_PARAMETERS, the y-axis are displayed left-to right. If /STACK_PARAMETERS, each y-axis is displayed above the previous one. The default is /NOSTACK_PARAMETERS. STACK_PARAMETERS and MERGE_Y_AXES are mutually exclusive.

/[NO]MERGE_Y_AXES

specifies whether the parameters in the graph should have one single merged x-axis or not. If /MERGE_Y_AXES, the graph contains one y-axis without any axis labels. The actual plot-range for each parameter will be displayed in the graph header. If /NOMERGE_Y_AXES, each parameter has a separate y-axis.

The default is /NOMERGE_Y_AXES. STACK_PARAMETERS and MERGE_Y_AXES are mutual exclusive.

/X_AXIS_TIME_WIDTH

Not supported for this release.

/TEN_CM_TIME_WIDTH

Not supported for this release.

Examples

Graphics Proforma

```
DEFINE GRAPHIC_PROFORMA BATT "Battery Temperatures" -
 /spacecraft=ISO /graphs=2 /default_colour=green
PARAMETER P241 /colour=cyan  /graph=1  /scaling=(min=-20,max=20)
PARAMETER P244 /colour=red   /graph=2  /scaling=(min=-20.8,max=-20.2)
PARAMETER P245 /colour=blue  /graph=2  /scaling=automatic
END
```

This defines a graphic display, id BATT, with two axes, drawn in green, with 3 parameters. The first parameter, P241, is drawn on the first axis with a scale from -20 to 20; the other two are drawn on the second axis in red and blue, scaled from -20.8 to -20.2 and automatically respectively. All are plotted with solid lines and no symbols, by default.

Alphanumeric Proforma

```
DEFINE ALPHANUMERIC_PROFORMA 6000 “TC ANSWER" -
 /spacecraft=ERS_2
```

```
PARAMETER G500   -
/background=BLACK /foreground=CYAN /list_field=1 /display_field=1
/format=STRING /mode_dependent /nocalibrated /commutation=SINGLE=1
PARAMETER G501   -
/background=BLACK /foreground=CYAN /list_field=2 /display_field=2
/format=STRING /mode_dependent /nocalibrated /commutation=SINGLE=1
END
```

This defines a graphic display, id 6000, with two parameters. Parameter G500 is displayed in row 1 on the Alphanumeric Display and Column 1 on the Alphanumeric List. Parameter G501 is displayed in row 2on the Alphanumeric Display and Column 2 on the Alphanumeric List. Both Parameters are displayed as raw (uncalibrated) values. For both Parameters, only the first commutation in the SCOS Packet will be displayed.

Parameter Proforma

```
DEFINE PARAMETER_SET              SUMM  “Summary                “ -
  /spacecraft=ERS_2
PARAMETER F102  -
  /mode_dependent     /nocalibrated      /commutation=SINGLE=  1
PARAMETER A100P  -
  /mode_dependent     /nocalibrated      /commutation=SINGLE=  1
END
```

This defines a retrieval proforma , id SUMM, with two parameters which are retrieved (but not displayed at retrieval time) .

Field Proforma

```
DEFINE FIELD_PROFORMA OOLS   “Partial OOL Display “ -
   /spacecraft=ERS_2
PARAMETER P_NAME -
     /background=WHITE          /foreground=BLACK          /list_field=  1
/display_field= 1   /format=STRING
PARAMETER CUR_V  -
     /background=WHITE          /foreground=BLACK          /list_field=  2
/display_field= 2   /format=FIXED: 2
PARAMETER COR_V  -
     /background=WHITE          /foreground=BLACK          /list_field=  4
/display_field= 4   /format=FIXED: 2
END
```

This defines a OOL (out-of-limits) field Proforma, containing only a sub-set of the possible OOL fields to display, namely the Parametere Name (P_NAME), the Current Value (CUR_V) and the correct value (COR_V).

Possible Errors

If the Proforma compilation fails, messages will be written to the standard output. The following table identifies the message ID and the corresponding meaning.

Error Message	Meaning
PROF-W-TRUNCATED	An input string was too long and has been truncated. Shorten the string if the truncation is not acceptable.

Error Message	Meaning
PROF-W-ATOSCALE	Minimum and maximum values must be different for fixed scales. Automatic scaling has been selected. Specify different values, or automatic scaling.
PROF-W-ONE_OR_ALL	All occurrences of a parameter in a proforma must specify either the same single commutation, or ALL commutations. It is not possible to retrieve two different commutations, or to display a single commutation in one field and all commutations in another. All commutations will be displayed at each position specified for this parameter.Correct proforma specification in line with restriction
PROF-E-CANTMODSCOS	SCOS proforma definitions may not be updated or superseded on SPEVAL. Use a new name to save the updated proforma.
PROF-E-WRITEFAIL	An error occurred trying to write a proforma binary file. A secondary message should explain the problem; if it does not, consult software support.
PROF-E-CANTOPENOUT	An error occurred trying to open an output file. A secondary message should explain the problem; if it does not, consult software support.
PROF-F-NOTPROFORMA	An input file does not contain a valid proforma. Check that the correct file is specified.
PROF-F-CLIERR	The program has probably been invoked using RUN rather than as a proper DCL command. Use SET COMMAND PRJPROF:PROF_COMMANDS to define the correct DCL commands.
PROF-F-NOSPACECRAFT	No spacecraft id was given on the DCL command line. Specify a valid spacecraft code on the command line
PROF-F-BADTYPE	No valid proforma type was specified.Specify a valid proforma type on the command line.
PROF-F-NOLUN	Program tried to use too many Fortran logical units at once. Notify software support.
PROF-F-NODATABASE	The spacecraft derived database was not accessible. Contact software support.
PROF-F-NOSUCHPARAM	A non-existent parameter is referenced in a proforma definition. Check parameter name and spelling and recompile.
PROF-F-NOSUCHSC	An unsupported spacecraft name was used. The proforma cannot be compiled. Correct the name and recompile
PROF-F-DEFINEFIRST	A DEFINE proforma command must be used before a GRAPH or PARAMETER command. Correct the input and recompile.
PROF-F-GRAPHNUM	The given graph number is greater than the number of graphs specified in the DEFINE command. Correct the input and recompile.
PROF-F-TOOMANYPARAMS	Too many parameters were defined for the type of proforma. Reduce the number and recompile.
PROF-F-WRNGPROFTYPE	The wrong proforma type was specified for the given parameter type. Define graphic parameters in graphic proformae, and alphanumeric parameters in alphanumeric or graphic proformae.
PROF-F-ONEXAXIS	Only one x-axis parameter may be specified per graph Reduce the number and recompile.

Error Message	Meaning
PROF-F-INVNUM	An invalid numeric value was specified Correct the number and recompile.
PROF-F-MAXGRAPH	Too many graphs were requested. Correct the number and recompile.
PROF-F-FATALERR	A fatal error was detected. The proforma compilation cannot continue. Panic.
PROF-F-INVCOMMAND	An input command line is invalid Correct the input and recompile
PROF-F-CANTOPENFILE	The proforma compiler could not open the input file Supply the correct file name. Note that the directory defaults to SPVL_PROFORMA_DIR: if not specified.
PROF-F-GETFILENAME	The proforma compiler could not get the name of the file to compile. Software Support
PROF-F-BADFIELDNUM	Alphanumeric list and display field numbers must be in the range 0 - 64. This message may result from a parameter automatically being given the next field number after the previous one, if no number is explicitly given. Correct and recompile.
PROF-F-FIELDINUSE	Only one parameter can be displayed in a given field, and a previous parameter in the same proforma has already used this field number. This message may result from a parameter automatically being given the next field number after the previous one, if no number is explicitly given. Correct and recompile.
PROF-F-CANTCALIB	Only numeric parameters which have a calibration curve can be calibrated. This parameter cannot be calibrated. Specify /NOCALIBRATED or omit the qualifier altogether.
PROF-F-BADFORMAT	A display format was specified which is incompatible with the parameter's underlying type. Note that a numeric parameter which can be calibrated is considered integer when raw and real when calibrated.Specify a valid format, or don't specify a format and allow a default format to be supplied.

Cross Reference

Item
4.6.1 SPEVAL Control - File page 66

4.1.2 Field Proformae

Description

The layouts of the special displays for OOL, statistics, and totals are defined exactly as for alphanumeric lists, using fixed "pseudo-parameter" names to identify the different fields. While defaults are provided by the system, each user can create his own private layouts to restrict or change the order of the columns.

The possible field types are described in the following sections:

- Statistics Display “pseudo parameters” are listed in section 4.9.2 on page 168.
- OOL Display “pseudo parameters” are listed in section 4.9.3 on page 171.
- Totals Display “pseudo parameters” are listed in section 4.9.4 on page 174.

Cautions and Warnings

Not applicable.

Syntax

Not Applicable.

Examples

This example shows a definition for a statistics display for ERS-2 which shows only the minimum, maximum, and average:

```
DEFINE FIELD_PROFORMA ST_1  "AC's Statistics Display"  /spacecraft=ers_2
PARAMETER   P_NAME
PARAMETER   MAX_V
PARAMETER   MIN_V
PARAMETER   AVGE
END
```

Since the qualifier /LIST_POSITION is not given for any column (pseudo-parameter), they will appear in the first four columns in the order specified.

Possible Errors

For error messages, see the COMPILE section.

Cross Reference

Item
4.1.1 COMPILE page 41
4.9.2 Statistics Window page 168
4.9.3 OOL (Out-of-Limits) Window page 171
4.9.4 Totals Window page 174

4.1.3 EXTRACT

Description

This command converts a binary proforma into a text proforma. The source file can then be edited using a text editor.

Cautions and Warnings

None.

Syntax

```
$ EXTRACT proforma-filename [/OUTPUT=file]
```

Note that the default location for the proforma file is SPVL_PROFORMAE, which by default searches SCOS proformae, the user's private proformae (by default in his login directory), and SPEVAL public proformae, in that order.

If /OUTPUT is not specified, the output file is proforma-id.PROFORMA in the current default directory.

Examples

Not Applicable.

Possible Errors

If the Proforma extraction fails, messages will be written to the standard output. The following table identifies the message ID and the corresponding meaning.

Error Message	Meaning
PROF-E-EXTRACTFAIL	A proforma file appeared to be valid but caused errors during processing. Consult software support
PROF-E-WRITEFAIL	An error occurred trying to write a proforma binary file. A secondary message should explain the problem; if not, consult software support.
PROF-E-READFAIL	An error occurred trying to read a proforma binary file. A secondary message should explain the problem; if not, consult software support.

Cross Reference

Item
4.1.1 COMPILE page 41

4.2 Time Specification Fields

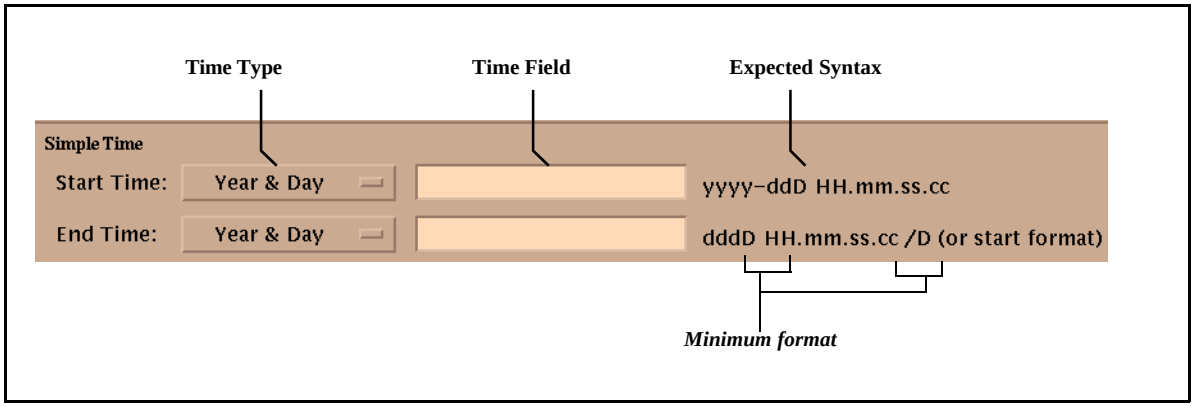


Figure 3Time Specification field example (2 fields)

Description

This section describes the standard SPEVAL time specification syntax. In several SPEVAL windows (e.g. the *Save Case Definer*), there are Text Fields which must be filled with a valid time specification. SPEVAL defines the following types of time formats:

- *Calendar.* This format is reserved for future releases.
- *Year & Day.* Currently the only allowed format. The format can be specified as *Year & Day Absolute* (an absolute date) or *Year & Day Delta* (Delta time).
- *Mod. Jul Day.* This format is reserved for future releases.
- *Orbit & Offset*. This format is reserved for future releases.

Each Time Format has its own syntax, usually indicated by the “Expected Syntax” Label to the right of the Time field. See the Syntax section for the explanation of the labels.

Cautions and Warnings

None.

Syntax

The SPEVAL Time Syntax (usually displayed to the right of each Time Input Field) is specified as follows:

- Each alphabetical letter (A- Z, a-z) designates a placeholder for alphanumeric characters. The letters form logical groups. E.g. “yy” translates to a two-letter specification for “Year”. Note that this is not the case if the letter is preceded by the character “/” as described below. All other characters should be specified “as is”.
- Letters preceded by a “/” are mandatory and should be written as specified including the “/” character. E.g. if the format specifies “/D’, you must write “/D” in the text field.
- Each group of *Uppercase* letters signals the minimum allowed format for specifying the current time format. E.g. if the format specifies “yyyy-ddD HH.mm.ss.cc”, the minimum time format allowed will be a 4 letter word (including the blank), such as “1 24” (day 1, hour 24). The rest of the fields will be filled with default values.
- *Lowercase* letters signal an expansion of the minimum allowed format. The minimum allowed format can be extended either way (left or right). E.g. if you want to specify the

minutes for the minimum format “D HH”, you may specify “1 23 1”. (day 1, hour 23, minute 1).

Table 1: gives the SPEVAL time syntax formats. Table 2: shows the special character placeholders.

Table 1: SPEVAL Time Formats

Time syntax	Expanded
Year & Day Absolute	yyy-ddD HH.mm.ss.cc
Year & Day Delta	dddD HH.mm.ss.cc /D

Table 2: Time Format Placeholders

Placeholder	Meaning
y,Y	Year. The default value is the current year (e.g. 1995).
d,D	Day of Year. (1-365) (1-366 for leap years)
h,H	Hours. (0-23).
m,M	Minutes(0-59). The default is 0.
s,S	Seconds.(0-59). The default is 0.
c,C	Milliseconds (0-99). The default is 0.

Examples

Year & Day Absolute

“1995-365 23.59.59.99” Specifies the last millisecond in 1995.

“1 00” Specifies the first date in the current year (expanded to e.g. 1995-001 00.00.00.00)

Year & Day Delta

“9999 10 /D” Specifies a time offset on 9999 days, 10 hours.

“1 2.10 /D” Specifies a time offset on 1 day, 2 hours and 10 minutes.

Possible Errors

Error Message	Meaning
`Field has invalid format`	Time field syntax in error. Specify the syntax according to the expected time format (default is Year & Day).
`Field contains no input`	A mandatory time input field is empty.
`Field is all blanks`	A mandatory time field contains only (invisible) blanks
`Field is too short for defaulting`	The characters specified in the time field (Uppercase characters in the syntax diagrams) were to few to be expanded to the full time format.
`Field has invalid use of annotator`	A "/" character followed by a character is unrecognised for the current time format.
`Mismatch between required time format & actual format`	The time syntax has been recognised but is not in the required format. This message will be issued if you for instance have specified a "Delta Time" format in the Start Time Text Field.
`End time is equal to or before start time`	This message is issued only for Time fields consisting of a Start Time and End Time field. Both formats are recognised, but the start time is not after the end time.
`Unable to fully validate because start time is invalid`	This message is issued only for Time fields consisting of a Start Time and End Time fields. The verification of the Start Time failed, so the End Time cannot be verified fully.

Cross Reference

The following table shows the SPEVAL windows which contain time input fields.

Item
4.3 Jump To Time Window page 55
4.7.12 Save Case - Simple Time page 108
4.7.14.4 Save Case - TME - Time Filters page 130
4.7.15.8 Save Case - TO - One Time Window page 154
4.7.15.9 Save Case - TO - Repeated Time Windows page 155
4.7.15.10 Save Case - TO - Irregular Time Windows page 157

4.3 Jump To Time Window

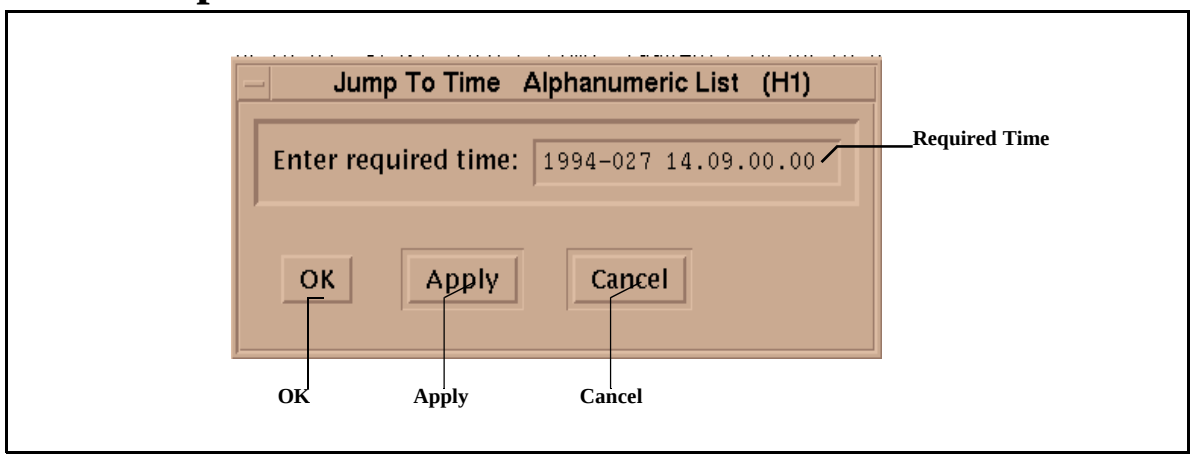


Figure 4Jump To Time Window

Description

This Window is displayed when choosing the *Commands | Jump To Time Button* in *Standard Alphanumeric List Windows* or the *Alphanumeric Display Window* . The window makes it possible to display the Data Rows for a particular time. SPEVAL will find the time closest to the value you enter in the *Required Time Text Field* and position the Scrollbars and the window contents accordingly.
If the time you have entered is outside the *In Table* Start and End Time specified in the Window Area header, SPEVAL will position the window contents on the first (last) record of the retrieved data.

The three push buttons are as follows:

OK

Pressing this button activates the time search. If the time search was successful, the window contents are positioned according to the time you have entered, and the *Jump To Time Window* disappears from the screen. If the time you have entered is invalid, the Message Area will display a failure message and the display window contents remains unchanged.

APPLY

This button is functionally equal to the OK Button, but the *Jump To Time Window do not* disappear from the screen after button activation.

CANCEL

Pressing this button cancels the *Jump To Time Window* . The display window contents remain unchanged.

Cautions and Warnings

None.

Syntax

The syntax for the Required Time Text Field is the standard SPEVAL *Year & Day* Time syntax, described in section 4.2 on page 52.

Examples

“1995-001 16.15” means: Day one of 1995, 16.15.

Possible Errors

If an invalid syntax has been specified in the *Required Time* field, the Message Area Window will display on of the messages described in section 4.2.

Cross Reference

Item
4.9 Standard Alphanumeric List Windows page 162
4.2 Time Specification Fields page 52

4.4 SPEVAL File Selection Boxes

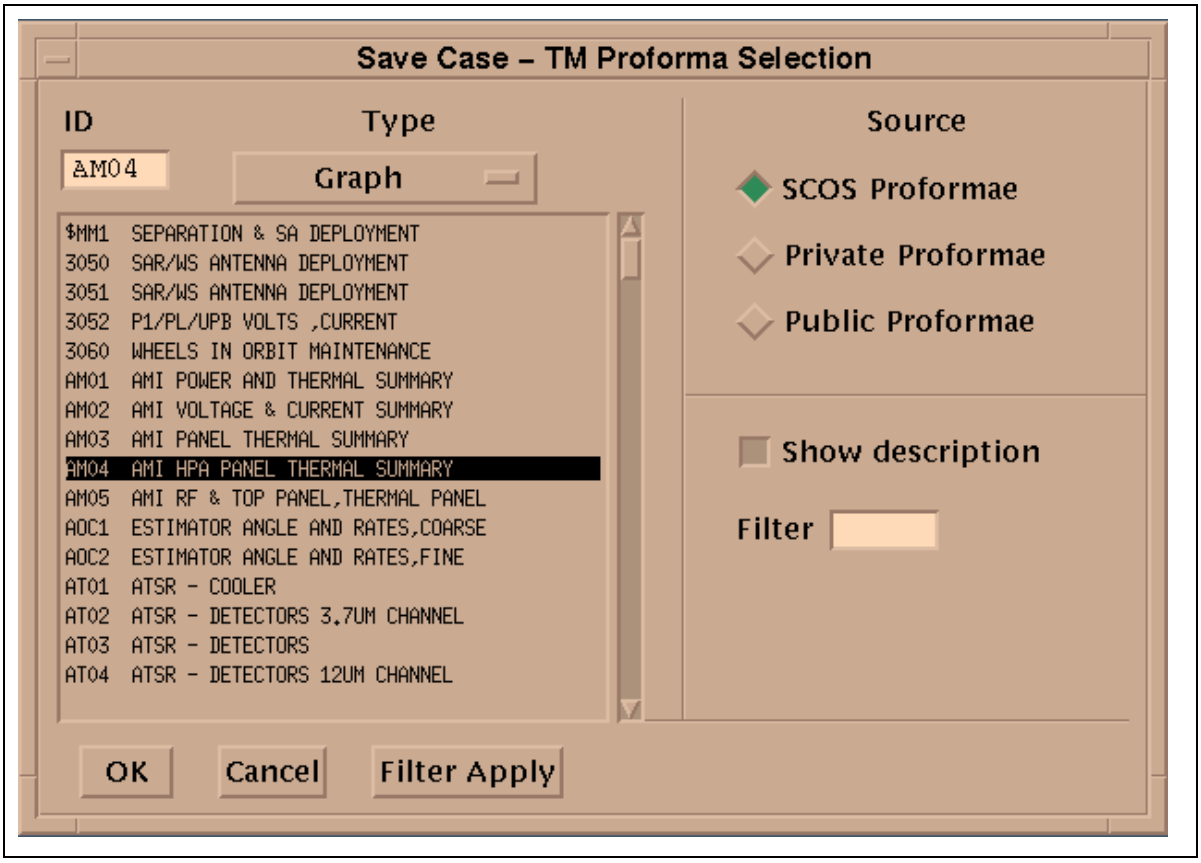


Figure 5Example of a SPEVAL File Selection Box (Proforma Selection)

Description

The SPEVAL File Selection Boxes allows you to select Save Cases, Proforma, User Data Set (UDS) files and ERS Scrolling Logs from a list of existing files or items. You can use the Source Directory Radio Buttons to navigate between the different “Private”, “Public” and “SCOS” directories. The File Selection Boxes also allow you to view the description for Save Cases, Proforma and ERS Log ID’s (For UDS files, no descriptions are available).

By double-clicking on an item in the list or selecting an item, then clicking the OK button, SPEVAL constructs the file name to use for the corresponding operation by using the currently selected *Source, ID* and *Type*. Further action depends on which way you activated the File Selection Box. E.g. if you activated the Box by pressing the Push Button in the *Save Case - EDEF - Save Case ID* field, the default OK action is just to display the selected Save Case ID in the text field.

Note: When the File Selection Box is selected, all other Session Control Windows will turn insensitive. This means that you cannot e.g. enter text in the Save Case Definer Window if a File Selection Box is visible.

The standard File Selection Box controls are the following:

ID Text Field

This text field allows you to directly enter the ID of the item to be selected. If you

activated the File Selection Box from a normal Text Field Push Button, the contents of the text field will be mirrored in the File Selection Box *ID* Text Field. Pressing the return button in this field has the same effect as pressing the OK Button.

Type Option Menu

This Option Menu allow you to select the subtype of the item to be selected. E.g. for SPEVAL TM Proforma File Selection Boxes, the Types available are “Alpha”, “Graph” and “Parameter Only”, representing Alphanumeric, Graphical and Parameter Proforma respectively. Selecting an option from this Menu updates the *Item List* to only display the items having the selected subtype. I.e. it is impossible to display both Alphanumeric and Graphical Proforma at the same time.

Source

This is a selection of exclusive Radio Buttons. Each Radio Button corresponds to a directory search path. E.g. for SPEVAL TM Proforma File Selection Boxes, the available sources are “SCOS Proforma”, “Private Proforma” and “Public Proforma”. The corresponding directories are SPVL_SCOS_PROFORMAE, SPVL_PRIVATE_PROFORMAE and SPVL_PUBLIC_PROFORMAE.
Selecting a radio button will update the *Item List* to only display the items residing in the selected directory.

Item List

The List shows SPEVAL Items and their description. The items which are displayed depends on the *Source* directory chosen, the *Filter* Text and the *Type* Option Menu state. Single-clicking on one item will copy the item ID to the *ID* Text Field. Double-clicking on an item has the same function as first single-clicking on it, then pressing the *OK* Button.

Show Description

If set, the *Item List* displays the description as well as the ID. For Save Cases, only the first line of description is displayed. Note that the *Item List* will be updated much slower when the *Show Description* radio Button is set. The reason is that each Save Case File/ Proforma File must be opened and read in order to get the description line. For Save Cases, only the first line of the possibly multi-line description is displayed.

Filter

The *Filter* Text Field allows you to enter a wildcard text string to only display the items having an ID matching the wildcard specification. E.g. specifying “PF*” in this field updates the Item List to only display items starting with “PF”. Note that it is not possible to filter on the description field of the items.

OK

Pressing this button constructs a file name from the current *ID*, *Type* and *Source* Settings. Further action depends on which way you activated the File Selection Box as indicated in Table 2:

Table 3: File Selection Box - OK actions

Activated From	Item Type	Action
Save Case - EDEF - Save Case ID	*Save Case*	Full file name constructed and stored. ID displayed in the Save Case ID Text Field.

Table 3: File Selection Box - OK actions

Activated From	Item Type	Action
Save Case - Simple Extraction Processing (SEP)	Proforma	Full file name constructed and stored. ID displayed in the Proforma ID Text Field. Proforma Type set to the same as selected in the File Selection Box "Type" Option Menu.
Save Case - TME - Proforma ID	Proforma	Same as above.
Save Case - Output - Field Proforma	Proforma	Same as above.
Save Case - Data - Data Source	UDS	Full file name constructed and stored. ID displayed in the User Data Set ID field.
Save Case - Data - Data Type (ERS2 Scrolling Logs)	Logs	ID displayed in the Log ID field.
SPEVAL Control - Direct Load of UDS	UDS/UCH	See Section 4.6.5 on page 72

FILTER APPLY

This button updates the *Item List* with the current filter settings.

CANCEL

Pressing this button cancels the *File Selection Box* without altering any data.

File Selection Boxes and Text Fields - directories

Normally, the File Selection Box is activated from a Text Field (e.g as in the Save Case Definer Window) as shown in Figure 6.

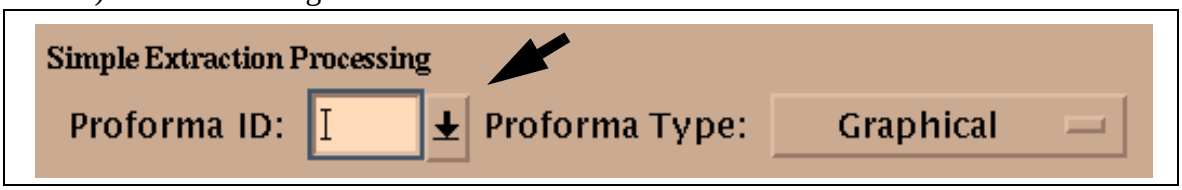


Figure 6Text Field with a File Selection Box activation Push Button

You may enter the ID directly in the Text Field, but the File Selection Box gives you the opportunity to explicit select the underlying directory. As an example, say that two versions of the Proforma "PF30" exist, one in the "Public" Proforma directory and one in your "Private" Proforma directory. Entering "PF30" directly in the Proforma ID text field makes SPEVAL always select the version in the "Private" directory since, by default SPEVAL always search the SCOS directory first, then the Private and then the Public directory.

Using the File Selection Box allows you to use the *Source* Radio Buttons to navigate between the Private and the Public Proforma directories. When you press the *OK* Button, the corresponding directory is stored in the Save Case Definer together with the Proforma ID. I.e. you may choose any of the two different versions of the "PF30" Proforma.

Cautions and Warnings

Non-resolvable directories

When the File Selection Box is activated from a Text Field, any existing full filename is used to set the correct *Source* Directory Radio Button. However, the File Selection Box will complain if the directory specification in the full filename does not match any of the standard File Selection Box directories. If a user for instance has chosen to re-define his SPVL_PRIVATE_PROFORMA directory from e.g. DISKA:[HUSTAD.PROF] to DISKA:[HUSTAD.PRIVATE_PROFORMA], then opening an existing Save Case containing a private Proforma, the File Selection Box will display the following message:

Figure 7Pop Up Message - Could not resolve directory

In this case, clicking on the “Private Proforma” Radio Button, would update the file specification to point to the correct directory.

NOTE: Even if you have re-defined any of your Private SPEVAL directories, you do NOT need to manually update all the affected Save Cases. When validating or submitting a Save Case, SPEVAL first tries to the full file name stored. If the file cannot be found, SPEVAL searches all the standard directories and uses the first file matching the “ID” and “Type” fields.

Syntax

Not Applicable.

Examples

Figure 5 shows the File Selection Box for TM Proforma. If the OK Button is clicked, SPEVAL would construct the Proforma file name (spacecraft is “ERS2”)
`“SPVL_SCOS_PROFORMAE:ERS2_AM04.GRAPH”.`

Possible Errors

The File Selection Box do not generate error messages. If an error is detected in an existing filename (picked up by the File Selection Box when activated), the File Selection Box displays a Pop-Up error box similar to Figure 7. The possible error text messages are the following:

Pop-Up Message	Meaning
`Could not resolve directory <dir>` `Please re-specify.`	The filename contained a directory specification which did not match any of the allowed File Selection Box search directories. See the “Cautions and Warning” section for possible reasons.
`Could not resolve filename <filename>`	The filename could not be parsed. This message will appear if you have entered e.g. “...” in the Text Field, then activates the File Selection Box

Pop-Up Message	Meaning
`Could not resolve file-type: <filetype> Please re-specify.`	The filetype could not be matched to any of the filetypes in the “Type” Option Menu. Contact Software Support.
`Please specify a directory`	None of the Source directory Radio Buttons have been selected. Select one.

Cross Reference

Item
4.6.5 SPEVAL Control - Direct Load of UDS page 72
4.7.9.2 Save Case - EDEF - Save Case ID page 92
4.7.1 Save Case - TM Extraction Processing Options page 77
4.7.13.4 Save Case - Output - Field Proforma page 117
4.7.14.1 Save Case - TME - Proforma ID page 124
4.7.10.1 Save Case - Data - Data Source page 98

4.5 Row Selection Modes

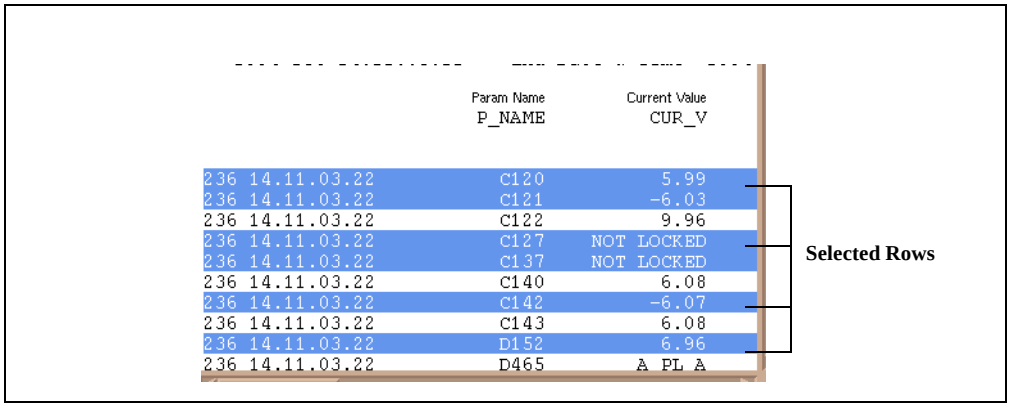


Figure 8List Selection Example (6 selected rows)

Description

This section describes the SPEVAL List Selection Modes. In several SPEVAL windows (e.g. the *Standard Alphanumeric List Windows*), you can select specific rows of data for processing. Examples of processing options are:

- Selecting rows for printing.
- Selecting rows for filtering.

The SPEVAL Row Selection modes make it possible to select separate rows and range of rows with combinations of MB1 (Mouse Button 1), the <CNTRL> button and the <SHIFT> buttons. Selected rows are shown with a blue background colour.

NOTE: If you haven't selected any row, SPEVAL interprets this as all rows being selected.

The different selection modes are described in table Table 4:

Table 4: List Selection Modes

Action	Result
MB1 Down on an *unselected* row	Select the row without unselecting other rows.
MB1 Down on a *selected* row.	Unselects all selected rows in the selected range which the row belongs to.
Holding the <CNTRL> key, then pressing MB1 on an *unselected* row.	Uniquely selects the row. (All other rows are unselected).
Holding the <CNTRL> key, then pressing MB1 on a *selected row.*	Unselects all selected rows. This means in fact that all the rows will be processed as selected (see NOTE)
Holding the <SHIFT> key, then pressing MB1 on an *unselected* row.	Selects a range of rows. The range will extend all the rows between (and including) the current row and the nearest selected one.

Table 4: List Selection Modes

Action	Result
Holding the <SHIFT> key, then pressing MB1 on a *selected* row.	unselects a range of rows. The range will extend all the rows between (and including) the current row and the nearest unselected one.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

To select all rows in a Window:

Clink MB1 on the (unselected) first row. Navigate to the last row in the Window (using the Scrollbars if necessary). While holding the <SHIFT> key down, press MB1 on the last row. All rows will turn selected.

Possible Errors

None.

Cross Reference

The following table shows the SPEVAL windows which contains selectable rows.

Item
4.7.14 Save Case - TM Extraction (TME) page 121
4.9.1 TM (Alphanumeric List) Window page 166
4.9.2 Statistics Window page 168
4.9.3 OOL (Out-of-Limits) Window page 171
4.9.4 Totals Window page 174

4.6 SPEVAL Control

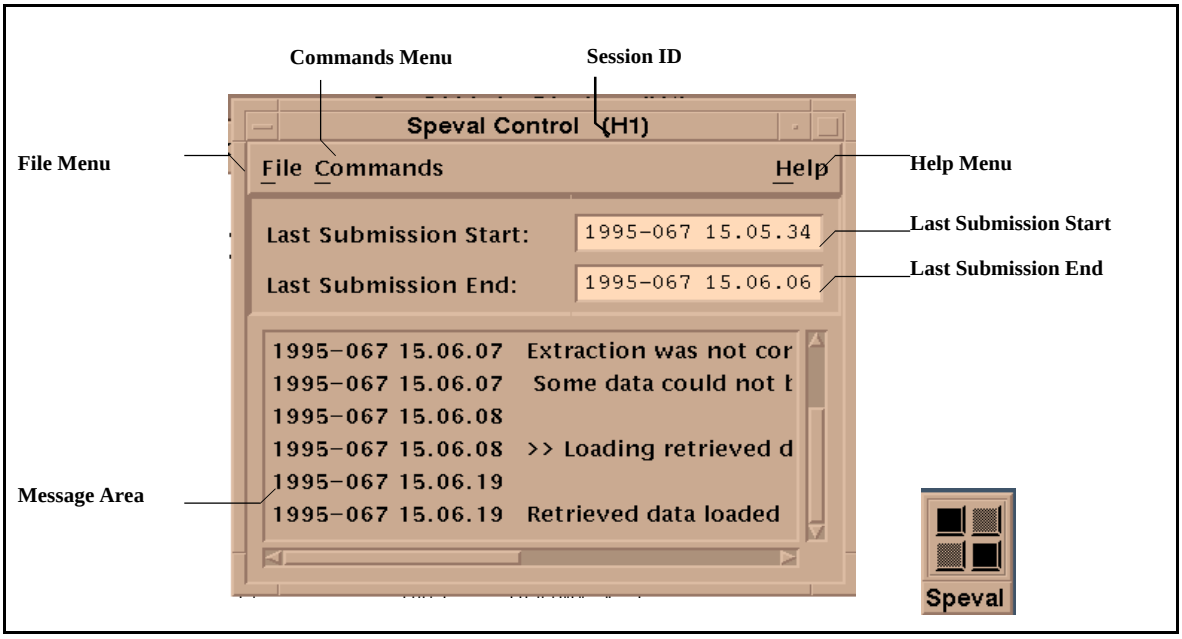


Figure 9SPEVAL Main Control Window and Icon

Description

The SPEVAL Control Window is the top-level window within the system. It will pop up when you have started SPEVAL and remains active for the complete session. Whenever SPEVAL issues a message, the Window will be displayed in the front and if iconified, it will be de-iconified.

The SPEVAL Control window contains the following items:

Session ID

This two character field is only visible if you have started multiple SPEVAL sessions (see below). In this case, the Session ID identifies the session which this SPEVAL Control Window controls. The first session is identified by the User Acronym character (e.g. “H”) plus the number 0.

File Menu.

Currently the only entry in this Menu is the Exit Push-Button.

Commands Menu.

This Menu allows you to activate the Save Case Definer, to perform direct load of a UDS file and to activate the Retrieval Job Control Window.

Help Menu.

This Menu displays the current Speval version number.

Last Submission Start Time Text Field.

The field shows the time the last Save Case Submission was initialised.

Last Submission End Time Text Field.

The field shows the time the last Save Case Submission was terminated.

Message Area.

This window displays all the SPEVAL User messages as well as the time each message was generated.

Starting Multiple Sessions

There is nothing preventing you from starting multiple SPEVAL Sessions (up to 8 is possible). In this case, all the SPEVAL Windows belonging to the Session will display the Session ID in the Window Header. The Session ID is a combination of your SPEVAL User ID character and the Session number. For example, Figure 2 on page 6 shows that the SPEVAL Control Window is one of Several Sessions (the first session has the number 0). The User ID character is "H".

Cautions and Warnings

Not applicable.

Syntax

Not Applicable.

Examples

Figure 9 on page 64 shows the standard SPEVAL Control Window. The Message Area displays messages related to a Save Case submission.

Possible Errors

See the relevant sub-sections.

Cross Reference

Item
4.6.1 SPEVAL Control - File page 66
4.6.2 SPEVAL Control - Commands page 67
4.6.3 SPEVAL Control - Help page 68

4.6.1 SPEVAL Control - File

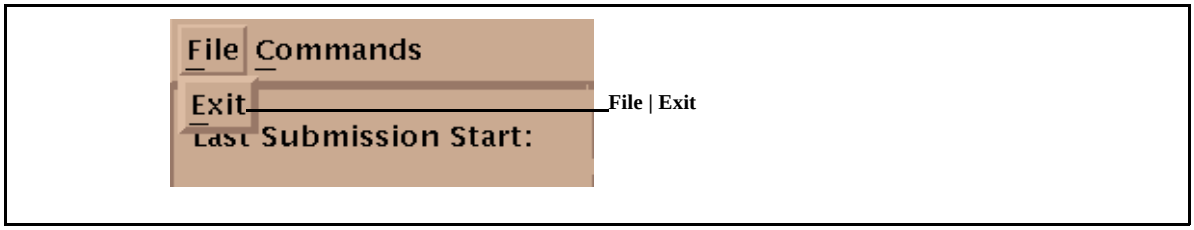


Figure 10Save Case - File Menu

Description

The *Save Case File Menu* is invoked by pressing MB1 on the File Push Button in the SPEVAL Control header. Currently, the only item in the list is the *File* | *Exit* Push Button.
Pressing the Exit Button will, under normal circumstances force the SPEVAL system to exit.

In special circumstances, the *File* | *Exit* will only generate an Informational message displayed in the Message Area. This will for example be the case if you have pressed the button while some SPEVAL tasks are still initialising.

Cautions and Warnings

File | *Exit* will exit the SPEVAL system without giving you any warnings about unsaved data. You should ensure that you have saved any Save Case definitions before pressing this button.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

Error Message	Meaning
`Some tasks are still starting - retry in a minute or so`	Session Control has detected that some SPEVAL tasks are still initialising. If you really MUST exit, you can use the CLOSE option in the Pulldown Menu in the top left corner of the Motif Window frame.

Cross Reference

Item
4.6.1 SPEVAL Control - File page 66

4.6.2 SPEVAL Control - Commands

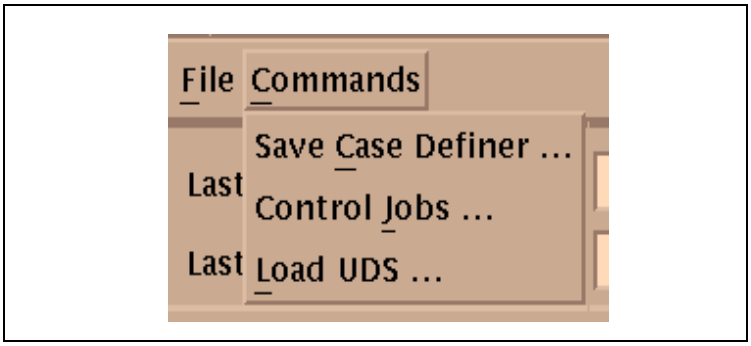


Figure 11Save Case - Commands Menu

Description

The *Save Case - Commands Menu* is invoked by pressing MB1 on the *Commands Push Button* in the SPEVAL Control header. The menu consists of one Push Button.

Save Case Definer Button

This Button allows you to start the *Save Case Definer Window* . If the Window is already activated, it will pop up in the front of the Workstation Screen. The Window is described in Section 4.7 on page 74.

Load UDS Button

This Button activates a File Selection Box for direct load of UDS files. The Load UDS Box is described in Section 4.6.5 on page 72

Control Jobs Button

This Button activates the SPEVAL Job Control Window, allowing you to monitor and abort Retrieval Jobs. The Window is described in Section 4.6.4 on page 69

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7 Save Case Definer Window page 74

4.6.3 SPEVAL Control - Help

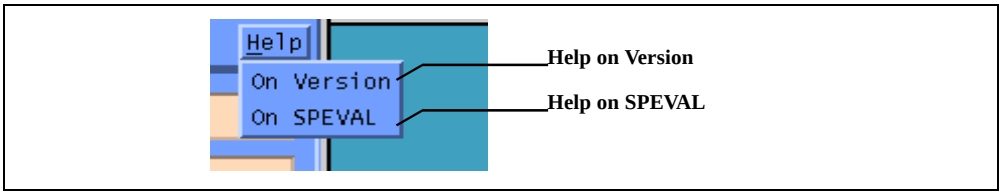


Figure 12Speval Control - Help Menu

Description

The *Save Case - Help Menu* is invoked by pressing MB1 on the *Help Push Button* in the SPEVAL Control header. The menu consists of two Push Buttons.

Help on Version Button

Activating this button displays the current SPEVAL version you are using. This version number should be used when issuing any software problem report concerning SPEVAL.

Help on SPEVAL Button

Activating this button brings up a message window referencing the Software User Manual as the help document.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.6 SPEVAL Control page 64

4.6.4 Job Control Window

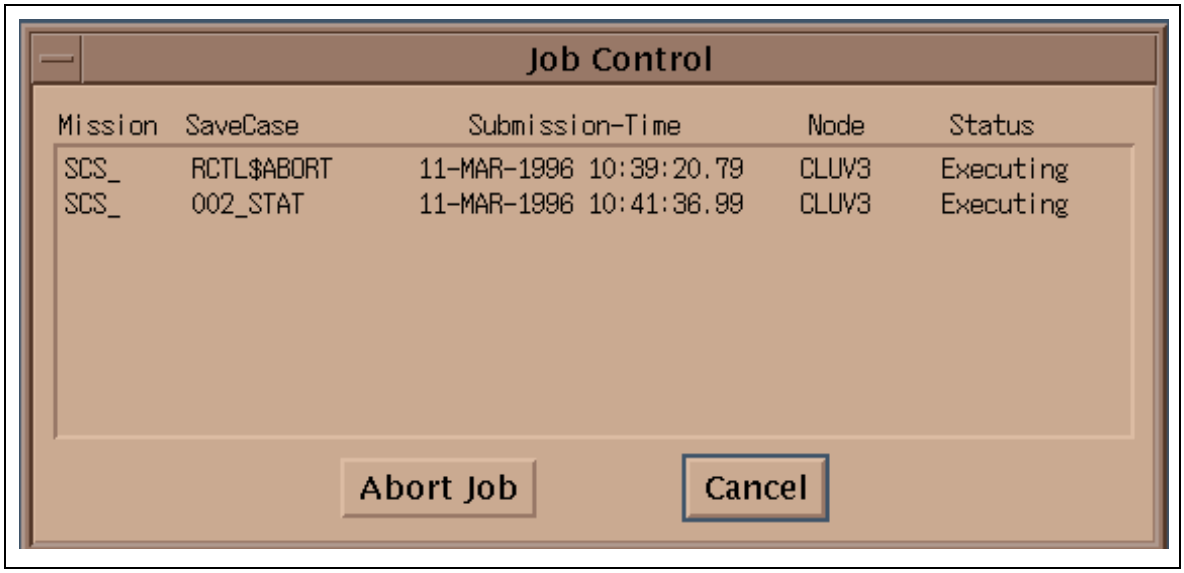


Figure 13SPEVAL - Job Control Window

Description

The Job Control Window is invoked by selecting the *Commands* | *Control Jobs* Push Button from the *SPEVAL Control* Commands Menu. The Window displays a list of all outstanding Retrieval jobs which were started under your user account. I.e. even if you have started Retrievals from several different SPEVAL Sessions, each Job Control Window displays all the outstanding jobs for all your Sessions. The Job Control Window is automatically updated every 20'th second with the new Retrieval Job Status. You can accelerate the update time at any time by re-selecting the *Commands* | *Control Jobs* Button also when the *Job Control Window* is visible. This will immediately update the Job List to display the most current information.

By selecting a job entry, then pressing the *Abort Job* Button, SPEVAL stops the Retrieval Job.

Note that the Job Control Window will not display entries for jobs started from the *SPEVAL Control - Direct Load of UDS* Window. These jobs are not Retrieval Jobs and hence do not have an entry in the SPEVAL Job tables.

The Job Control Window provides the following items:

Job List

the Job List displays one entry per outstanding Retrieval Jobs. The List allows you to select one single entry which may be aborted by later selecting the Abort Job Button. The headers are as follows:

Mission

Displays the Spacecraft ID for which the current job is executing. See

Section 4.7.9.1 on page 90 for possible SPEVAL spacecraft IDs.

SaveCase

Displays the Save Case ID which was used to submit the Retrieval Job.

Submission-Time

Displays the time the Retrieval Job was submitted.

Node

Displays the Hostname of the node actually performing the Retrieval. If you are running a remote retrieval from the Long Term Archive (LTA) from a remote SPEVAL node, you should expect the node name to be different from your local SPEVAL node. If you are retrieving from User Data Set files, the Node will always display the local node,

Status

Displays the current Batch queue status of the retrieval job. The following types are possible:

Table 5: SPEVAL Job Status

String	Meaning
[Remote]	Retrieval running on remote node. The Job Status is unknown since the local SPEVAL node cannot inquire the system to return information about the current job.
Unknown	Unknown RCTL job status. This might show up if a job which is expected to be found on the batch queue does not have an entry yet. If the status does not change in 20 seconds, contact Software Support.
No Entry	No batch queue entry found for the submission job. The job has probably just been started. If the status does not change in 20 seconds, contact Software Support.
Starting	Job is starting
Executing	Job is executing
Pending	Job is Pending.
Aborting	Job is aborting.
Aborted	This status is displayed if you have aborted the current job and SPEVAL aborted the job successfully. The job entry will be removed the next time the Job List is updated (every 20’th seconds).
Not Aborted	This status is displayed if you have aborted the current job but SPEVAL failed to satisfy the request. In this case, an error message will be displayed in the Message Area.

Abort Job

Pressing this Button causes that the currently selected job to be aborted. If the job is running on a local node, you should expect the Status field to be changed to “Aborted” after a few seconds. If the Retrieval Job is running on a remote node, the Status field may take several minutes to update.

Cancel

This Button removes the Job Control Window from the display. It does not cancel any abort job request.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 13 shows the Job Control Window . The User has 2 outstanding Retrieval jobs. Both are executing.

Possible Errors

The following messages might be displayed in the SPEVAL Control Message Area as reply to an “Abort Job” Button Press.

Error Message	Meaning
`Aborted job submitted at <date-time>`	Informational. The job which was submitted at the displayed time has been successfully aborted
`Failed to abort Job submitted at <date-time>`	The requested Save Case Retrieval Job could not be aborted. This message may be displayed if you try to abort the same job twice and the job has been aborted on the first try but the Job Control list has not yet been updated
`Error processing the list of outstanding Retreival jobs.`	Internal Error. Contact Software Support.
`Error processing a request to abort an outstanding Retreival job`	Internal Error. Contact Software Support.

Cross Reference

Item
4.6.2 SPEVAL Control - Commands page 67

4.6.5 SPEVAL Control - Direct Load of UDS

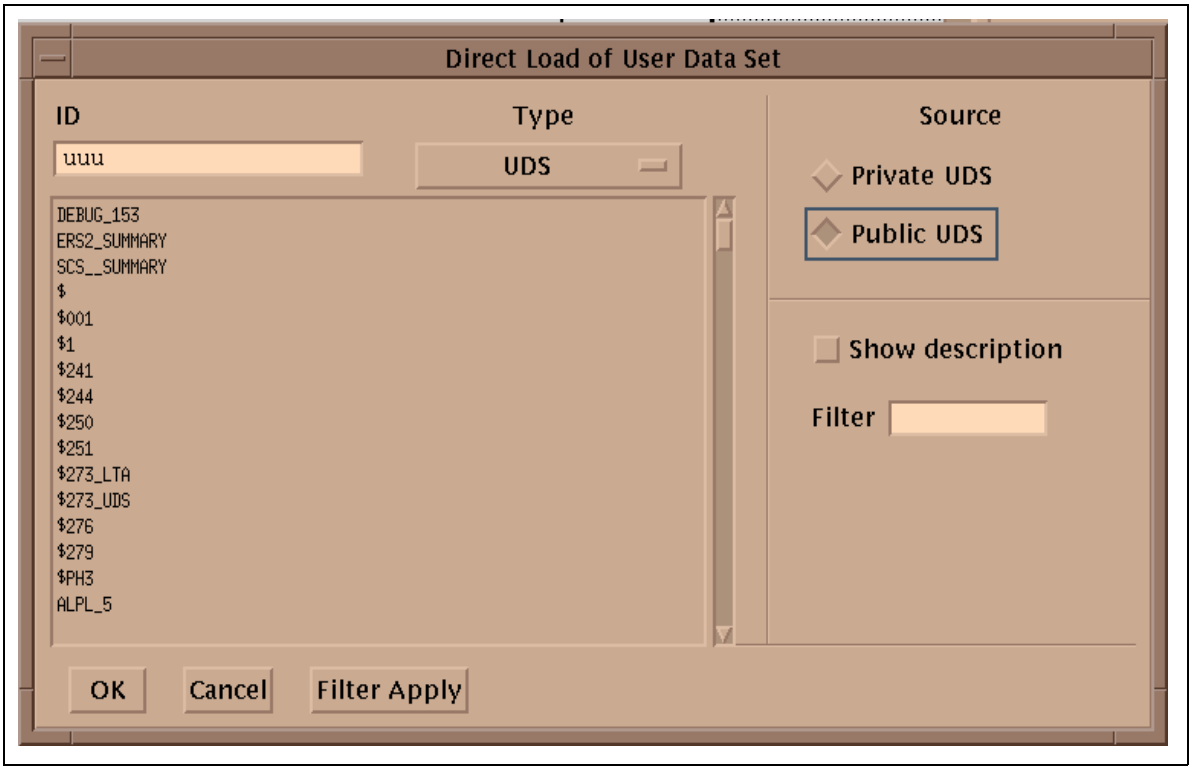


Figure 14SPEVAL Control - Direct Load of UDS Window

Description

The *Direct Load of UDS* Window invoked by selecting the *Commands |Load UDS* from the SPEVAL Control Commands Menu. The Window displays the standard *SPEVAL File Selection Boxes* properties, and you should consult this section for further information.

The *Direct Load of UDS Window* allows you to speed up the loading of a User Data Set for display in the Alphanumeric/Graphical Windows without having to Retrieve the data from the UDS file first. By double-clicking on an item in the list or entering a UDS ID in the ID field, then pressing the OK Button, SPEVAL will load the contents of the UDS file.

SPEVAL will automatically select the display windows to use as follows:

- If the UDS file contains normal TM data, SPEVAL uses the Proforma embedded in the UDS to decide upon the types of Display Windows. If the Proforma is of type Graphical, the Graphical Window and the Alphanumeric Windows will be used. If the Proforma is of type Alphanumeric, only the Alphanumeric Windows will be used. If the Proforma is of type “Parameter Only”, SPEVAL cannot load the User Data Set, since no display information is available.
- For other data than TM (e.g. Scrolling Logs, OOL), SPEVAL uses the Standard Windows associated with the data type.

If SPEVAL manages to load the specified UDS, the *Direct Load of UDS* Window disappears, an the Message Area displays the “Loading Retrieved Data” message. If SPEVAL fails to load the contents, the Window remains visible, and the Message Area displays the cause of error.

NOTE: The SPEVAL Control Window and the Save Case Window cannot receive any inputs

when the Direct Load of UDS Window is displayed on the Screen. I.e. you will have to explicit cancel the Direct Load of UDS Window in order to continue working with other Windows.

Cautions and Warnings

Loading very large UDS files into SPEVAL may take long time. It is recommended to start off with smaller UDS files.

A Direct Load of UDS will not have an entry in the *Job Control Window* .

Syntax

Not Applicable.

Examples

Figure 14 shows the Window layout.

Possible Errors.

The following error messages may be generated when pressing the OK Button. The error messages are normally followed by a beep signal, and the File Selection Box remains visible. Note that you cannot scroll the Session Control Message Area when the File Selection Box is visible (use the cancel button if required)..

Error Message	Meaning
`File <file-name> not found`	The specified file has not been found. Check filename and directory.
`UDS file <file-name> is corrupted`	The User Data Set file could not be read properly. This could happen if another file type has been renamed to a UDS extension. Otherwise contact Software Support
`UDS file <file-name> contains no data for display`	The User Data Set file contains no data which can be displayed.
`Another display retrieval job running - Parallel display jobs not possible`	PEVAL cannot have two outstanding retrieval jobs directed for display. Wait until the previous display retrieval job finishes or start another SPEVAL session and re-submit.
`UDS file <file-name> contains no Alphanumeric or Graphical Proforma. Cannot be displayed`	The User Data Set file contains no “alphanumeric” or “graphical” proforma. The Save Case used to generate the UDS file in the first place probably contained a “Parameter Only” Proforma. In order to display the contents of the UDS file, you must retrieve from it using a Save Case strategy and specifying a valid Proforma.

Cross Reference

Item
4.4 SPEVAL File Selection Boxes page 57

4.7 Save Case Definer Window

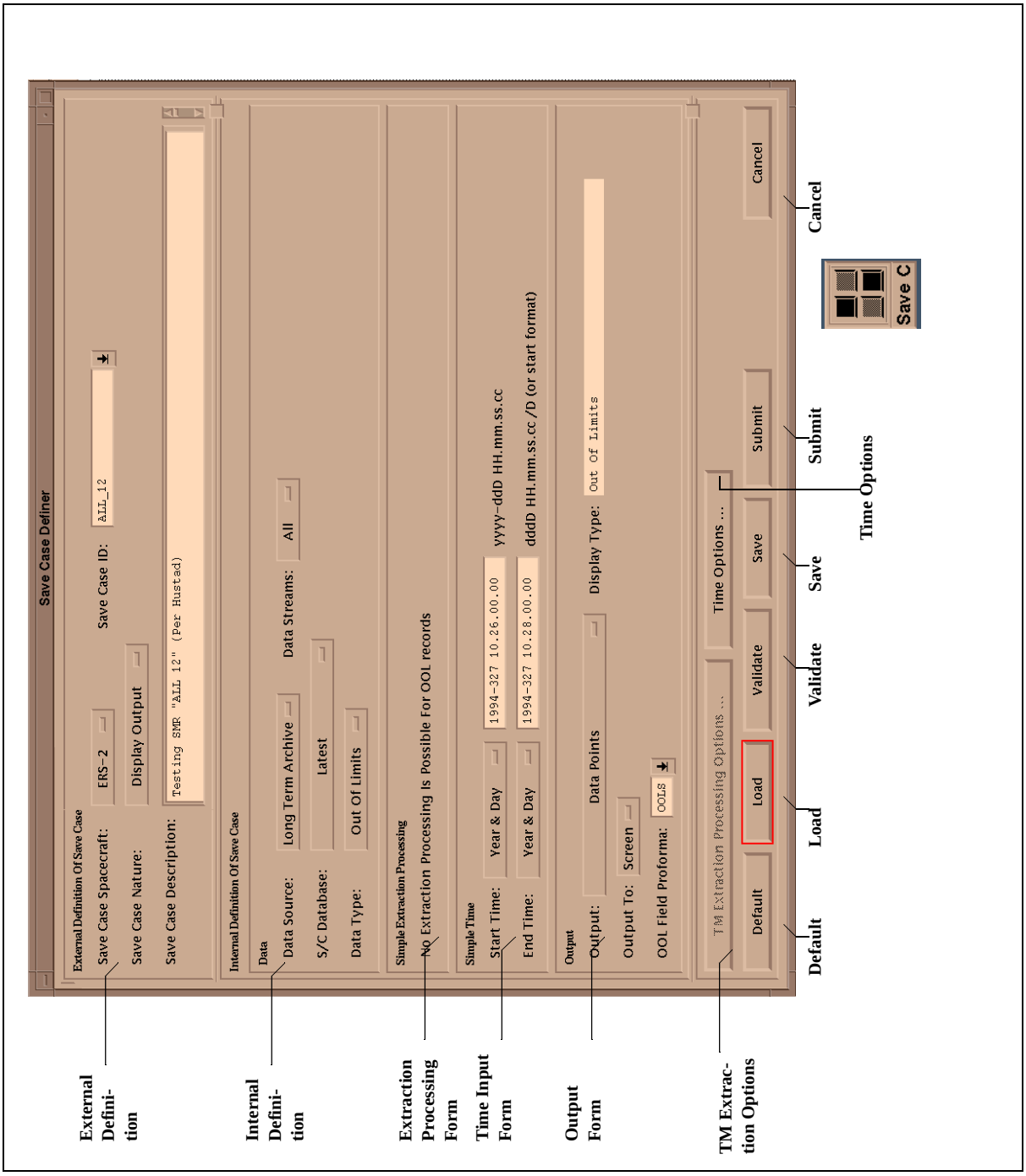


Figure 15Save Case Definer Window and Icon

Description

The *Save Case Definer* consists of a top-level window filling almost the entire workstation screen. The window allows you to define specific criteria for retrieval of SPEVAL data and to retrieve the data. Examples of those criteria are:

- The Spacecraft (e.g. ISO,CLUSTER) for which the data is retrieved.
- The Data Source for the retrieval. The source is normally the Long Term Achieve (LTA), but you can also retrieve data from the Summary or from a User Data Set file.

- The time-span which the data set is retrieved for.
- The Parameters contributing to the retrieval definitions.
- The output method for the data. This is normally a Graphical or Alphanumeric window, but you can also redirect the output to a User Data Set file.

Each Retrieval and Display strategy is called a Save Case, and the Save Case Definer allows you to:

- Load existing Save Case Definitions.
- Defining new Save Case Definitions.
- Saving Save Case Definitions to file.
- Submitting Save Case Definitions for retrieval. The submission will retrieve the data and display it in Graphical/Alphanumeric windows as defined by the current Save Case definition.

Currently, the *Save Case Definer* allows you to define retrieval definitions for the following types of data:

- Normal TM (Telemetry Data). This option allows you to view a set of TM Parameters and their values for a particular time-span.
- OOL (Out-of-Limits) data. This option allows you to view all OOL generated parameters for a particular time-span.
- Statistical Information for TM Data. This option allows you to view statistical information for a set of TM Parameters. Examples are Minimum and Maximum values, Standard Deviation and Data Quality for a particular time-span.
- Totals. This option allows you to view the number of data points which have been retrieved for a Save Case.
- Cluster and ERS Telecommand (TC) history.
- Cluster and ERS Logs.

Cautions and Warnings

See the relevant sub-sections.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

This window provides no direct actions. See the relevant sub-sections for possible error messages.

Cross Reference

Item
4.7.3 Save Case - Default page 79

Item
4.7.4 Save Case - Load page 80
4.7.5 Save Case - Validate page 81
4.7.6 Save Case - Save page 82
4.7.7 Save Case - Submit page 83
4.7.8 Save Case - Cancel page 87
4.7.9 Save Case - External Definition (EDEF) page 88
4.7.10 Save Case - Data page 97
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.12 Save Case - Simple Time page 108
4.7.15 Save Case - Time Options (TO) Window page 145
4.7.13 Save Case - Output page 110

4.7.1 Save Case - TM Extraction Processing Options

Figure 16Save Case - TM Extraction Processing Button

Description

This Push Button is located at the bottom left in the *Save Case Definer* window. When pressed, the button activates the *Save Case - TM Extraction (TME) Window.* If the Window is already active, it will be brought to the front of the Screen, and no data will be lost.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7 Save Case Definer Window page 74
4.7.14 Save Case - TM Extraction (TME) page 121

4.7.2 Save Case - Time Options Button

Figure 17Save Case - Time Options Button

Description

This Push Button is located at the bottom in the *Save Case Definer* window. When pressed, the button activates the *Save Case - Time Options (TO) Window* . If the Window is already active, it will be brought to the front of the Screen, and no data will be lost.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7 Save Case Definer Window page 74
4.7.15 Save Case - Time Options (TO) Window page 145

4.7.3 Save Case - Default

Figure 18Save Case - Default Button

Description

This Push Button is located at the bottom left in the *Save Case Definer* window. The Button resets the current Save Case definition to the default SPEVAL configuration

Cautions and Warnings

Pressing this Push Button will override all unsaved Save Case definitions. You will not be given a warning if you have unsaved data.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7 Save Case Definer Window page 74
4.7.6 Save Case - Save page 82

4.7.4 Save Case - Load

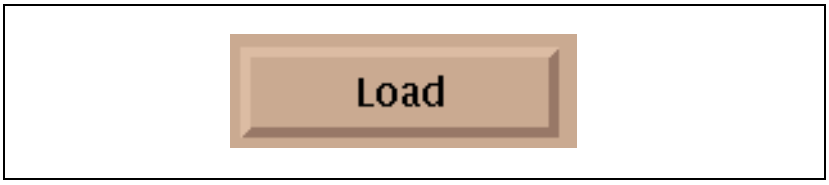


Figure 19Save Case - Load Button

Description

This Push Button is located at the bottom left in the *Save Case Definer* window. The Button allows you to load the contents of existing Save Cases.

When pressing the Button, the Save Case ID specified in the *Save Case - EDEF - Save Case ID* Text Field and the Spacecraft specified in the *Save Case - EDEF- Spacecraft* Option Menu are combined to form the unique file name of the Save Case ID. If SPEVAL finds the Save Case file, the contents are loaded into the *Save Case Definer Window* . Otherwise, a message is displayed in the *Message Area Window* and the *Save Case Definer Window* remains unchanged.

To get a list of the save cases available for the selected spacecraft, use the File Selection Button by the Save Case ID field (see 4.7.9.2 Save Case - EDEF - Save Case ID page 92)

Cautions and Warnings

Pressing this Push Button will override all unsaved Save Case definitions. You will not be given a warning if you have unsaved data.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

The possible error messages are listed under the *Save Case ID Text Field*.

Cross Reference

Item
4.7 Save Case Definer Window page 74
4.7.9.2 Save Case - EDEF - Save Case ID page 92
4.7.9.1 Save Case - EDEF- Spacecraft page 90
4.7.6 Save Case - Save page 82

4.7.5 Save Case - Validate

Figure 20Save Case - Validate Button

Description

This Push Button is located at the bottom left in the *Save Case Definer Window* . The Button validates (syntax checks) the Save Case Definitions you have defined but does not save or submit it.
If the Validation succeeds, the *Message Area Window* displays the message "`Validation completed - No errors found`", otherwise a failure message is logged.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

For possible error messages, see the relevant section. E.g. if the Error Message is preceded by "External Definition ~ Save Case ID", see section 4.7.9.2 Save Case - EDEF - Save Case ID page 92.

Cross Reference

Item
4.7 Save Case Definer Window page 74

4.7.6 Save Case - Save

Figure 21Save Case - Save Button

Description

This Push Button is located at the bottom left in the *Save Case Definer Window* . When pressing the Button, the Save Case ID specified in the *Save Case - EDEF - Save Case ID Field* and the Spacecraft ID specified in the *Save Case - EDEF- Spacecraft* Menu are combined to form the unique file name of the Save Case ID.
Note that you will be allowed to save the Save Case definitions even when they are invalid. However, you will not be allowed to save if the Save Case ID Text Field contains invalid characters. In order to guarantee that you save a consistent Save Case, you should first validate it using the *Save Case - Validate Button.*

Cautions and Warnings

You will not be given a warning if the Save Case ID you have specified overwrites an already existing Save Case. E.g. if you use this button to “copy” Save Case Definitions, be sure that the Save Case ID you have specified does not already exist.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

For possible error messages, see the relevant section. E.g. if the Error Message is preceded by “External Definition ~ Save Case ID”, see section 4.7.9.2 Save Case - EDEF - Save Case ID page 92.

Cross Reference

Item
4.7.5 Save Case - Validate page 81
4.7.9.2 Save Case - EDEF - Save Case ID page 92
4.7.9.1 Save Case - EDEF- Spacecraft page 90

4.7.7 Save Case - Submit

Figure 22Save Case - Submit Button

Description

This Push Button is located at the bottom middle in the *Save Case Definer* window. The Button allows you to submit the current Save Case Definitions for retrieval and display in the Graphical and/or Alphanumeric Display Windows (or as output to a User Data Definition file).The processing of the request goes as follows:

- SPEVAL validates the current Save Case Definitions. This process is a superset of the validation which is performed when you press the *Save Case - Validate Button*. If the validation fails, a message will be displayed in the Message Area and further processing stopped.
- If the Save Case Definition is valid, SPEVAL submits it for Retrieval Control. The *SPEVAL Control - Last Submission Start* Text Field will display the current time, and the *SPEVAL Control - Last Submission End* Text Field will be cleared. The Message Area will display the message "`Save Case submitted for retrieval control`".
- After a time span (a few seconds to several hours), The *SPEVAL Control - Last Submission End* Text Field will be initialised with the current time and the data you have requested for retrieval will be displayed in the Graphical and/or Alphanumeric windows or output to the UDS file. The time before the Save Case Submission have finished depends in a high degree on the time span you have specified and the number of Parameters which are to be retrieved.

Note that, after a submission you don't need to wait for a Submission End Message. You will be allowed to perform other SPEVAL tasks (e.g. defining a new Save Case or perform another submission). Note however that SPEVAL will not allow you to perform two concurrent submissions for data display (one retrieval to UDS and one to display is accepted). In order to perform concurrent submissions to display, you must start a second SPEVAL session as explained in "SPEVAL Control" on page 64.

Cautions and Warnings

Submitting a Save Case will not automatically save the current Save Case definitions. In order to Save the Save Case Definitions, you must use the *Save Case - Save* Button.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

The following error messages are error messages generated from the Retrieval phase of the retrieval. Messages related to the Save Case Validation phase are always described under the relevant section. E.g. if the Error Message is preceded by "External Definition ~ Save Case

ID", see section 4.7.9.2 Save Case - EDEF - Save Case ID page 92.

Message	Meaning
Display Save Case has already been submitted - parallel retrievals of this type are not supported	You have already submitted a Save Case for retrieval, and the previous retrieval has not yet finished. Wait until the retrieval confirmation message before issuing another retrieval request.
Save Case submitted for retrieval	Informational. The Save Case is valid and is currently being submitted.
<< Loading retrieved data <<	Informational. The retrieval was successful (partial or full). SPEVAL is currently processing the data for display.
No data was found for this retrieval	The SPEVAL Retriever has failed to find any data for the specified time range. I.e. none of the Parameters defined in the associated Proforma had values for the time range specified in the *Save Case - Simple Time fields.*
No parameters found after ANDing PTVS with Proforma	This message should only be issued if you have performed a OOL,Statistic or Totals retrieval. It indicates that the Field Proforma used for the Retrieval contains field names not recognised. Check the field proforma you have used.
Retrieved data loaded	Informational. Save Case submission has finished.
An internal error has occurred, please Contact Software support	The message specifies an internal error. Contact Software Support.
No data was found for Parameter <parameter>	Partial.The SPEVAL Retriever has failed to find any data for the parameter in the specified time range. Specify a larger time range and/or change the Parameter Proforma. Check the Save Case data filters.
Internal PTVS Error occured	The message specifies an internal error. Contact Software Support.
Failed to open PTVS file: cannot carry on with retrieval	FILE I/O Error encountered. Contact Software Support
Failed to create ptvs file: cannot carry on with retrieval	Check file protection and disk quotas. If still disk space, contact Software Support.
Device Full: cannot carry on with retrieval	The disk is full. Contact Software Support
Device not ready: cannot carry on with retrieval	Problems with the device I/O. Contact Software Support
zero parameters defined in proforma	This message could be issued if you have define your own field Proforma or TM Proforma and the Proforma contains zero Parameters. Check the Source Proforma
Failed to find processes ID and Packet Type for Packet <packet_id>	The Process ID and Packet Type could not be found in the DB for the Packet ID. This message could be issued if you are accessing an out-of-date Database.
Parameter <parameter> is of type constant. Cannot be retrieved	A Parameter in the Proforma was of type constant. The Parameter cannot be retrieved. Remove the Parameter from the Source Proforma.
failed to find Packet ID for parameter <parameter>	Some parameters were located in Packets which could not be found in the Long Term Archive.
failed to map to SCOS database: retriever stopped	The Retriever failed to map to the derived SCOS database. Contact Software Support.

Message	Meaning
No database is valid for the specified time	The Retriever did not found any database which was valid for the specified time.This message may be issued if the <Current At> or <Current at Generation> Database option has been specified in the Save Case Definer, but no database has been found for the specified time. Specify a later time or use the <Latest> option.
Text Table could not be found for Parameter <parameter>	Partial. The retrieved Status Parameter referenced Text Tables which were not found in the LTA. Status strings for the Parameter cannot be displayed.
Cannot retrieve any data. Parameters were not located in packets correctly	The derived DB specifies packet locations which are outside the packet boundaries. The retriever has been stopped.The message may be issued if a out-of-date Database has been used. Try to repeat the Retrieval using the “Current” Database option.
failed to get PNT pointer for parameter <parameter>	The parameter did not exist in the SCOS database. Normally, the Proforma Editor prevents specifying non-existing Parameters. The message can however be issued if the Proforma has been compiled with another version of the database.
Retrieval reached end-of-file	The Retrieval time window extends the LTA time window. No action required.
Failed to write to PTVS: disk full	Disk is full. Contact Software Support.
Parameter <parameter> changed in SCOS DB.	Partial. The Parameter characteristics (e.g. parameter type) changed between two Databases. The retriever cannot retrieve more values of the Parameter in the new DB. In order to examine the Parameter Values after the DB change, choose a Retriever start-time which is equal to or greater than the DB change time.
Save Case specified an output nature for Param <parameter> that the retriever did not recognise	The Parameter output nature is unknown to the Retriever process. Contact Software Support
Parameter characteristics couldn’t be formed for Param <parameter>	Partial. In order to examine the Parameter Values after the DB change, choose a Retriever start-time which is equal to or greater than the DB change time.
Internal error: scrolling log format is invalid	The format of a scrolling log was wrongly defined internally. Contact Software Support
This type of retrieval function is not yet implemented	A type of retrieval was requested which has not yet been implemented. Be patient. Supply money and/or beer.
Internal error: cannot access scrolling log database	The scrolling log database could not be found. Software Support.
The ERS scrolling log <log_id> is not defined	An ERS scrolling log display was requested which is not defined. Check spelling and respecify
Cannot process dump log since no time correlation coefficients are available	No time correlation coefficients are available near the time of the dump requested. Software Support
Dump at <id> was truncated on output <n> of <m> lines are shown>	The text of a dump was truncated on output. This is due to a buffer size being increased in CMCS and not reflected on SPEVAL. Software Support
Incomplete CHB dump detected at <id> events may be missing	An incomplete CHB dump was found with the given SCET. The dump was not processed, and any events contained in it, but not in other dumps, will be missing from the output.
Couldn’t read from tape drive	ISO retrieval failed to read from the tape drive. Contact Software Support and/or operator

Message	Meaning
`Operator cancelled mount request`	Operator cancelled the mount request. Ask operator.
`Failed to mount tape <tape_label>. Only data from n tapes are retrieved`	Tape mount failed and no more tapes will be read. Note however that the data already successfully retrieved will be displayed. See the event log or ask the operator.
`Could not load alphanumeric data into memory (probably resource constraints)`	It was not possible to load the required data into memory for alphanumeric displays. If thisis a recurrent problem, it may be possible to increase system resource quotas to all-evaite it - contact Software Support.

Cross Reference

Item
4.7.5 Save Case - Validate page 81
4.7.6 Save Case - Save page 82
4.6 SPEVAL Control page 64
4.7.12 Save Case - Simple Time page 108

4.7.8 Save Case - Cancel

Figure 23Save Case - Cancel Button

Description

This Push Button is located at the bottom right in the *Save Case Definer* window. The Button allows you to quit the Save Case Definer Window.

Cautions and Warnings

Pressing this Push Button will disregard all unsaved data. If you want to save the data before cancelling the Window, use the *Save Case - Save Button*.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7 Save Case Definer Window page 74
4.7.6 Save Case - Save page 82

4.7.9 Save Case - External Definition (EDEF)

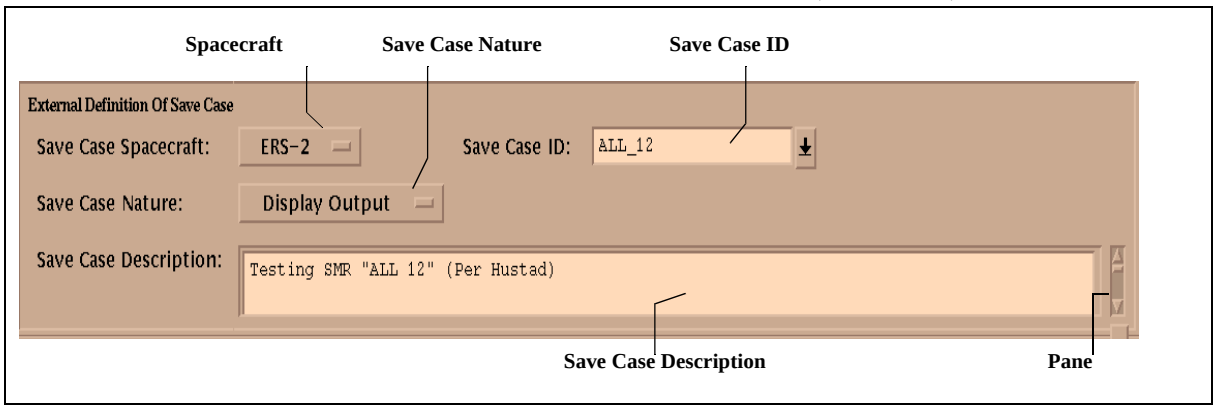


Figure 24Save Case - External Definition (ED EF) Form.

Description

This Form is Located at the top of the *Save Case Definer Window* . It contains the following items:

- The *Spacecraft* for which the Save Case is defined (e.g. ERS-2,CLUSTER). This item is described in section 4.7.9.1 on page 90.
- A *Save Case ID* field, displaying the Save Case (file) ID of the current definitions. This item is described in section 4.7.9.2 on page 92.
- A *Save Case Description* field, displaying the description of the Save Case. This item is described in section 4.7.9.3 on page 94.
- A *Save Case Nature* field, displaying the type (e.g. Summary, Output) of the Save Case. This item is described in section 4.7.9.4 on page 95.
- A *Pane*, allowing you to extend the size of the form. This item is useful if the *Save Case Description* extends multiple lines.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7 Save Case Definer Window page 74
4.7.9.2 Save Case - EDEF - Save Case ID page 92

Item
4.7.9.3 Save Case - EDEF - Description page 94
4.7.9.4 Save Case - EDEF - Save Case Nature page 95

4.7.9.1 Save Case - EDEF- Spacecraft

Figure 25Save Case - EDEF - Spacecraft Option Menu

Description

This Option Menu defines the Spacecraft ID (e.g. CLUSTER,ERS-2) which the Save Case is defined for. Note that, together with the *Save Case - EDEF - Save Case ID* field, the Spacecraft defines the Save Case file name. This means that when loading a Save Case definition, you should specify both the Spacecraft and the Save Case ID.

The visibility of the Menu items depends on the Spacecraft which your host computer is connected to as follows:

ERS-2:

- ERS-2
- KIRUNA 2

ERS-1:

- ERS-1
- KIRUNA 1

ISO:

- ISO

CLUSTER:

- CLUSTER-1
- CLUSTER-2
- CLUSTER-3
- CLUSTER-4

SCOS

- SCOS

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 24 on page 88 shows the Spacecraft Option Menu. The Spacecraft defined is ERS-2.

Possible Errors

None.

Cross Reference

Item
4.7.10 Save Case - Data page 97
4.7.9.2 Save Case - EDEF - Save Case ID page 92

4.7.9.2 Save Case - EDEF - Save Case ID

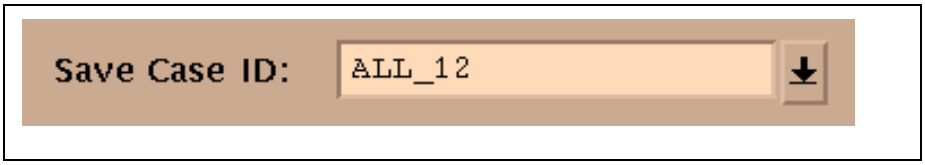


Figure 26Save Case - EDEF - Save Case ID

Description

This Text Field is located in the *Save Case - External Definition (EDEF)* form. It has the following function:

- On a Save Case *Load*, the field (in combination with the *Save Case - EDEF- Spacecraft Option Menu)* specifies the complete ID of the Save Case to load.
- On a Save Case *Save*, the field (in combination with the *Save Case - EDEF- Spacecraft Option Menu)* specifies the complete ID which the definitions are saved under.

Note that for Summary Save Cases, this field will be non-editable and always display the "summary" text string. The field will change to editable when setting the *Save Case - EDEF - Save Case Nature* different from "Summary".

File Selection Box Button

Clicking on the Push Button to the right of the Text Fields displays a SPEVAL File Selection Box. The Box will be initialised to reflect the directory in which the Save Case resides. Clicking the File Selection Box OK button updates the *Save Case - EDEF - Save Case ID* field with the selected Save Case ID, but without performing any "Load" or "Save" operations.

Cautions and Warnings

You will not be given a warning if you do a "Save As" operation, thereby specifying an ID of an already defined Save Case in this field.

Syntax

<*save_case_id*>: String, 1-20 characters. May contain alphanumeric characters and "$","-" and "_" characters. Uppercase and lowercase characters are considered equal.

Examples

`"$A-01_1"` is a valid Save Case ID.
`"TM_A001"` and `"tm_a001"` refers to the same Save Case ID.
`"TM A"` is INVALID. (Contains interleaved blanks).
`"%TM"` is INVALID. (Contains the "%" character).

Possible Errors

Error Message	Meaning
`File not found`	The file has not been found (on a Load Operation). Check the spelling, the Spacecraft and the Save Case Nature which has been entered.
`Use only letters, numbers, and the following: ”_”, ”-”, ”$”`	Invalid letters in the Save Case ID text field.
`Field contains no input`	Save Case ID field contains no letters.
`Wildcards in file names are not supported`	One or more “*” in the Save Case ID.
`Field contains embedded blanks - Use only letters, numbers, and the following: ”_”, ”-”, ”$”`	Embedded blanks are not allowed in the Save Case ID.
`Field is all blanks`	Save Case ID contains (hidden) blanks. Use the <backspace> key to ensure that all blanks are removed.

Cross Reference

Item
4.7.9 Save Case - External Definition (EDEF) page 88
4.7.5 Save Case - Validate page 81
4.7.4 Save Case - Load page 80
4.7.6 Save Case - Save page 82
4.7.9.1 Save Case - EDEF- Spacecraft page 90

4.7.9.3 Save Case - EDEF - Description

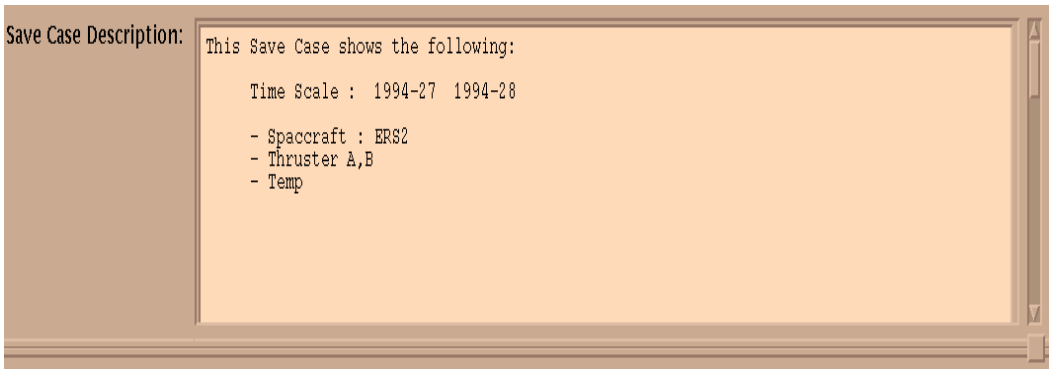


Figure 27Save Case Description (Pane extended)

Description

This Text Field is located in the *Save Case - External Definition (EDEF)* form. It displays (optionally) the Description of the Save Case identified in the *Save Case - EDEF - Save Case ID* field. You may scroll the description using the Vertical Scrollbar located to the right of the Text Window. Alternatively, you can use extend the Pane as shown in Figure 27.

Cautions and Warnings

None.

Syntax

<*save_case_desc*>: String (0-540) characters.

Examples

Figure 27 shows a Save Case Description extending multiple lines,

Possible Errors

None.

Cross Reference

Item
4.7.9 Save Case - External Definition (EDEF) page 88

4.7.9.4 Save Case - EDEF - Save Case Nature

Figure 28Save Case Nature Option Menu

Description

This Option Menu is located in the *Save Case - External Definition (EDEF)* form. It displays the Save Case Nature of the current definitions. The following types are possible:

- *Display Output* (Default). This option specifies that the data retrieved (when the Save Case is submitted) is displayed on the Workstation screen only.
- *User Data Set.* This option specifies that the retrieved data is stored in a UDS (User Data Set) File. Note that in this case, the *Save Case - Output - User Data Set* field must contain a valid UDS ID. The data can later be retrieved from the UDS file by specifying User Data Set in the *Save Case - Data - Data Source* and the UDS ID in the Text field.
- *Summary.* This option specifies that retrieved data is stored in the Global Summary. In this case, the data is added to the existing Summary. (see also warning).
- *Time Definition file*. This option is reserved for future releases.

Cautions and Warnings

Specifying large User Data Set Save Cases will occupy a large amount of disk space.
Summary Save Cases must be copied to the Public area if they should have any effect.

Syntax

Not Applicable.

Examples

Figure 28 shows the Option Menu.

Possible Errors

For error messages related to the User data Set ID, see section 4.7.13.5 on page 119.

Cross Reference

Item
4.7.9 Save Case - External Definition (EDEF) page 88
4.7.10.1 Save Case - Data - Data Source page 98
4.7.13.1 Save Case - Output - Output Type page 112
4.7.13.5 Save Case - Output - User Data Set page 119

4.7.10 Save Case - Data

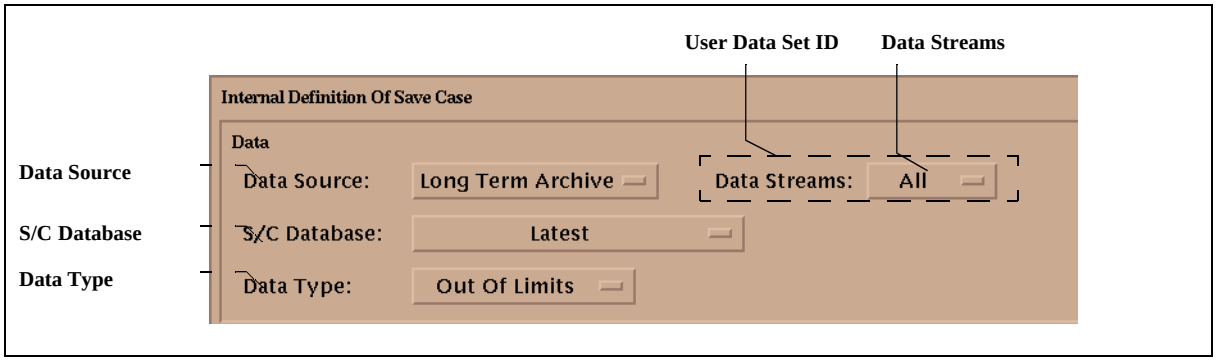


Figure 29Save Case - Data Form.

Description

This form is located in the *Save Case Definer Window* . The form contains items defining the following properties:

- The *Data Source* to be accessed when a Save Case submission is committed. This item is described in section 4.7.10.1 on page 98.
- The Data Streams to be used when the Data Source is the Long Term Archive. This item is described in section 4.7.10.2 on page 99
- The SC/Database, specifying which Database (e.g. Latest) from which to load the retrieved data. The item is described in section 4.7.10.3 on page 101.
- The Data Type (e.g. TM or OOL) of the retrieved/saved data. This item is described in section 4.7.10.4 on page 103.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 29 shows a typical Save Case configuration. TM data will be retrieved from the long term archive using the latest ERS-2 database. The *User Data Set ID* field is not visible.

Possible Errors

None.

Cross Reference

Item
4.7.9.4 Save Case - EDEF - Save Case Nature page 95
4.7.9.1 Save Case - EDEF- Spacecraft page 90
4.7.10.2 Save Case - Data - Data Streams page 99

Item
4.7.10.3 Save Case - Data - S/C Database page 101
4.7.10.4 Save Case - Data - Data Type page 103

4.7.10.1 Save Case - Data - Data Source

Figure 30Save Case - Data - Data Source Option Menu

Description

This Option Menu defines the Data Source to be used for a SPEVAL data retrieval. The following choices are possible:

- *Long Term Archive (LTA)*. This choice is the default. It specifies that the data which is retrieved is the data as received from the Control Centre. For ERS-2 and CLUSTER, the LTA's are stored on magnetic disks. ISO has the data stored partly on disks, partly on DAT tapes.
- *Summary Data*. This choice specifies that the data is retrieved from the Spacecraft Summary. There exist only one Summary per Spacecraft. In order to examine the Save Case definitions used to define the regular retrieval for the project summary, you may open the Save Case name "SUMMARY" .
- *User Data Set*. This choice specifies that the data should be retrieved from an existing UDS file (created from a previous Retrieval). In this case, a Text Field to the right of the Option Menu will be visible, and the UDS ID should be entered here; for a list of available data sets, click on the File Selection Box button to the right of the text field. For the syntax of the UDS ID and the resulting file name, see section 4.7.13.5 on page 119.

Cautions and Warnings

If the entire contents of a User Data Set is to be retrieved, and displayed using the originally specified proforma, it is much quicker to load it directly (see 4.6.5 SPEVAL Control - Direct Load of UDS page 72).

Syntax

See section 4.7.13.5 on page 119 for the syntax of the UDS ID.

Examples

Figure 29 on page 97 shows the Option Menu. The current Data Source defined is "Long Term Achieve". The position of the User Data Set ID Text field is indicated.

Possible Errors

None.

Cross Reference

Item
4.7.10 Save Case - Data page 97
4.7.13.5 Save Case - Output - User Data Set page 119

4.7.10.2 Save Case - Data - Data Streams

Figure 31Save Case - Data - Data Streams.

Description

This Option Menu is only visible when the *Save Case - Data - Data Source* is set to Long Term Archive and when the *Save Case - Data - Data Type* is set to TM or OOL. It allows you to specify the data streams to be used for a SPEVAL retrieval.
The options are as follows:

- *All. T*his choice is the default. It specifies that all the data streams should be retrieved.
- *Specific*. In this case, a text field will be visible allowing you to specify a list of specific data streams (-9 to 9) to be retrieved.

When the Save Case definer validates the data stream list you have specified, any duplicates will be removed, and the list put on a standard comma-separated form (see Examples).

Cautions and Warnings

None.

Syntax

<*data_stream_list*>: List of data stream numbers in the range -9 to 9. The numbers can be separated by commas, blanks or no separator (see examples). Multiple occurrences of a data stream number will be filtered out.

Examples

The following data stream lists are functionally identical. They specify that the data streams “-9”, ”0”, and “9” should be retrieved:

```
-9, 0, 9
-909
-9 0 9
-9 -0 +0 9 9 9
```

The Save Case definer will convert the list format to the standard format:

```
-9, 0, 9
```

Possible Errors

Error Message	Meaning
`Invalid data stream - following are valid examples: ”-1,0,+1”, ”-1 0 1”, ”-101”`	The “specific” data stream option has been chosen but the syntax is incorrect.

Cross Reference

Item
4.7.10 Save Case - Data page 97
4.7.10.4 Save Case - Data - Data Type page 103

4.7.10.3 Save Case - Data - S/C Database

Figure 32Save Case - Data - S/C Database (Current At: Option).

Description

This Option Menu allows you to specify the derived Data Base to be used for the Save Case Retrieval. SPEVAL archives each database as received from the Mission Control Centre. The DB information is used to calibrate the data, to find the Parameter locations in the SCOS packets and so on.
The selectivity of the different options depends on the SC mission and the data type retrieved as shown in the table below. Note that the *Latest* option always is selectable.
The following database choices are possible:

- *Current At data Generation.* Specifies that the retrieved data should be matched against the database which was valid at the time the data was generated. This means that SPEVAL may use several databases during one retrieval.
- *Latest.* Access the Latest Version of the Derived Database.
- *Current At.* If this option is chosen, a *Time Specification Field* will be displayed to the right of the Option Menu, allowing you to specify the time for which the database should yield.

Mission	Data types for where “Current At data Generation” and “Current At” are possible	Comment
ERS 1 ERS 2 KIRUNA 1 KIRUNA 2	TM TC	TC retrieval does currently not access any database.
CLUSTER	TM Chronological History Buffer Log Monitoring Table Log Time-tagged Commands Buffer Log Backup-Up Time-tagged Commands Buffer Log Macro Commands Buffer Log Survival Mode Extension Buffer Log	Cluster TC retrieval (from the Command History File) does not access any Database. The Command History file is self-containing.
ISO	TM	
SCOS	TM	

Cautions and Warnings

The retrieval will fail if the *Current At data Generation* or *Current At* options are specified and no database is valid for the current time.

Syntax

Not Applicable.

Examples

Figure 32 on page 101 shows the Option Menu. The current choice is “Current At:”.

Possible Errors

None

Cross Reference

Item
4.7.10 Save Case - Data page 97
4.7.10.4 Save Case - Data - Data Type page 103

4.7.10.4 Save Case - Data - Data Type

Figure 33Save Case - Data - Data Type (showing ERS Scrolling Log).

Description

This Option Menu defines the Data Types to be retrieved. The options in the Menu are mission specific, but TM and OOL data are common for all spacecrafts.

ERS Scrolling Log File Selection Box Button

For ERS Scrolling Logs, a Log ID text field and a File Selection Box Push Button will be visible as shown in Figure 33. The File Selection Box displays a number of Scrolling Log ID's together with their description.

The tables below list the different Data Type options.

Table 6: ERS1, ERS2, KIRUNA1 and KIRUNA2 data types

Data type	Comment
TM	Specifies that Telemetry data is retrieved. The Proforma in the *Save Case - Simple Extraction Processing (SEP)* form is used to identify the Parameters. This is the only option where statistical processing is possible.
OOL	Specifies that Out-of-Limits data is retrieved. Note that when this option is chosen, the *Save Case - Simple Extraction Processing (SEP)* form will be inhibited and the *Save Case - Output* form will only allow you to specify output of OOL data.
TC	Specifies that Telecommanding data is retrieved.
Scrolling Log	Specifies that the Scrolling Log history is retrieved.

Table 7: CLUSTER data types

Data type	Comment
TM	As for ERS/KIRUNA
OOL	As for ERS/KIRUNA

Table 7: CLUSTER data types

Data type	Comment
TC	Specifies that Telecommanding data is retrieved. For CLUSTER, the TC history is displayed in the same type of window as used by the CMCS.
Time Correlation File	Not implemented in SPEVAL Version 3.0
Orbit Event File	Not implemented in SPEVAL Version 3.0
Ground Station Schedule File	Not implemented in SPEVAL Version 3.0
Spacecraft Schedule File	Not implemented in SPEVAL Version 3.0
OBRQ File	Not implemented in SPEVAL Version 3.0
Chronological History Buffer Log	Specifies that the Chronological History Buffer Log is retrieved.
Monitoring Table Log	Specifies that the Monitoring Table Log is retrieved.
Time-Tagged Commands Buffer Log	Specifies that the Time-Tagged Commands Buffer Log is retrieved.
Backup-Up Time-Tagged Commands Buffer Log	Specifies that the Backup-Up Time-Tagged Commands Buffer Log is retrieved
Macro Commands Buffer Log	Specifies that the Macro Commands Buffer Log
Survival Mode Extension Buffer Log	Specifies that the Survival Mode Extension Buffer Log is retrieved.

Table 8: ISO data types

Data type	Comment
TM	*As for ERS/KIRUNA*
OOL	As for ERS/KIRUNA

Table 9: SCOS data types

Data type	Comment
TM	*As for ERS/KIRUNA*
OOL	As for ERS/KIRUNA

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 29 on page 97 shows the Option Menu. The data type is “Out of Limits” (OOL).

Possible Errors

An invalid Scrolling Log ID in the Scrolling Log ID Text Field implies a subsequent Retrieval failure.

Cross Reference

Item
4.7.10 Save Case - Data page 97
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.13 Save Case - Output page 110

4.7.11 Save Case - Simple Extraction Processing (SEP)

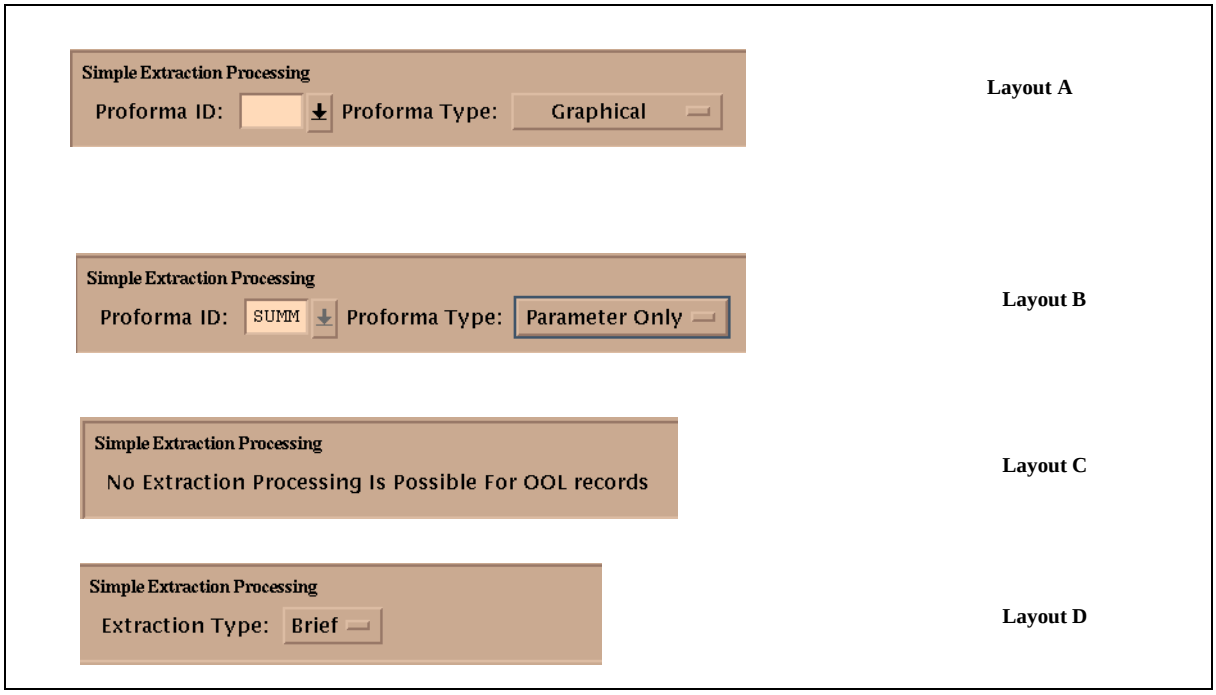


Figure 34Save Case - Simple Extraction Processing (SEP) form (4 configurations).

Description

This Form is located in the middle of the *Save Case Definer* window. It allows you to specify the primary Proforma and Proforma Type for the retrieval. As indicated in Figure 34, the form may take three distinct layouts. The appearance of the different forms depends on the *Save Case - EDEF - Save Case Nature* and the *Save Case - Data - Data Type items,*

Table 10: Simple Extraction Processing (SEP) form layout

Save Case Nature	SC Data Type	Layout	Comment
Summary	*Only TM possible*	B	Proforma id is fixed to be “SUMM” and Proforma Type fixed to “Parameter Only”
UDS/ Display Output	TM	A	
	TC	D (ERS) C (others)	Only possible to specify TC Extraction type for ERS/KIRUNA. For CLUS-TER, specified at display time.
	others	C	No proforma may be specified

The following fields are considered:

Save Case - SEP - Proforma ID

Specifies the name of the Proforma to use. The directories which will be searched for the Proforma is the logical name SPVL_PROFORMA_DIR. For *Summary* Save cases, the field will be initialised with the Proforma ID “SUMM”. See below

for the expected filename extensions.

Save Case - SEP- Proforma Type

Specifies the type of the Proforma identified in the Proforma ID field. The following types are possible:

Parameter Only

This option will be the only choice if the *Save Case - EDEF - Save Case Nature* is set to Summary and is also selectable for *User Data Set* types. It simply specifies that the Parameter extraction processing cannot be identified as Graphical or Alphanumeric, since the data is not displayed. In this case, the Proforma file name extension is expected to be “PARAM”.

Alphanumeric

This option specifies that the Proforma to use is of type Alphanumeric. In this case, the Proforma file name is expected to be “ALPHA”.

Graphical.

This option specifies that the Proforma to use is of type Graphical. In this case, the Proforma file name extension is expected to be “GRAPH”.

Save Case - SEP - Extraction Type

Specifies the type of TC data extraction for ERS/KIRUNA:

Brief

Each command is summarized on a single line.

Full

The full command details are retrieved.

Cautions and Warnings

If a proforma is updated (using the Proforma Editor) after it is included in a save case, the new version will not automatically be imported into the save case. To use the new version, explicitly reload it as described in section 4.7.14.11 on page 143

Syntax

.<*proforma_id*>: String, 1-4 characters. May contain alphanumeric characters and “$”,”-” and “_” characters. Uppercase and lowercase characters are considered equal.

Examples

Spacecraft “ERS-2:, Proforma ID “SUMM” + *Summary* Save Case Nature produces the Proforma file name “ERS2_SUMM.PARAM”.

Possible Errors

For errors concerning the Proforma ID, see 4.7.14.1 on page 124.

Cross Reference

Item
4.7.9.4 Save Case - EDEF - Save Case Nature page 95
4.7.10.4 Save Case - Data - Data Type page 103

4.7.12 Save Case - Simple Time

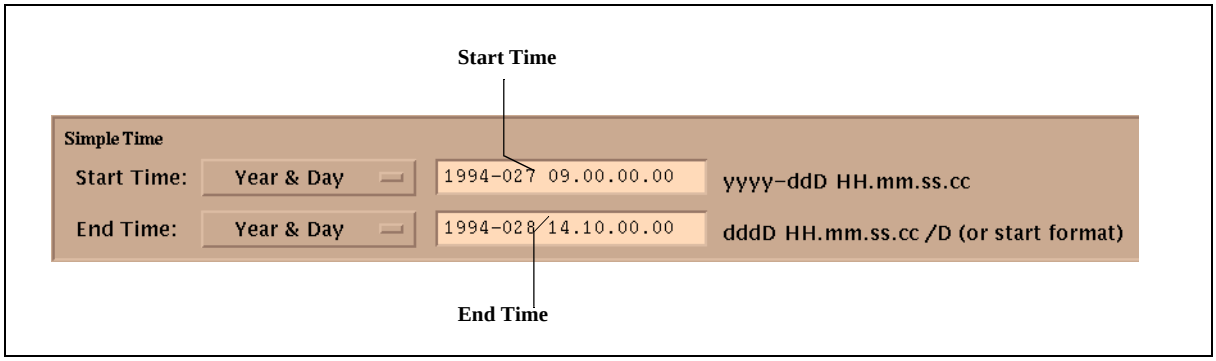


Figure 35Save Case - Simple Time.

Description

These two fields are central within the *Save Case Definer* window. They specify the start and end time for the retrieval which is started when you press the *Save Case - Submit* Button. Note that for Summary Save Cases, these two fields are not displayed. If you want to retrieve using multiple time windows, see “Save Case - Time Options (TO) Window” on page 145. If the Time Options window contains “Repeated Time Windows” or “Irregular Time Windows”, the *Save Case - Simple Time* window will be inhibited.

Currently, the only format allowed is the “Year & Day” format as indicated in Figure 35. The complete syntax for this format is described in section 4.2 on page 52. You must always specify an end time greater than the start time. Otherwise, any Save Case *Submit* or *Validate* will fail.

Cautions and Warnings

Specifying a large time range may increase the retrieval time drastically. It is recommended to start of with smaller time scales in order to get an indication of how long larger retrievals will take.

Syntax

A complete syntax for the time fields is given in section 4.2 on page 52.

Examples

Figure 35 specifies a retrieval starting at day 1994, day 27, 09:00, ending at day 28 14:10.

Possible Errors

See section 4.2 on page 52. Additional error messages are the following:

Error Message	Meaning
`Design constraint: time range is too big for stats data ( reduce to <= 497 days )`	SPEVAL cannot handle statistics retrieval for more than 497 days. Either (1) turn of the statistics retrieval options in the *Save Case - TME - Data Filters (analogue)* , or (2) reduce the time window.

Cross Reference

Item
4.2 Time Specification Fields page 52
4.7.15 Save Case - Time Options (TO) Window page 145
4.7.7 Save Case - Submit page 83

4.7.13 Save Case - Output

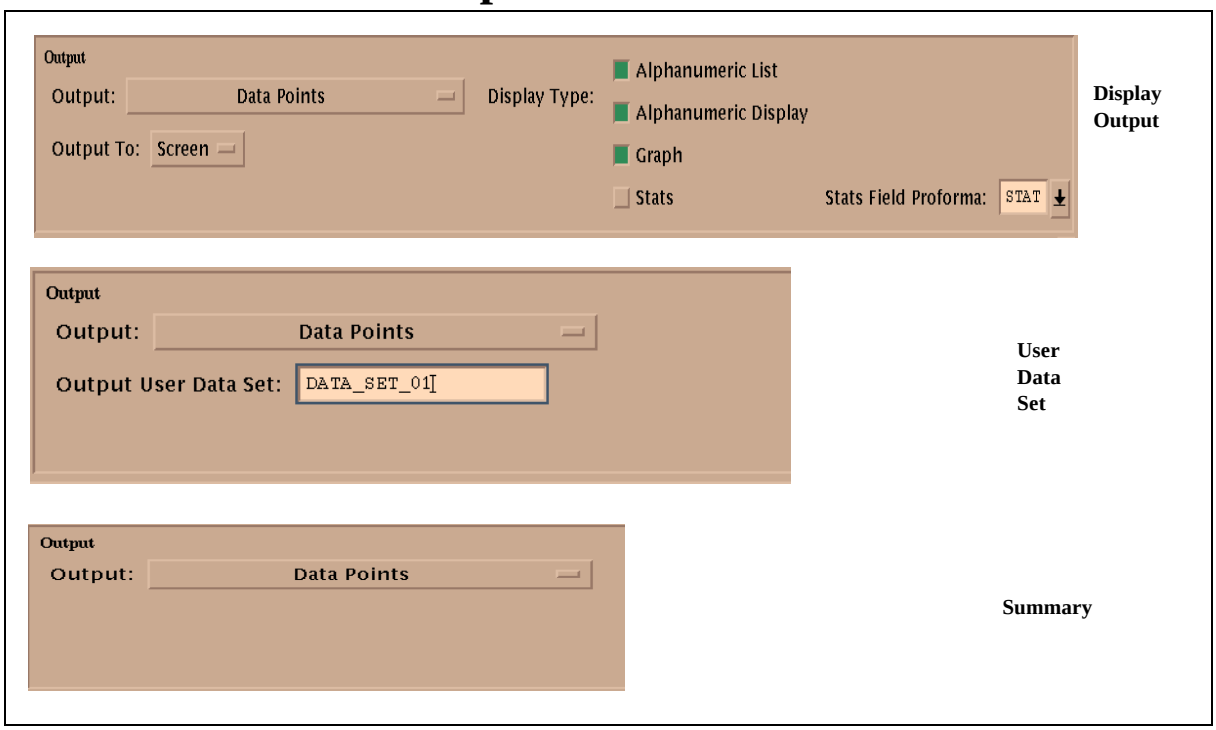


Figure 36Save Case - Output (different configurations).

Description

This Form, located in the lower part of the Save Case Definer Window defines the output possibilities for the retrieval associated with the Save Case. The form layout varies according to the following other Save Case items (as well as the items defined in the form):

- *Save Case - EDEF - Save Case Nature* . The maximum visible fields for each of the 3 Save Case Natures are shown in Figure 36.
- *Save Case - Data - Data Type* . If the Save Case Data Type is set different from TM, the Display Type is limited to one type of display. In this case, no Graphical interface will be possible. See *Save Case - Data - Data Type* for a list of these display Windows.

The form contains the following items:

- The *Output*, allowing you to specify whether to output data points or totals of data points. These items are described in detail in section 4.7.13.1 on page 112.
- The *Output To* (i.e. Screen, Printer or File). This item is described in detail in 4.7.13.2 on page 114.
- An *Output User Data Set*. This item is described in detail in 4.7.13.5 on page 119.
- A *Display Type* radio Button Group. It defines the different windows which the retrieved data should be displayed in. The buttons are described in 4.7.13.3 on page 115.
- *Field Proforma* text fields. These field allow you to define alternative column layouts for the display of *OOL, Statistics* and *Totals* Windows. The fields are described in detail in section 4.7.13.4 on page 117.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not applicable.

Possible Errors

Not Applicable.

Cross Reference

Item
4.7.13.2 Save Case - Output - Output To page 114
4.7.13.3 Save Case - Output - Display Type page 115
4.7.13.4 Save Case - Output - Field Proforma page 117
4.7.13.5 Save Case - Output - User Data Set page 119

4.7.13.1 Save Case - Output - Output Type

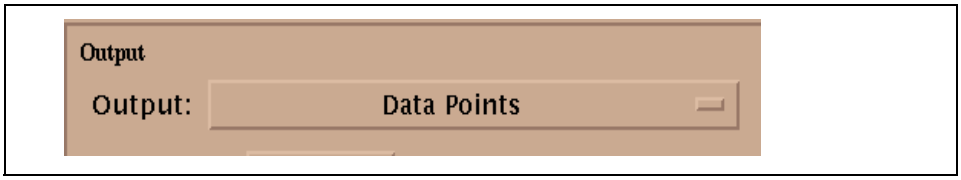


Figure 37Save Case - Output - Output Type Option Menu

Description

This Option Menu specifies the nature of the data after a successful retrieval. It is always visible. The Menu choices are as follows:

Data Points

This Button specifies that the data which have been retrieved should be displayed or printed to file. The Button is always selectable.

Totals From Data Points

This button specifies that "Totals" information should be displayed. The different items for this option are described under the "Totals Window" on page 174. The Button is not selectable if the *Save Case - EDEF - Save Case Nature* is set to Summary.

All Already Calculated Totals

This button specifies that "Totals" information should be displayed. E.g. if the *Save Case - Data - Data Source* is set to Summary, and the Summary UDS file used for the retrieval contains one or more "Totals" records, the retrieval will retrieve all the records and display them. The Button is only selectable if the *Save Case - Data - Data Source* is set to *Summary* or *User Data Set*.

Merge of All Already Calculated Totals

This button specifies that merge "Totals" information should be displayed. E.g. if the *Save Case - Data - Data Source* is set to Summary, and the Summary UDS file used for the retrieval contains one or more "Totals" records, the retrieval will retrieve all the records, merge them into one, and display it. The Button is only selectable if the *Save Case - Data - Data Source* is set to *Summary* or *User Data Set*.

Note: Retrieval from a UDS file specifying the *All Already Calculated Totals* or *Merge of All Already Calculated Totals* might give some unexpected results. The reason is that the "Totals" records are stored in the UDS file using the time key of the actual Save Case submission time, *not* the actual time span the Totals have been collected for. (See Examples and the related section "Save Case - TME - Data Filters (analogue)" on page 136).

Cautions and Warnings

Syntax

Not Applicable.

Examples

Say that the current day is 1-OCT 1995. If you do a "Totals from Data Points" retrieval from the Long Term Archive, specifying a UDS file as the output and the time range 1-JUL-1995 to 1-AUG-1995, the single "Totals" record will be stored in the UDS file with the time stamp according to e.g. 1-OCT 1995 14.00.00. Now, doing a retrieval from the UDS file specifying

All Already Calculated Totals or *Merge of All Already Calculated Totals*, using the (same) time range 1-JUL-1995 to 1-AUG-1995 would produce zero ouput records. In order to find the Totals record you must specify a time range covering the sumbission time (1-OCT 1995 14.00.00).

Possible Errors

None.

Cross Reference

Item
4.7.9.4 Save Case - EDEF - Save Case Nature page 95
4.7.13.2 Save Case - Output - Output To page 114
4.7.13.5 Save Case - Output - User Data Set page 119

4.7.13.2 Save Case - Output - Output To

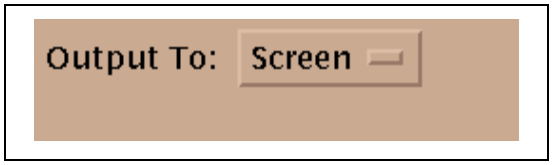


Figure 38Save Case - Output - Output To Option Menu

Description

This Option Menu is located in the Save Case - Output window. It will only be visible if the *Save Case - EDEF - Save Case Nature* is *"Display Output"*.The Button allows you to specify the Output direction of the Save Case retrieval as follows:

- *Screen*. Outputs the data in one or more X-Windows as defined by the *Save Case - Output - Display Type* radio Buttons.
- *Printer*. This Button is reserved for future releases. You can however print the contents of a particular display window by choosing the *File | Output > Print* in the corresponding display window.
- *File*. This Button is reserved for future releases. You can however print the contents of a particular display window to a text file by choosing the *File | Output > Text* in the corresponding display window. For Graphics Windows, you can choose the *File | Output > Postscript* or the *File | Ouput > EPS* option. EPS stands for Encapsulated Postscript.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7.13 Save Case - Output page 110
4.7.13.1 Save Case - Output - Output Type page 112
4.7.13.2 Save Case - Output - Output To page 114

4.7.13.3 Save Case - Output - Display Type

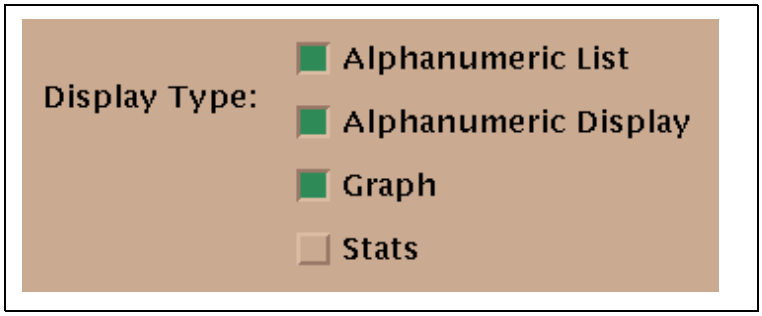


Figure 39Save Case - Output - Display Type radio Buttons (one layout)

Description

These items determines where to display the retrieved data for Save Cases of type “Display Output”. At any time, the possible choices depends on other fields in the Save Case Definer as follows:

If the *Save Case - Output - Output Type* is “Totals From Data Points”, the only possible Display Window will be the Totals Window. In this case, the *Save Case - Output - Field Proforma* field will display the name of the Totals Proforma used for column display definitions. The layout of this window is described in section 4.9.4 on page 174. The table below lists the possible data types when the *Save Case - Output - Output Type* is set to “Data Points”:

Table 11: Save Case - Output - Display Type options

SC Data Type	Display Types possible	Comment
TM	Alphanumeric List	When set, the radio button specifies that the Alphanumeric List Window should be displayed after the retrieval. The layout of this window is described section in 4.9.1 on page 166.
	Alphanumeric Display	When set, the radio button specifies that the Alphanumeric Display Window should be displayed after the retrieval. The layout of this window is described in section 4.10 on page 176.
	Graph	When set, the radio button specifies that the Statistics Window should be displayed after the retrieval. In this case, the *Save Case - Output - Field Proforma* field will display the name of the Stats Proforma used for column display definitions.The layout of this window is described in section 4.9.2 on page 168.
	Stats	When set, the radio button specifies that the Statistics Window should be displayed after the retrieval. In this case, the *Save Case - Output - Field Proforma* field will display the name of the Stats Proforma used for column display definitions.The layout of this window is described in section 4.9.2 on page 168.

Table 11: Save Case - Output - Display Type options

SC Data Type	Display Types possible	Comment
OOL	OOL Display	When set, the radio button specifies that the Statistics Window should be displayed after the retrieval. In this case, the *Save Case - Output - Field Proforma* field will display the name of the OOL Proforma used for column display definitions.The layout of this window is described in section 4.9.3 on page 171.
TC	Telecommand	For CLUSTER, the Command History display will show the Command History. For ESR/Kiruna, the Command History is displayed in one of the *Standard Alphanumeric List Windows* described in section 4.9 on page 162
Logs files	as for Data Type	Log files will be displayed in one of the *Standard Alphanumeric List Windows* described in section 4.9 on page 162. The format of the columns will be as described in the MCS SUMs.

Cautions and Warnings

None.

Syntax

Not Applicable.

Error Messages

Message	Meaning
`No stats data is expected for Stats display since no parameters have stats filters`	The STATS option has been specified but no TM Parameters have their statistics filters turned on. Either (a) Turn off the Statistics or (b) define statistical filters via the TM Extraction Window.
`No TM data is expected for TM displays since all parameters have stats filters`	The Alphanumeric Display, Alphanumeric List or Graph option have been turned on, but only Statistics filters have been specified (only statistics is produced). Either (a) turn off the option(s) or (b) turn off the statistic filters.

Cross Reference

Item
4.7.13 Save Case - Output page 110
4.7.13.1 Save Case - Output - Output Type page 112
4.7.14.7 Save Case - TME - Data Filters (analogue) page 136
4.9 Standard Alphanumeric List Windows page 162
4.10 Alphanumeric Display Window page 176

Item
4.11 Graphical Window page 178
4.9.1 TM (Alphanumeric List) Window page 166
4.9.2 Statistics Window page 168
4.9.3 OOL (Out-of-Limits) Window page 171
4.9.4 Totals Window page 174

4.7.13.4 Save Case - Output - Field Proforma

Figure 40Save Case - Output - Field Proforma Text Field (for Stats)

Description

These text fields specify a name of a Field Proforma to use when displaying OOL, Statistics and Totals windows. When SPEVAL displays the retrieved data, the Proforma is used to determine the layout of the corresponding Window columns. The text fields will only be visible if the *Save Case - EDEF - Save Case Nature* is “Display Output”.

The fields may be located at different positions in the Save Case - Output form:

- The OOL Field Proforma field specifies the name of the OOL Proforma to be used for display of SCOS OOL packets. The default name for this field is “OOLS”. See section 4.9.3 on page 171 for the possible column layout of this window.
- The Stats Field Proforma field specifies the name of the Stats Proforma to be used for display of SPEVAL Statistics. The default name for this field is “STATS”. See section 4.9.2 on page 168 for the possible column layout of this window.
- The Totals Field Proforma field specifies the name of the Totals Data Points Proforma to be used for display of the number of data points retrieved. The default name for this field is “TOTS”. See section 4.9.4 on page 174 for the possible column layout of this window.

Cautions and Warnings

None.

Syntax

Not Applicable.

Possible Errors

Error Message	Meaning
`File not found`	The Proforma file has not been found. Check the spelling.
`Use only letters, numbers, and the following: ”_”, ”-”, ”$”`	Invalid letters in the Field Proforma text field.
`Field contains no input`	Field Proforma field contains no letters.
`Wildcards in file names are not supported`	One or more “*” in the Field Proforma.
`Field contains embedded blanks - Use only letters, numbers, and the following: ”_”, ”-”, ”$”`	Embedded blanks are not allowed in the Field Proforma.
`Field is all blanks`	Field Proforma ID contains (hidden) blanks. Use the <backspace> key to ensure that all blanks are removed.

Cross Reference

Item
4.7.13 Save Case - Output page 110
4.9.2 Statistics Window page 168
4.9.1 TM (Alphanumeric List) Window page 166
4.9.3 OOL (Out-of-Limits) Window page 171

4.7.13.5 Save Case - Output - User Data Set

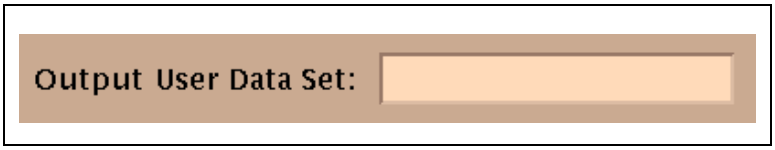


Figure 41Save Case - Output - User Data Set text field

Description

This Text Field is only visible if the *Save Case - EDEF - Save Case Nature* is "User Data Set". In this case, it specifies the name of the User Data Set in which to store the retrieved data. The file will be stored in the directory identified by the logical name SPVL_USER_DATA_SET_DIR.

As for Save Cases and Proforma, there exists a *private* (SPVL_PRIVATE_USER_DATA_SETS) and a *public* (SPVL_PUBLIC_USER_DATA_SETS) UDS directory. The private directory has precedence over the public one.

Cautions and Warnings

None.

Syntax

<user_data_set_id>: String, 1-20 characters. May contain alphanumeric characters and "$","-" and "_" characters. Uppercase and lowercase characters are considered equal.
The expanded file name will be "<spacecraft_id>_<user_data_set_id>.UDS"

Examples

A User Data Set ID defined for ERS-2 named "USER_DSET_01" will produce the file name "ERS2_USER_DSET_01.UDS", and will be stored in SPVL_USER_DATA_SET_DIR.

Possible Errors

Error Message	Meaning
`Use only letters, numbers, and the following: "_", "-", "$"`	Invalid letters in the UDS text field.
`Field contains no input`	UDS field contains no letters.
`Wildcards in file names are not supported`	One or more "*" in the UDS ID.
`Field contains embedded blanks - Use only letters, numbers, and the following: "_", "-", "$"`	Embedded blanks are not allowed in the UDS ID.
`Field is all blanks`	UDS ID contains (hidden) blanks. Use the <backspace> key to ensure that all blanks are removed.

Cross Reference

Item
4.7.9.4 Save Case - EDEF - Save Case Nature page 95
4.7.9.1 Save Case - EDEF- Spacecraft page 90

4.7.14 Save Case - TM Extraction (TME)

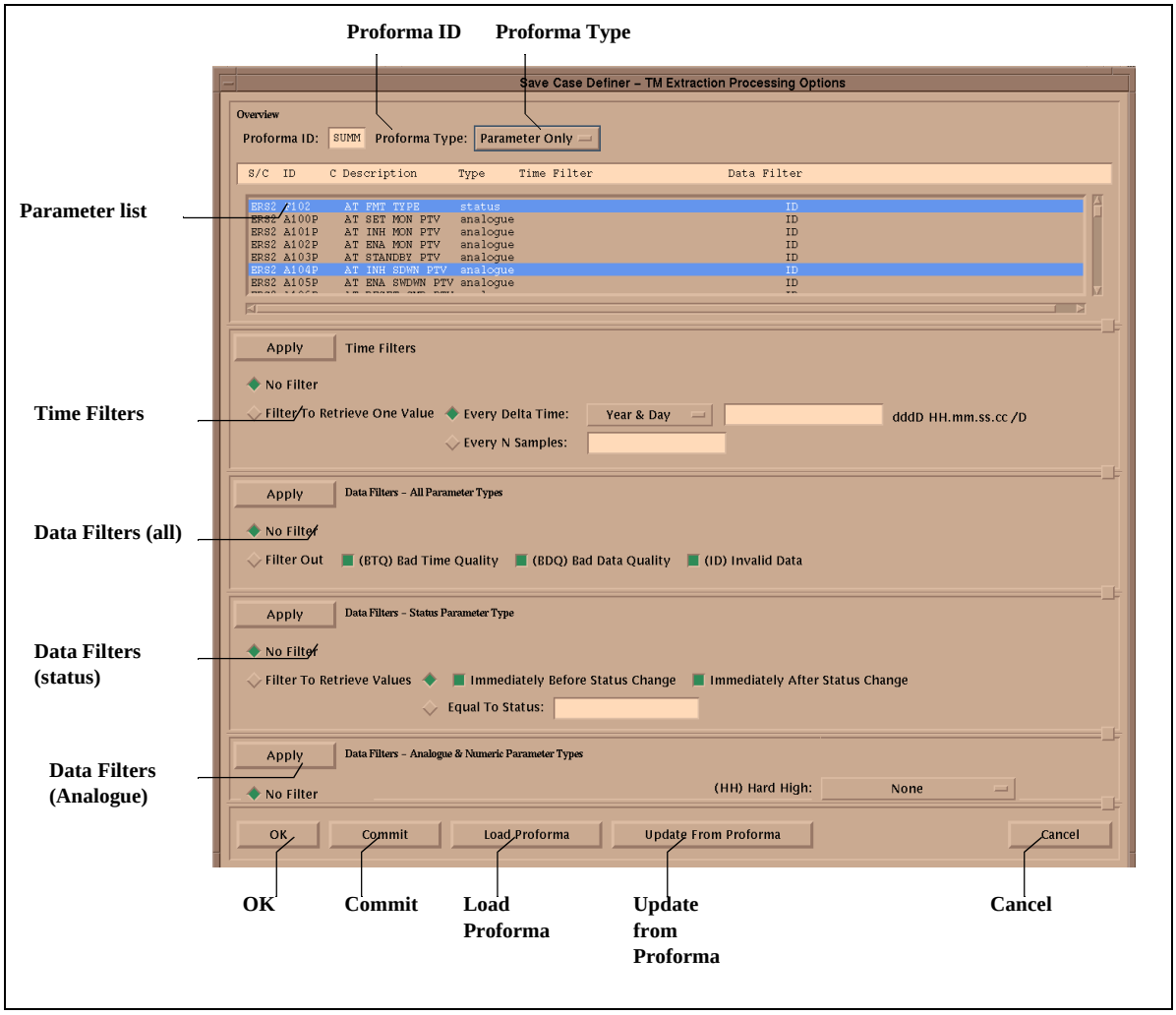


Figure 42TM Extraction Window

Description

This Window is activated by pressing the *Save Case - TM Extraction Processing Options* in the *Save Case Definer* window. The Window offers a wide range of filter possibilities which are used at retrieval time (not display time).

- A *Proforma ID* and *Proforma Type* field, allowing you to specifying the name and type of an existing proforma which may be loaded into the window using the *Load Proforma* or *Update from Proforma* Button.
- A *Parameter List* displaying all the Proforma Parameters and their filter characteristics. You can select individual or ranges of Parameters for retrieval filtering.
- A *Time Filter* Form, allowing you to define time characteristic filters for the retrieval (e.g every nth sample).
- A *Data Filter* (All) Form, defining filter characteristics which may be applied to all types of TM Parameters.
- A *Data Filter* (Status) Form, defining filter characteristics which may be applied to all types

of Status Parameters.

- A *Data Filter (Analogue)* Form, defining filter characteristics which may be applied to all types of numerical (analogue and integer) Parameters.
- An *OK* Button, allowing you to Save and Close the Window contents to the Save Case. Note however that the changes are not saved permanently to file.
- A *Commit* Button, allowing you to save the Window contents without closing the Window. Note however that the changes are not saved permanently to file.
- A *Load Proforma* Button. this button loads in an existing Proforma (specified in the Proforma ID field), resetting any Parameter and filter characteristics.
- A *Update From Proforma* Button. This button loads in an existing Proforma (specified in the Proforma ID field). Proforma parameters which already are in the Parameter List inherit the existing characteristics. New parameters are highlighted.

Filtering Mechanisms

SPEVAL allows you to define a wide range of filters to be applied to each the Parameters in the Parameter List. However, some of the filter options are mutually exclusive as indicated in Figure 43.

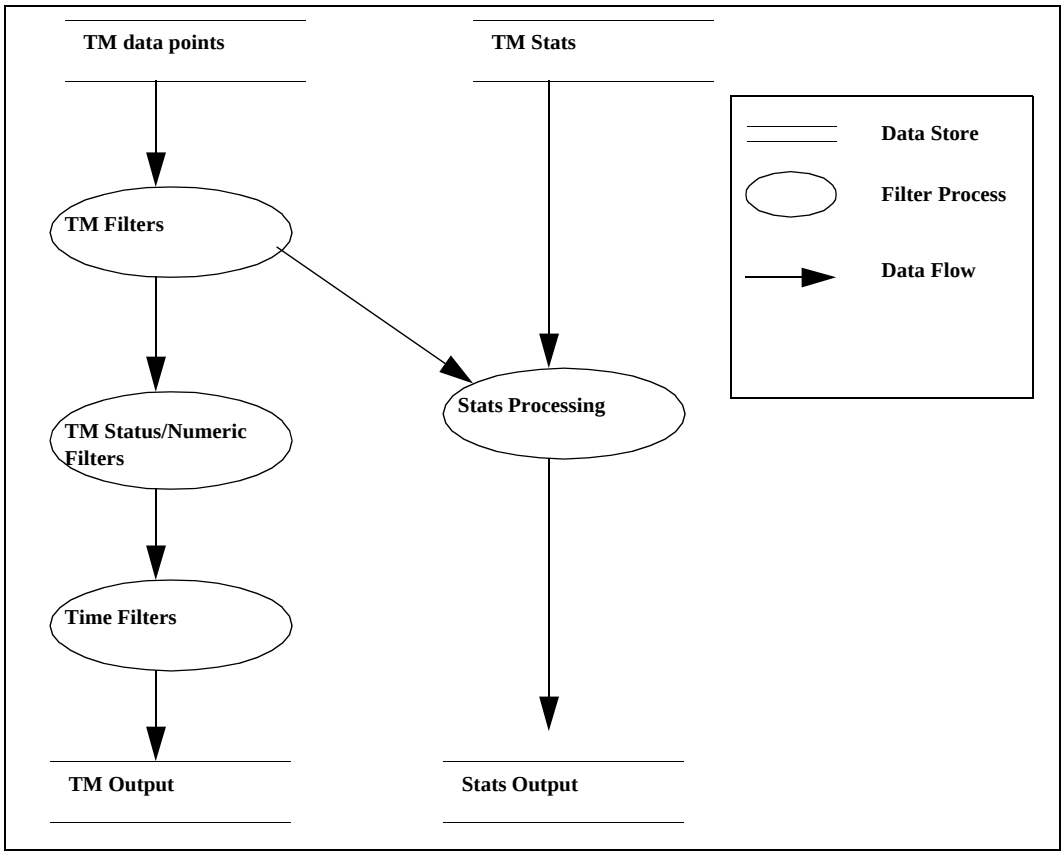


Figure 43SPEVAL filtering data Flow Diagram

The flow diagram specifies which types of filters may be applied to a particular data type. There are two types of input data to the filtering process:

- *TM Stats* corresponds to all already calculated statistics and the merge of all calculated statistics. This data type would be the input to the filtering process if you are retrieving the data

from a UDS (User Data Set) or a Summary and the retrieved data is statistics.

- *TM data points* corresponds to all other data.

The arrows indicates the possible filter mechanisms which may be applied to the different input types. For example, you can apply the general TM Filters to *TM data points* but not to the *TM Stats*. Moreover, you cannot apply both the TM Status/Numeric filters and the Stats Processing Filters to a Parameter because the filters are mutually exclusive.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7.1 Save Case - TM Extraction Processing Options page 77
4.7.14.1 Save Case - TME - Proforma ID page 124
4.7.14.2 Save Case - TME - Proforma Type page 126
4.7.14.3 Save Case - TME - Parameter List page 127
4.7.14.4 Save Case - TME - Time Filters page 130
4.7.14.5 Save Case - TME - Data Filters (all) page 132
4.7.14.6 Save Case - TME - Data Filters (status) page 134
4.7.14.7 Save Case - TME - Data Filters (analogue) page 136
4.7.14.8 Save Case - TME - OK page 140
4.7.14.9 Save Case - TME - Commit page 141
4.7.14.11 Save Case - TME - Update from Proforma page 143
4.7.14.10 Save Case - TME - Load Proforma page 142
4.7.14.12 Save Case - TME - Cancel page 144

4.7.14.1 Save Case - TME - Proforma ID

Description

This Text Field is located at the top left of the *Save Case - TM Extraction (TME)* Window. It specifies the name of an alternative Proforma to be used when retrieving the data. The field defaults to the Proforma ID which have been specified in the *Save Case - Simple Extraction Processing (SEP)* Form. By entering a Proforma ID in the field, then pressing the *Save Case - TME - Load Proforma* or *Save Case - TME - Update from Proforma* Button, SPEVAL will load the proforma and update the Parameter List.

Cautions and Warnings

NOTE: If you specify an alternative Proforma, you must use the “Load” or “Update” Button for the change to have any effect in the Save Case Definitions.

Syntax

<proforma_id>: String, 1-4 characters. May contain alphanumeric characters and “$”,”-” and “_” characters. Uppercase and lowercase characters are considered equal.
The expanded file name will be “<spacecraft_id>_<proforma_id>.<proforma_type_ext>”

Examples

A Graphics Proforma ID defined for ERS-2 named “A-01” will produce the file name “ERS2_A-01.GRAPH”, and the directories searched are the ones identified by the logical name SPVL_PROFORMA_DIR.

Possible Errors

Error Message	Meaning
`File not found`	The file has not been found (on a Load Operation). Check the spelling, the Spacecraft and the Proforma Type which has been entered.
`Use only letters, numbers, and the following: ”_”, ”-”, ”$”`	Invalid letters in the Proforma ID text field.
`Field contains no input`	Proforma ID field contains no letters.
`Wildcards in file names are not supported`	One or more “*” in the Proforma ID.
`Field contains embedded blanks - Use only letters, numbers, and the following: ”_”, ”-”, ”$”`	Embedded blanks are not allowed in the Proforma ID.
`Field is all blanks`	Proforma ID contains (hidden) blanks. Use the <backspace> key to ensure that all blanks are removed.

Cross Reference

Item
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.14.2 Save Case - TME - Proforma Type page 126

Item
4.7.14.10 Save Case - TME - Load Proforma page 142
4.7.14.11 Save Case - TME - Update from Proforma page 143
4.7.14.3 Save Case - TME - Parameter List page 127

4.7.14.2 Save Case - TME - Proforma Type

Description

This Option Menu is located at the top left of the *Save Case - TM Extraction (TME)* Window. It specifies the type of an alternative Proforma to be used when retrieving the data. The field defaults to the Proforma Type which have been specified in the *Save Case - Simple Extraction Processing (SEP)* Form. The Proforma Type decides which filename extension SPEVAL looks for as follows:

- Parameter Only. Filename extension is ".PARAM".
- Alphanumeric. Filename extension is ".ALPHA".
- Graphical. Filename extension is ".GRAPH".

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

A Graphics Proforma ID defined for ERS-2 named "A-01" will produce the file name "ERS2_A-01.GRAPH", and the directories searched are SPVL_PROFORMA_DIR.

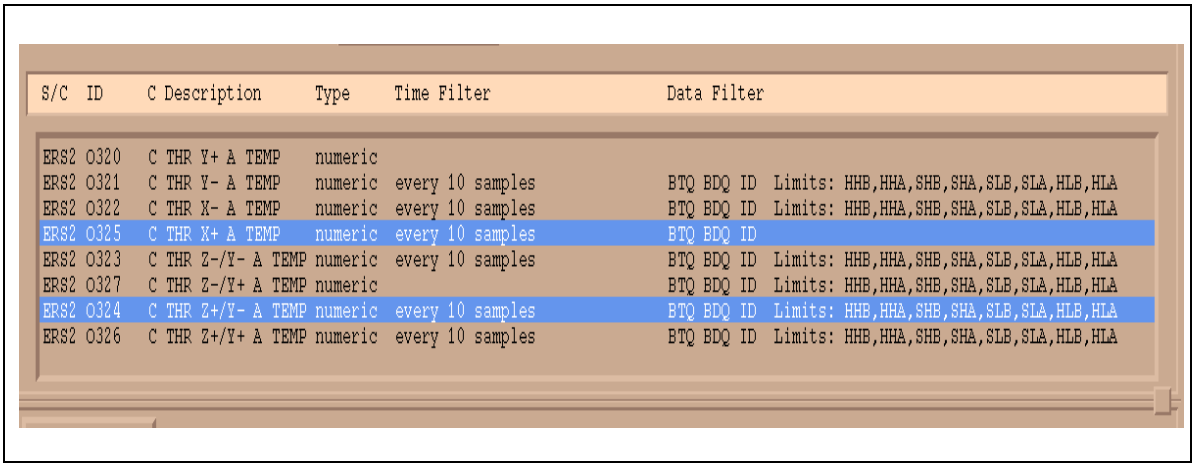
Possible Errors

Not Applicable.

Cross Reference

Item
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.14.1 Save Case - TME - Proforma ID page 124

4.7.14.3 Save Case - TME - Parameter List



S/C	ID	C	Description	Type	Time Filter	Data Filter
ERS2	O320		C THR Y+ A TEMP	numeric		
ERS2	O321		C THR Y- A TEMP	numeric	every 10 samples	BTQ BDQ ID Limits: HHB,HHA,SHB,SHA,SLB,SLA,HLB,HLA
ERS2	O322		C THR X- A TEMP	numeric	every 10 samples	BTQ BDQ ID Limits: HHB,HHA,SHB,SHA,SLB,SLA,HLB,HLA
ERS2	O325		C THR X+ A TEMP	numeric	every 10 samples	BTQ BDQ ID
ERS2	O323		C THR Z-/Y- A TEMP	numeric	every 10 samples	BTQ BDQ ID Limits: HHB,HHA,SHB,SHA,SLB,SLA,HLB,HLA
ERS2	O327		C THR Z-/Y+ A TEMP	numeric		BTQ BDQ ID Limits: HHB,HHA,SHB,SHA,SLB,SLA,HLB,HLA
ERS2	O324		C THR Z+/Y- A TEMP	numeric	every 10 samples	BTQ BDQ ID Limits: HHB,HHA,SHB,SHA,SLB,SLA,HLB,HLA
ERS2	O326		C THR Z+/Y+ A TEMP	numeric	every 10 samples	BTQ BDQ ID Limits: HHB,HHA,SHB,SHA,SLB,SLA,HLB,HLA

Figure 44TM Extraction Parameter List

Description

This List is located at the top of the *Save Case - TM Extraction (TME) Window.* It shows all the Save Case TM Parameters and their current filter characteristics.

You may select single parameters or ranges of parameters for filtering as indicated in Figure 44. For a description of the SPEVAL List selection mechanisms, see section 4.5 on page 62. It should be noted that applying invalid filter characteristics to a particular parameter (e.g. applying Status Filters to a numerical Parameter) will have no effect.

The Parameters displayed in the list reflect unique Parameters defined in the Proforma displayed in the *Save Case - TME - Proforma ID* field. You can override the standard Save Case Proforma (displayed in the Proforma ID field when the TM Extraction Window is activated) with a new proforma name, then applying the *Load Proforma* or *Update from Proforma* Buttons. In this case, the List will be updated, showing the new Parameters.

Note that the filter characteristics in the list displays the filters previously applied to the Parameters, not necessary the current filter settings.
Note also that the Parameter List displays unique Parameters. E.g. if a Parameter is specified twice in the Proforma (with different layout), if will only appear once on the Parameter List.

The List header consists of the following items:

S/C

This is the spacecraft which the Parameter belongs to.

C

The column displays whether the Parameter is calibrated (C) or Uncalibrated (blank).

ID

This column gives the Parameter name.

Description

This column displays the Parameter description.

Type

This column displays the SPEVAL type of the Parameter. The possible Parameters types are:

- *status*. The Parameter is a Status Parameter. For these Parameters
- *numeric*. The Parameter either an Analogue Parameter or an Integer Parameter.
- *ascii*. The Parameter is a Text Parameter.

Time Filter

This column displays the Time filters which have been applied to the Parameter (For how to define time filters, see section 4.7.14.4 on page 130). The Parameters may be retrieved according to n'th samples or Delta Time as follows:

Delta Time

`every <Year & Day Delta>`, where the syntax is as described in section 4.2 on page 52. A Parameter value is only retrieved if the time offset from the previous *retrieved* value is greater or equal to <Day & Year Delta>. The first parameter value is always retrieved. E.g. if the first parameter value for a specific day occurs at time 9.00, then at 9.05, 9.10, 9.20 and 9.30, and you specify a Delta Time of 7 minutes, you will get the values for the times 9.00, 9.10, 9.20 and 9.30. The parameter value for 9.05 is not retrieved because its offset from the previous retrieved value (5 minutes) is less than <Day & Year Delta>.

N'th Sample

`every <n> samples`, where <n> is the n'th sample to retrieve. E.g. if you specify 2 in this field, all the odd (1,3,5 etc.) occurrences of the Parameter will be retrieved.

Data Filter

This column specifies all the possible data filters currently applied to the Parameter. The default is taken from the Proforma definitions. Each filter code is described in Table 12:

Table 12: Data filter codes

Code	Meaning
BTQ	(All Parameters). Filter out Bad Time Quality Parameters. BTQ Parameters are found by analysing the SCOS Packet header.
BDQ	(All Parameters). Filter out Bad Data Quality Parameters. BDQ Parameters are found by analysing the SCOS Packet header.
ID	(All Parameters). Filter out Invalid Parameter data.
Immediately Before Status Change.	(Status Parameters). Only retrieve the values immediately before a Status Change (e.g if ON goes to OFF, retrieve ON)
Immediately after Status Change.	(Status Parameters). Only retrieve the values immediately after a Status Change (e.g if ON goes to OFF, retrieve OFF)
Immediately Before & After Status change.	(Status Parameters). Only retrieve the values before and after a status change. (e.g. if ON goes to OFF, retrieve ON and OFF).
Equal To Status <STATUS>	(Status Parameters). Only retrieve the values which status is equal to <STATUS> E.g. if <STATUS> is ON, return ON. Note that you may only specify one status text string in this field. It is for instance NOT possible to retrieve both the ON and OFF value by entering e.g. "ON,OFF".

Table 12: Data filter codes

Code	Meaning
Limits: <limits>	(Numerical Parameters). The <limits> text string consists of the 3 letters entries below.
HHB	Retrieve values before a Hard High Limit crossing.
HHA	Retrieve values after Hard High Limit crossing.
SHB	Retrieve values before a Soft High Limit crossing.
SHA	Retrieve values after a Soft High Limit crossing.
SLB	Retrieve values before a Soft Low Limit crossing.
SLA	Retrieve values after a Soft Low Limit crossing.
SHB	Retrieve values before a Soft High Limit crossing.
SHA	Retrieve values after a Soft High Limit crossing.
statistics from data points	(Numerical parameters). For these Parameters, generate SPEVAL Statistics Data. The data can be displayed in the Statistics Window.

Cautions and Warnings

None.

Syntax

The syntax of the fields have been defined in the Description.

Examples

Figure 44 on page 127 shows the filter specifications for a set of numerical parameters.

Possible Errors

None.

Cross Reference

Item
4.7.14.4 Save Case - TME - Time Filters page 130
4.7.14.5 Save Case - TME - Data Filters (all) page 132
4.7.14.6 Save Case - TME - Data Filters (status) page 134
4.7.14.7 Save Case - TME - Data Filters (analogue) page 136
4.7.14.10 Save Case - TME - Load Proforma page 142
4.7.14.11 Save Case - TME - Update from Proforma page 143

Item
4.5 Row Selection Modes page 62

4.7.14.4 Save Case - TME - Time Filters

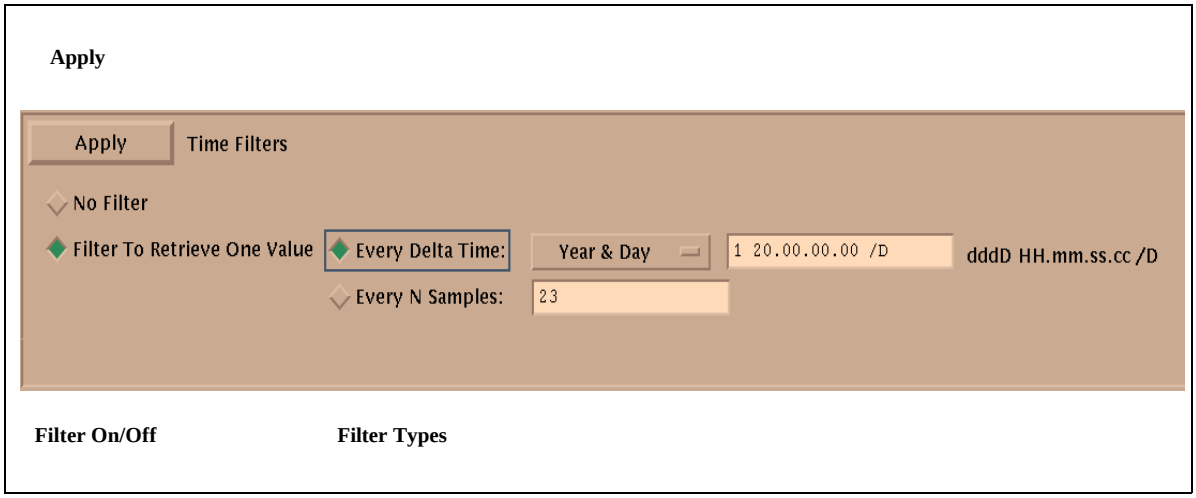


Figure 45TM Extraction - Time Filters Form

Description

This Form is located below the Parameter List in the *Save Case - TM Extraction (TME)* Window. It allows you to specify various time filters applied when SPEVAL is retrieving the Save Case TM data. The default state of this form is "*No Filter*", i.e. that all the Parameter values are retrieved.

By selecting Parameters in the *Save Case - TME - Parameter List* , then pressing the *Apply* Button, all the selected Parameters will be updated to reflect the current filter definitions.
The following items are defined in this window:

Apply Button

Pressing this Button applies the current time filter specifications to the selected Parameters in the Parameter List. If "No Filter" has been specified, all the filters will be cleared.

No Filter

This exclusive Radio Button specifies that no filter should be applied to the selected Parameters. When this state is chosen, the other fields in the form will be insensitive

Filter to Retrieve One Value

This exclusive Radio Button specifies that time filters should be applied to the Parameters, namely "every delta time" or "every sample"

Every Delta Time

This exclusive Radio Button specifies that the data should be retrieved `every <Day & Year Delta>`, where the <Day & Year Delta> syntax is as described in section 4.2 on page 52. A Parameter value is only retrieved if the time offset from the previous *retrieved* value is greater or equal to <Day & Year Delta>. The first parameter value is always retrieved. E.g. if the first parameter value for a specific day occurs at time 9.00, then at 9.05, 9.10, 9.20 and 9.30, and you specify a Delta Time of 7 minutes, you will get the values for the times 9.00, 9.10, 9.20 and 9.30. The parameter value for 9.05 is not retrieved because its offset from the previous retrieved value (5 minutes) is less than <Day & Year Delta>.

Every N Samples

This exclusive radio Button specifies that the data should be retrieved as every n'th

sample. E.g. if you specify 2 in this field, all the selected parameters will have the 1st, 3rd, 5th etc. sample retrieved.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 45 on page 130 shows a Time Filter definitions which will retrieve TM Parameter Values every 44 hours (1 day, 20 hours).

Possible Errors

None.

Cross Reference

Item
4.7.14.3 Save Case - TME - Parameter List page 127

4.7.14.5 Save Case - TME - Data Filters (all)

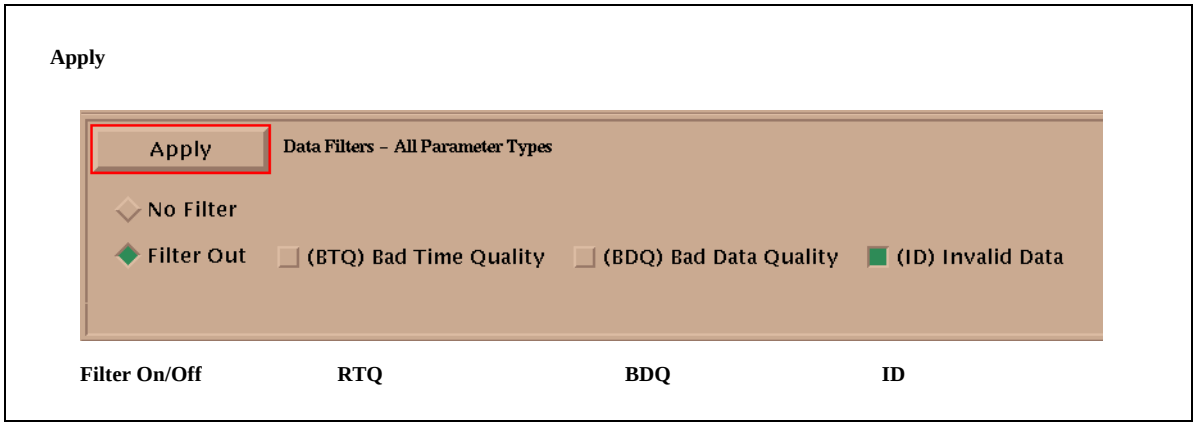


Figure 46TM Extraction - Data Filters (all)

Description

This Form is located in the *Save Case - TM Extraction (TME)* form. It allows you to specify various filters for all TM Parameters, applied when SPEVAL is retrieving the Save Case TM data. By selecting Parameters in the *Save Case - TME - Parameter List* , then pressing the *Apply* Button, all the selected Parameters will be updated to reflect the current filter definitions.

The default state of this form is "*No Filter*". Note however, that fresh Parameters often will have been set to filter out the ID (Invalid Data) records. This depends on the MODE_DEPENDENCY qualifier in the TM Proforma. In order to override this filter, you must explicitly select the Parameters, specifying "No Filter" and applying the current filter definitions.

The following items are defined in this window:

Apply Button

Pressing this Button applies the current time filter specifications to the selected Parameters in the Parameter List. If "No Filter" has been specified, all the filters will be cleared.

No Filter

This exclusive Radio Button specifies that no filter should be applied to the selected Parameters. When this state is chosen, the other fields in the form will be insensitive

Filter Out

This exclusive Radio Button specifies that the TM filter should be applied to the Parameters, namely one or several of the RTQ, BDQ and ID options

BTQ

This Radio Button specifies that Bad Time Quality Parameter values should be filtered out during the retrieval. The definition of Bad Time Quality Parameter values is mission specific.

BDQ

This Radio Button specifies that Bad Data Quality Parameter values should be filtered out during the retrieval. The definition of Bad Data Quality Parameter values is mission specific.

ID

This Radio Button specifies that Invalid Parameter values should be filtered out during the retrieval. The definition of Invalid Parameters is mission specific.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 46 on page 132 shows a TM Filter definitions which filter out all TM Parameter Values classified as “Invalid Data”.

Possible Errors

None.

Cross Reference

Item
4.7.14.3 Save Case - TME - Parameter List page 127
4.1.1 COMPILE page 41

4.7.14.6 Save Case - TME - Data Filters (status)

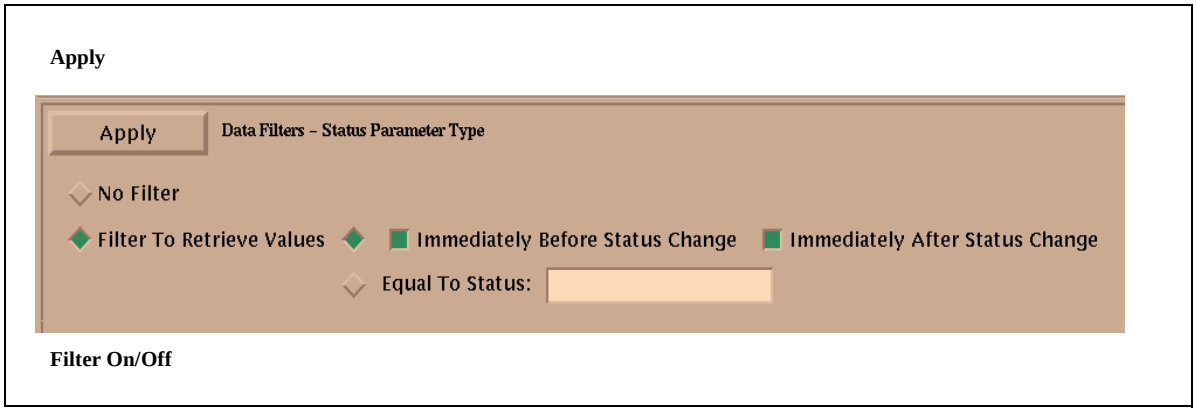


Figure 47TM Extraction - Data Filters (status)

Description

This Form is located in the *Save Case - TM Extraction (TME)* form. It allows you to specify various filters for all TM *Status* Parameters, applied when SPEVAL is retrieving the Save Case TM data. By selecting Parameters in the *Save Case - TME - Parameter List* , then pressing the *Apply* Button, all the selected Status Parameters will be updated to reflect the current filter definitions. Parameters different from Status will remain unchanged when this filter is applied. The default state of the form is "*No Filter*", i.e. no Parameters are filtered out.

The following items are defined:

Apply Button

Pressing this Button applies the current status filter specifications to the selected Status Parameters in the Parameter List. If "No Filter" has been specified, all the status filters will be cleared.

No Filter

This exclusive Radio Button specifies that no filter should be applied to the selected Status Parameters. When this state is chosen, the other fields in the form will be insensitive

Filter to Retrieve Values

This exclusive Radio Button specifies that the Status filter should be applied to the Parameters, namely the options below:

Immediately Before Status
Immediately After Status

These Radio Buttons specify that only the Parameters values should be retrieved before or after a Status Change.

Equal to Status

This Exclusive Radio Button only retrieves the values which status is equal to the specified Status String. E.g. if the status is ON, only retrieve the values which are ON. Note that you may only specify one status text string in this field. It is for instance NOT possible to retrieve both the ON and OFF value by entering e.g. "ON,OFF".

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 47 on page 134 shows a TM Status Filter definitions which only includes the Status Parameter Values immediately before and after a status change.

Possible Errors

None.

Cross Reference

Item
4.7.14.3 Save Case - TME - Parameter List page 127

4.7.14.7 Save Case - TME - Data Filters (analogue)

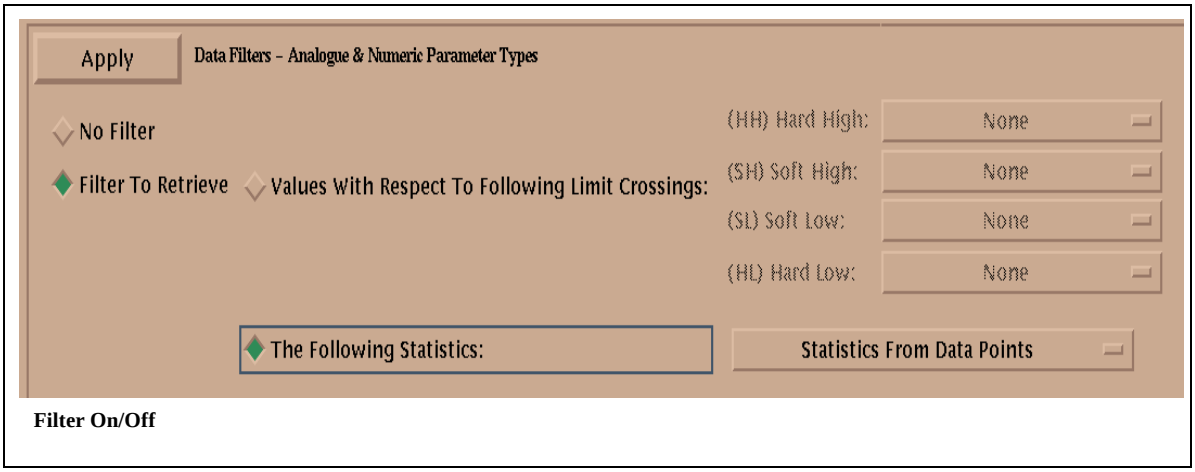


Figure 48TM Extraction - Data Filters (analogue)

Description

This Form is located in the Save Case - TM Extraction (TME) Window. It allows you to specify various filters for all TM *Analogue and Numerical* Parameters, applied when SPEVAL is retrieving the Save Case TM data. By selecting Parameters in the *Save Case - TME - Parameter List* , then pressing the *Apply* Button, all the selected *numeric* Parameters will be updated to reflect the current filter definitions. Parameters different from numeric will remain unchanged when this filter is applied. The default state of the form is "*No Filter*", i.e. no Parameters are filtered out.

If the filter is applied, it allows you to define two mutual exclusive options:

- Limit Crossing filters. These filters specify retrieval of Parameters dependent on when they crossed the predefined Limits.
- Others (The Following Statistics). These filters currently only allows you to specify that the Parameters should be prepared for the SPEVAL Statistics as explained below.

As well as the two options being mutually exclusive, you are not allowed to combine the Numerical Filters with all other Filter types. Figure 43 on page 122 displays the SPEVAL filters data flow diagram, indicating the allowed states.

NOTE: If you specify (and apply) the "Limit crossing filters", but have specified "None" in all the 4 Option Menus, no data will be retrieved for the filtered Parameters. However, the *Save Case - TME - Parameter List* will not indicate that no data is retrieved. In this case, the Message Area will display the warning message referenced in the Error Section.

The following items are defined:

Apply Button

Pressing this Button applies the current numerical filter specifications to the selected Numerical Parameters in the Parameter List. If "No Filter" has been specified, all the numerical filters will be cleared.

No Filter

This exclusive Radio Button specifies that no filter should be applied to the selected Numerical Parameters. When this state is chosen, the other fields in the form will be insensitive

Filter to Retrieve

This exclusive Radio Button specifies that the numeric filters should be applied to the Parameters, namely the options below:

Values with Respect to Limit Crossings

This Radio Buttons specify that the Parameter Values should be filtered according to the 4 Limit Crossing Option Menus. Each menu is independent and gives you the choice to retrieve values before, after (or both before and after) the Parameter values have crossed the corresponding Limit. NOTE: If “None” is specified, no values will be retrieved for the corresponding Limit crossing.

(HH) Hard High

If this Option Menu is set different from “None”, SPEVAL will retrieve Parameter Values crossing the Hard High Limits.

(HL) Hard Low

If this Option Menu is set different from “None”, SPEVAL will retrieve Parameter Values crossing the Hard Low Limits.

(SH) Soft High

If this Option Menu is set different from “None”, SPEVAL will retrieve Parameter Values crossing the Soft High Limits.

(HL) Soft Low

If this Option Menu is set different from “None”, SPEVAL will retrieve Parameter Values crossing the Soft Low Limits.

The Following

This Exclusive Radio Button effectively disregards the filter specifications in the Limit Crossing Option Menus. Instead, you can prepare the data in different ways setting the Option Menu to the right of the Button as follows:

Statistics from data Points

If this filter is chosen, SPEVAL will generate statistics (e.g. maximum and minimum values) for the selected parameters. This data may be displayed in the *Statistics Window* .

All already calculated Statistics

This option is only selectable if the *Save Case - Data - Data Streams* is “User Data Set” or “Summary”. In this case, all the already calculated statistics (stored in the Summary or in the UDS file) will be retrieved. (See also below).

Merge of All already calculated Statistics

This option is only selectable if the *Save Case - Data - Data Streams* is “User Data Set” or “Summary”. In this case, all the already calculated merged statistics (stored in the Summary or in the UDS file) will be retrieved. (See also below).

Note: Retrieval from a UDS file specifying the *All already calculated Statistics* or *Merge of All Already Calculated Statistics* might give some unexpected results. The reason is that the “Statistics ” records (one per time window/parameter) are stored in the UDS file using the time key of the Statistics Start period. (See Examples).

Cautions and Warnings

If you specify (and apply) the “Limit crossing filters”, but have specified “None” in all the 4

Option Menus, no data will be retrieved for the filtered Parameter. In this case, the Message Area will display a Warning message.

Syntax

Not Applicable.

Examples

Example 1

Figure 49 illustrates the unexpected side-effects which may occur when retrieving *All already calculated Statistics* or *Merge of All Already Calculated Statistics* from a UDS file. Initially a retrieval of Statistics using 3 time windows are successfully stored in a UDS file. The actual time stamp of each record is equal to the corresponding window start time. Retrieval 1 and Retrieval 2 specifies the UDS file as the data source, and *All already calculated Statistics* or *Merge of All Already Calculated Statistics* as the data filter type. Retrieval 1 returns all the records since the retrieval time-span covers all the UDS record time-stamps. Retrieval 2 returns "No data found", since the time-span specified do not cover any of UDS time-stamps.

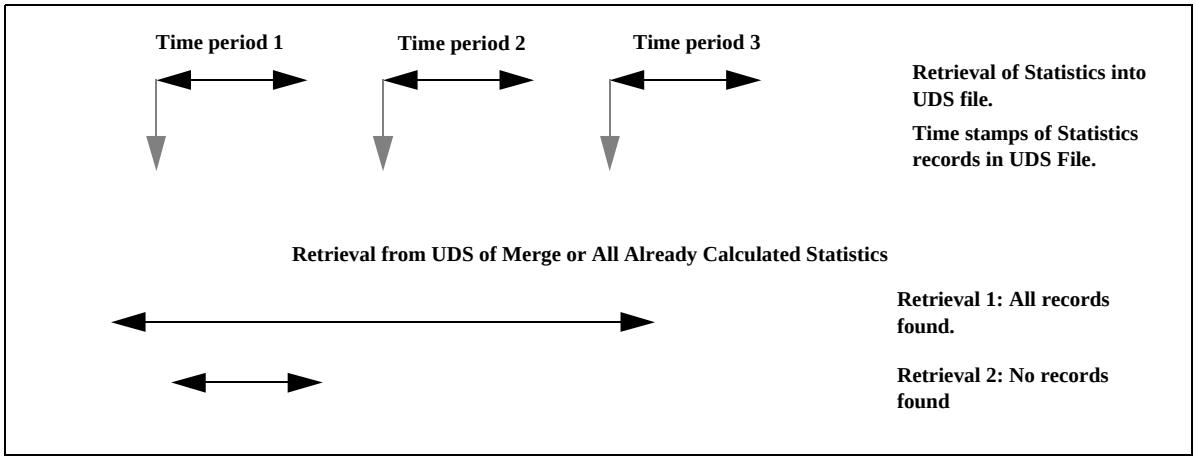


Figure 49Example of All already calculated Statistics or Merge of All Already Calculated Statistics

Example 2

Figure 48 on page 136 shows a TM numerical Filter definitions which specifies the retrieval of Limit-crossing Parameters according to the following criteria:

- No reports are given for Parameters crossing the HH (Hard High) Limit
- For the other limits, the Parameter Value immediately before and after the Limit Crossing will be retrieved.

Possible Errors

Error Message	Meaning
`Limit Crossings of None-None-None-None would result in no data retrieved`	(Warning) A Limit Filter has been applied, but all the Limit Crossing Option Menus have been set to "None". This implies that no data will be retrieved for the filtered Parameters!.

Cross Reference

Item
4.7.14.3 Save Case - TME - Parameter List page 127
4.9.2 Statistics Window page 168

4.7.14.8 Save Case - TME - OK

Description

This Push Button is located in the bottom of the *Save Case - TM Extraction (TME)* window. It updates the Save Case definitions with any Proforma you have loaded and all filter definitions applied to the TM Parameters. The Proforma ID and Type will overwrite the definitions in the *Save Case - Simple Extraction Processing (SEP)* form. The Window disappears after the Button has been pressed. The definitions will however *not* be saved to file. In order to save them permanently, you must use the *Save Case - Save* Button.

Note that if you have specified an alternative Proforma Id in the *Save Case - TME - Proforma ID* field, the Proforma definitions will only be saved in the Save Case if you successfully have applied the Proforma definitions (using the *Load Proforma* or *Update from Proforma* Buttons).

The same strategy applies for the filter specifications. You must have *applied* any new filter definitions in order to make them permanent visible in the Save Case Definition.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None

Cross Reference

Item
4.7.14.9 Save Case - TME - Commit page 141
4.7.14.1 Save Case - TME - Proforma ID page 124
4.7.14.2 Save Case - TME - Proforma Type page 126
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.14.10 Save Case - TME - Load Proforma page 142
4.7.14.11 Save Case - TME - Update from Proforma page 143

4.7.14.9 Save Case - TME - Commit

Description

This Push Button has the same functionality as the *Save Case - TME - OK* Button. The only difference is that the *Save Case - TM Extraction (TME)* Window remains visible after a Button press.

Cautions and Warnings

Same as for *Save Case - TME - OK* .

Syntax

Not Applicable.

Examples

Same as for *Save Case - TME - OK* .

Possible Errors

Same as for *Save Case - TME - OK* .

Cross Reference

Item
4.7.14.8 Save Case - TME - OK page 140

4.7.14.10 Save Case - TME - Load Proforma

Description

This Push Button allows you to load the Parameter Definitions from an alternative TM Proforma (Graphical or Alphanumeric) into the *Save Case - TM Extraction (TME)* Window. The TME *Proforma ID* and *Proforma Type* are used to construct the file name of the Proforma to import.

The *Save Case - TME - Parameter List* will be updated to display all the Parameters in the Proforma with the default filters applied. No permanent changes will be done to the Save Case when this Button is pressed. In order to make the changes permanent, use the *Save Case - TME - OK* or *Save Case - TME - Commit* Buttons.

Note that an alternative to this Button is the *Save Case - TME - Update from Proforma* Button. The "Update" Button maintains the filter definitions for any Parameters in the current (old) list which also are found in the imported (new) Proforma.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

See *Save Case - TME - Proforma ID* for Proforma error messages.

Cross Reference

Item
4.7.14.11 Save Case - TME - Update from Proforma page 143
4.7.14.1 Save Case - TME - Proforma ID page 124
4.7.14.2 Save Case - TME - Proforma Type page 126
4.7.14.3 Save Case - TME - Parameter List page 127
4.7.14.8 Save Case - TME - OK page 140
4.7.14.9 Save Case - TME - Commit page 141

4.7.14.11 Save Case - TME - Update from Proforma

Description

This Push Button allows you to load the Parameter Definitions from an alternative TM Proforma (Graphical or Alphanumeric) into the *Save Case - TM Extraction (TME)* Window, without clearing any filters you may already have set up on parameters that exist in the new proforma. The TME *Proforma ID* and *Proforma Type* are used to construct the file name of the Proforma to import.

Use this button to reload a proforma you have updated and recompiled, so that the new version is used next time you submit this save case.

The *Save Case - TME - Parameter List* will be updated to display all the Parameters in the Proforma as follows:

- If a Parameter in the Proforma is found in the (old) Parameter List, the Parameter's filter definitions remain unchanged.
- If a Parameter in the Proforma is not found in the Parameter List, the Parameter will be initialised with the default filter definitions and highlighted in blue. You can hence directly apply the current filter definitions to the new Parameters without having to explicitly select them.

No permanent changes will be done to the Save Case when this Button is pressed. In order to make the changes permanent, use the *Save Case - TME - OK* or *Save Case - TME - Commit* Buttons.

Note that an alternative to this Button is the *Save Case - TME - Load Proforma* Button. The "Load" Button imports a Proforma, resetting all filters to their default.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

See *Save Case - TME - Proforma ID* for Proforma error messages.

Cross Reference

Item
4.7.14.10 Save Case - TME - Load Proforma page 142
4.7.14.1 Save Case - TME - Proforma ID page 124
4.7.14.2 Save Case - TME - Proforma Type page 126
4.7.14.3 Save Case - TME - Parameter List page 127
4.7.14.8 Save Case - TME - OK page 140

Item
4.7.14.9 Save Case - TME - Commit page 141

4.7.14.12 Save Case - TME - Cancel

Description

This Push Button cancels the *Save Case - TM Extraction (TME)* Window and removes it from the screen. All changes since the last *OK* or *Commit* will be disregarded.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7.14 Save Case - TM Extraction (TME) page 121
4.7.14.8 Save Case - TME - OK page 140
4.7.14.9 Save Case - TME - Commit page 141

4.7.15 Save Case - Time Options (TO) Window

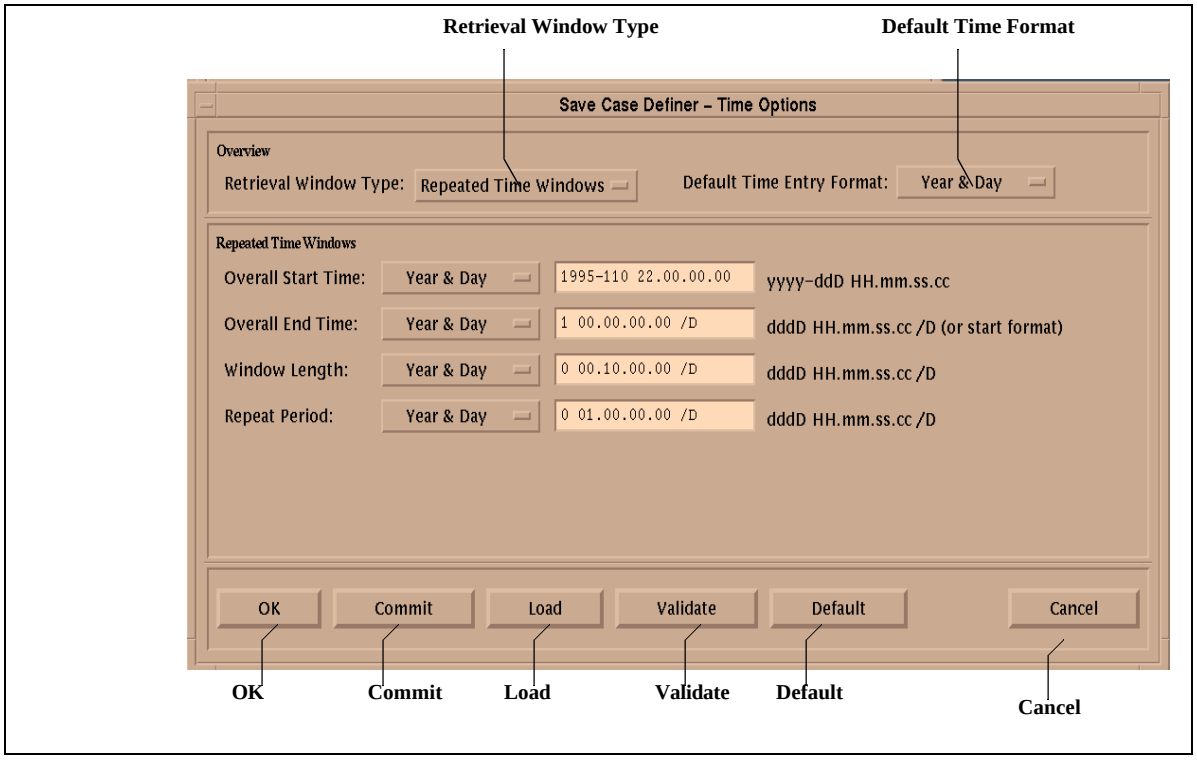


Figure 50Time Options Window (showing repeated time windows)

Description

This Window is activated by pressing the *Save Case - Time Options Button* in the *Save Case Definer* window. The Window offers a wide range of retrieval time-window options.
The time window options are the following:

- *One Time Window.* This option is functionally identical to the *Save Case - Simple Time f*orm.The option is described on page 154.
- *Repeated Time Windows*. This options allows you to specify a repeated set of time windows for the retrieval. You may e.g. specify that the data should be retrieved only between 9 and 10 for a period of one month. The option is described in detail on page 155.
- *Irregular Time Windows*. This options allows you to specify up to 30 time windows for the retrieval. Each time window specifies the start time and end time for one retrieval period. The option is described in detail on page 157.

An *OK* Button, allowing you to save and close the Window contents. The time definitions will however *not* be saved to file. In order to save them permanently, you must use the *Save Case - Save* Button. The button is described on page 148.

- A *Load* Button. Pressing this button has no effect !.
- A *Commit* Button, allowing you to save the Window contents to the *Save Case* without closing the Window. The button is described on page 149.
- A *Validate* Button, validating the current contents of the Time Options Window. The button

is described on page 152.

- A *Default* Button, allowing you to reset the Window Contents to the default values. The button is described on page 151.
- A *Cancel* Button, allowing you to quit the Window, disregarding any uncommitted changes. The button is described on page 153.

Cautions and Warnings

None.

Syntax

Not Applicable at this level.

Examples

See the relevant sub-sections.

Possible Errors

None.

Cross Reference

Item
4.7.2 Save Case - Time Options Button page 78
4.7.15.1 Save Case - TO - Retrieval Window Type page 147
4.7.15.2 Save Case - TO- OK page 148
4.7.15.3 Save Case - TO - Commit page 149
4.7.15.5 Save Case - TO - Default page 151
4.7.15.6 Save Case - TO - Validate page 152
4.7.15.7 Save Case - TO - Cancel page 153
4.7.15.8 Save Case - TO - One Time Window page 154
4.7.15.9 Save Case - TO - Repeated Time Windows page 155
4.7.15.10 Save Case - TO - Irregular Time Windows page 157

4.7.15.1 Save Case - TO - Retrieval Window Type

Description

This Option Menu is located in the left of the *Save Case - Time Options (TO) Window* . It determines the type of time windows used for the retrieval as the following three options:

- *One Time Window.* This option is functionally identical to the *Save Case - Simple Time f*orm described on page 108.
- *Repeated Time Windows*. This options allows you to specify a repeated set of time windows for the retrieval. You may e.g. specify that the data should be retrieved only between 9 and 10 for a period of one month. The option is described in detail on page 155.
- *Irregular Time Windows*. This options allows you to specify up to 30 time windows for the retrieval. Each time window specifies the start time and end time for one retrieval period. The option is described in detail on page 157.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7.12 Save Case - Simple Time page 108
4.7.15.8 Save Case - TO - One Time Window page 154
4.7.15.9 Save Case - TO - Repeated Time Windows page 155
4.7.15.10 Save Case - TO - Irregular Time Windows page 157

4.7.15.2 Save Case - TO- OK

Description

This Push Button is located in the bottom of the *Save Case - Time Options (TO) Window* . It updates the Save Case definitions with any time window specification you have specified. The time specifications will override the definitions in the *Save Case - Simple Time* form. The definitions will however *not* be saved to file. In order to save them permanently, you must use the *Save Case - Save* Button.
The Window disappears after the Button has been pressed. An alternative is to use the *Save Case - TO - Commit* Button which leaves the window.

Cautions and Warnings

No validation checking is performed when pressing this Button. Use the *Save Case - TO - Validate* Button first.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None. Window contents are not validated!

Cross Reference

Item
4.7.15 Save Case - Time Options (TO) Window page 145
4.7.15.3 Save Case - TO - Commit page 149
4.7.15.6 Save Case - TO - Validate page 152

4.7.15.3 Save Case - TO - Commit

Description

This Push Button has the same functionality as the *Save Case - TO- OK* Button. The only difference is that the *Save Case - Time Options (TO) Window* remains visible after a Button press.

Cautions and Warnings

Same as for *Save Case - TO- OK* .

Syntax

Not Applicable.

Examples

Same as for *Save Case - TO- OK* .

Possible Errors

Same as for *Save Case - TO- OK* .

Cross Reference

Item
4.7.15.2 Save Case - TO- OK page 148

4.7.15.4 Save Case - TO - Load

THIS BUTTON IS NOT SUPPORTED !

4.7.15.5 Save Case - TO - Default

Description

This Push Button resets all the fields in the *Save Case - Time Options (TO) Window* to default (empty) values. All the time specification fields will be cleared, and the *Save Case - TO - Retrieval Window Type* is set to the "One Time Window" option. Note also that the contents of the *Save Case - Simple Time* window in the main *Save Case* will be cleared.

Cautions and Warnings

Pressing this button will cancel all changes since a last "Commit" or "OK".

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7.15 Save Case - Time Options (TO) Window page 145
4.7.15.3 Save Case - TO - Commit page 149
4.7.15.2 Save Case - TO- OK page 148
4.7.15.1 Save Case - TO - Retrieval Window Type page 147

4.7.15.6 Save Case - TO - Validate

Description

This Push Button validates the current contents of the *Save Case - Time Options (TO) Window* but does not save the contents. If the Validation succeeds, the *Message Area Window* displays the message “Time Validation completed - No errors found”, otherwise a failure message is logged.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

For possible error messages, see the relevant section. E.g. if the Error Message is preceded by “Save Case - Time - Repeated Time Windows”, see section 4.7.15.9 Save Case - TO - Repeated Time Windows page 155.

Cross Reference

Item
4.7.15 Save Case - Time Options (TO) Window page 145
4.7.15.2 Save Case - TO- OK page 148
4.7.15.8 Save Case - TO - One Time Window page 154
4.7.15.9 Save Case - TO - Repeated Time Windows page 155
4.7.15.10 Save Case - TO - Irregular Time Windows page 157
4.2 Time Specification Fields page 52

4.7.15.7 Save Case - TO - Cancel

Description

This Push Button cancels the *Save Case - Time Options (TO) Window* and removes it from the screen. All changes since the last *OK* or *Commit* will be disregarded.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not Applicable.

Possible Errors

None.

Cross Reference

Item
4.7.15 Save Case - Time Options (TO) Window page 145
4.7.15.2 Save Case - TO- OK page 148
4.7.15.3 Save Case - TO - Commit page 149

4.7.15.8 Save Case - TO - One Time Window

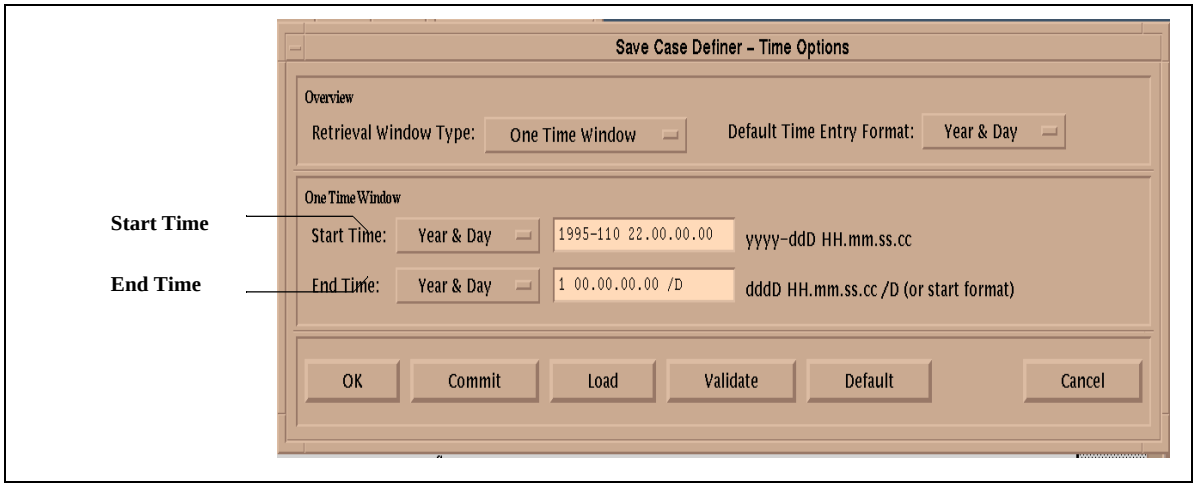


Figure 51Save Case - TO - One Time Window configuration

Description

This configuration applies when the *Save Case - TO - Retrieval Window Type* is set to "One Time Window". The "Start Time" and "End Time" fields are identical to that described in the *Save Case - Simple Time* form described on page 78.

Cautions and Warnings

Same as for *Save Case - Simple Time* .

Syntax

Same as for *Save Case - Simple Time* .

Examples

See *Save Case - Simple Time* .

Possible Errors

Same as for *Save Case - Simple Time* .

Cross Reference

Item
4.7.12 Save Case - Simple Time page 108
4.7.15 Save Case - Time Options (TO) Window page 145

4.7.15.9 Save Case - TO - Repeated Time Windows

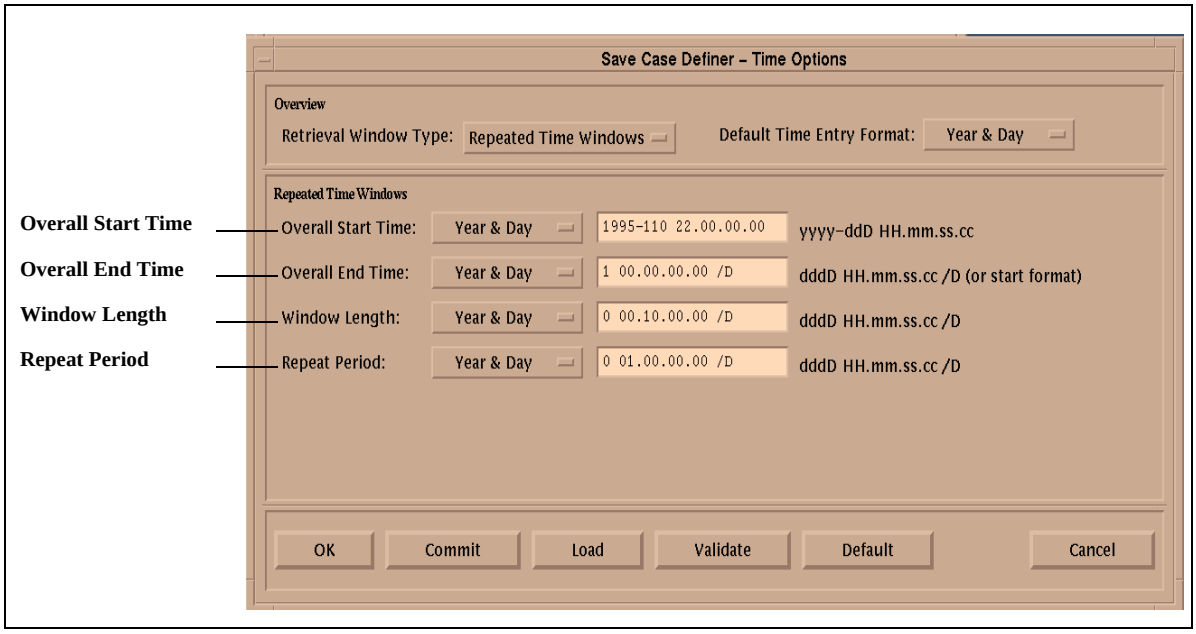


Figure 52Save Case - TO - Repeated Time Windows configuration

Description

This configuration applies when the *Save Case - TO - Retrieval Window Type* is set to "Repeated Time Windows". The window allows you to specify an indefinite number of repeated time windows for the retrieval. If you e.g. only are interested in retrieving data for a specific hour on a daily basis, this is the Time Window configuration to use.

The configuration consists of the following items:

Overall Start Time

Time Specification Field specifying the overall start time for the retrieval. The time specification must always be given as absolute time.

Overall End Time

Time Specification Field specifying the overall end time for the retrieval. The time specification may be given as absolute time or delta time (relating to the Overall Start Time).

Window Length

Time Specification Field specifying the size of the actual retrieval window. The time specification must be given as delta time.

Repeat Period

Time Specification Field specifying the time between the start of two consecutive time windows. The time specification must be given as delta time.

Cautions and Warnings

Time Windows and Statistics processing

Specifying repeated time windows for statistics processing will generate one statistics for each parameter per Time Window. If you e.g. have a Proforma with 10 parameter and specify 5 time windows, the Statistics Window will display 50 lines of statistics records.

Syntax

The syntax of the fields is the same as described in “Time Specification Fields” on page 52 with the following additions:

- The “Repeat Period” must be equal to or greater than the “Window Length”.

Examples

```
Overall Start Time:     1995-110 22.00.00.00
Overall End Time:       1 00.00.00.00 /D
Window Length:          0 00.10.00.00 /D
Repeat Period:          0 01.00.00.00 /D
```

This example specifies that the data should be retrieved 24 hours, starting from day 110, 22.00. The data will be retrieved 10 minutes every hour as follows: 22.00 - 22.10, 23.00 - 23.10, 00.00 - 00.10, 01.00 - 01.10 ...., ..., 21.00 - 21.10. I.e. 24 time windows have been specified.

```
Overall Start Time:     1995-110 22.00.00.00
Overall End Time:       1 00.00.00.00 /D
Window Length:          0 01.00.00.00 /D
Repeat Period:          0 01.00.00.00 /D
```

This example specifies that the data should be retrieved 24 hours, starting from day 110, 22.00. Since the “Window Length” is equal to the “Repeat Period”, all the data for the 24 hours will be retrieved. I.e. it would probably be easier to specify the retrieval from the *Save Case - TO - One Time Window* configuration.

Possible Errors

See “Time Specification Fields” on page 52. In addition, the following error messages may be generated from this configuration:

Error Message	Meaning
“Repeat Period” is less than “Window Length”	You have specified a repeat period which is less than the window length. This would imply overlapping time windows, not supported by SPEVAL.

Cross Reference

Item
4.7.12 Save Case - Simple Time page 108
4.7.15 Save Case - Time Options (TO) Window page 145

4.7.15.10 Save Case - TO - Irregular Time Windows

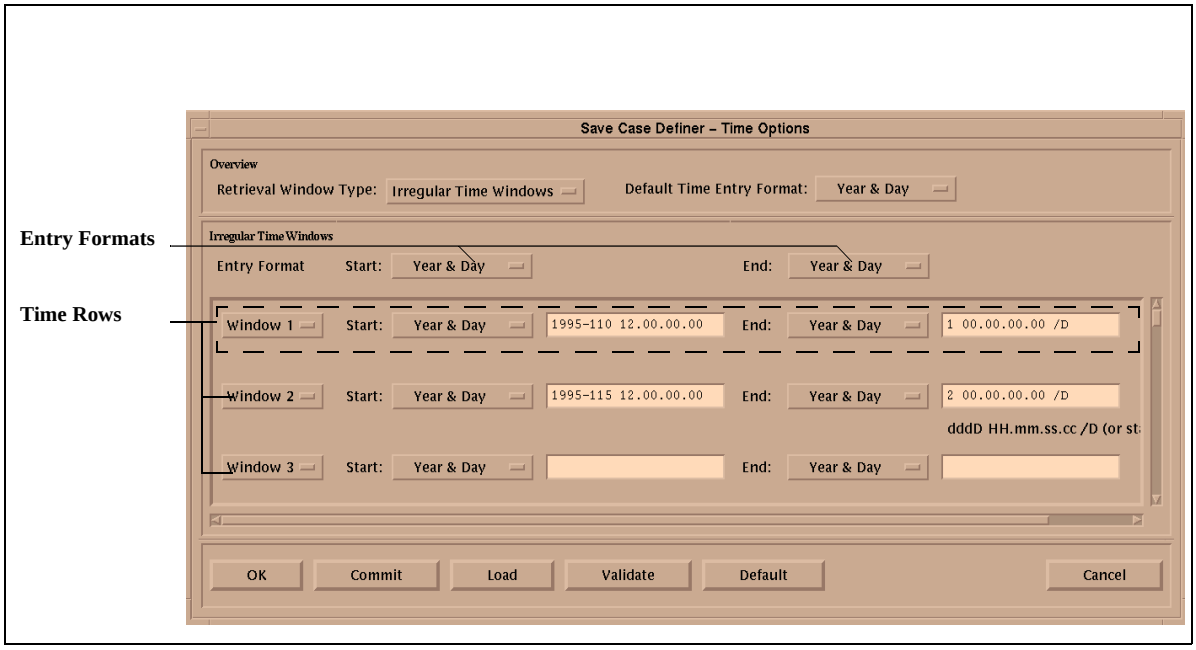


Figure 53Save Case - TO - Irregular Time Windows configuration

Description

This configuration applies when the *Save Case - TO - Retrieval Window Type* is set to “Irregular Time Windows”. The window allows you to specify up to 30 irregular time windows for the retrieval. You can inserting and removing entries by choosing options from the “Window n” Option Menu as explained below.

When validating an Irregular Time Window specification, SPEVAL scans each Time Row window starting from Window 1. Empty Time Rows are only allowed if all Time Rows after the first empty one also are empty.

The following items exists for this configuration:

Entry Formats

These items consist of a “Start” and an “End” Option Menu, allowing you to toggle the Time Formats for all the Start and End Time Window specifications in the time Rows. Currently, only the “Year and Day” option is selectable.

Time Rows

Each Time Row specify an irregular retrieval window. Blank Time Rows are not interpreted. Each Row consist of the “Window n”, “Start” and “End” fields.

Window n

Each Time Row is labelled by a “Window n” option menu, identifying the Time Window row as reference in error messages. The Option Menu contains the following choices:

Default

Clears the Window “Start” and “End” times to empty fields

Insert

Inserts a new Time Row above the current one. The “Window n” labels are updated to reflect the new order. Note that this option cannot be

used to “cut and paste” Time Rows.

Remove

Deletes the current Time Row. The “Window n” labels are updated. Note that this option cannot be used to “cut and paste” Time Rows.

Start

Each Time Row has a “Start” Time Specification Field, specifying the retrieval window start time. The time must always be entered as “absolute”.

End

Each Time Row has a “End” Time Specification Field, specifying the retrieval window end time. The time may be entered as “absolute” or “delta”.

Cautions and Warnings

Time Windows and Statistics processing

Specifying irregular time windows for statistics processing will generate one statistics for each parameter per Time Window. If you e.g. have a Proforma with 10 parameter and specify 5 time windows, the Statistics Window will display 50 lines of statistics records.

Syntax

The syntax of the fields is the same as described in “Time Specification Fields” on page 52 with the following additions:

- Overlapping Time Windows are not allowed. I.e. the end of one time window must be less than the start of the next one.
- An empty Time Row is only allowed if all the Time Rows below it are empty.

Examples

```
Window 1 Start: 1995-110    22.00.00.00
Window 1 End:           1   00.00.00.00 /D
Window 2 Start: 1995-120    00.00.00.00
Window 2 End:           0   01.00.00.00 /D
```

This example specifies that the data should be retrieved in 2 irregular time windows. Time Window 1 covers the range from day 110, 22.00 to day 111, 22.00 (24 hours). Time Window 2 covers the range from day 120, 00.00 to day 120, 01.00 (1 hour).

Possible Errors

See “Time Specification Fields” on page 52. In addition, the following error messages may be generated from this configuration:

Error Message	Meaning
`Overlaps next window start time - overlapping windows are not supported`	An irregular time window overlaps the start of the next window. In this case, the identification part of the message identifies the actual Time Row.

Cross Reference

Item
4.7.12 Save Case - Simple Time page 108
4.7.15 Save Case - Time Options (TO) Window page 145

4.8 Key Accelerators in Alphanumeric Windows

Description

The *Alphanumeric List* and *Alphanumeric Display* windows contains Scrollbars to navigate through the possible large display area. For the *Alphanumeric List Window,* you may do all operations by moving the Scrollbars. For the *Alphanumeric Display* Window, you must use the navigation keys as explained in the table below. Note that some display Windows (e.g. Cluster Logs) is a combination of the two types of Windows.

Table 13: Alphanumeric Windows Key Accelerators

Key	Alphanumeric List	Alphanumeric Display
<key-left>	Moves the Window contents one data column left.	No action.
SHIFT <key-left>	Moves the Window contents to the far left data column.	No action.
<key-right>	Moves the Window contents one data column right.	No action.
SHIFT <key-right>	Moves the Window contents to the far right data column	No action.
<key-down>	Moves the Window contents one time row down.	No action.
SHIFT <key-down>	Moves the Window contents to the far bottom time row.	No action.
<key-up>	Moves the Window contents one time row up.	No action.
SHIFT <key-up>	Moves the Window contents to the far top time row	No action.
<next> (VAX) <page_down> (PC)	No action.	Moves to the next packet contents from the retrieval
SHIFT <next> (VAX) SHIFT <page_down> (PC)	No action.	Moves to the last packet contents from the retrieval
<prev> (VAX) <page_up> (PC)	No action.	Moves to the previous packet contents from the retrieval
SHIFT <prev> (VAX) SHIFT <page_up> (PC)	No action.	Moves to the first packet contents from the retrieval

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Not applicable.

Possible Errors

None.

Cross Reference

Item
4.9 Standard Alphanumeric List Windows page 162
4.10 Alphanumeric Display Window page 176

4.9 Standard Alphanumeric List Windows

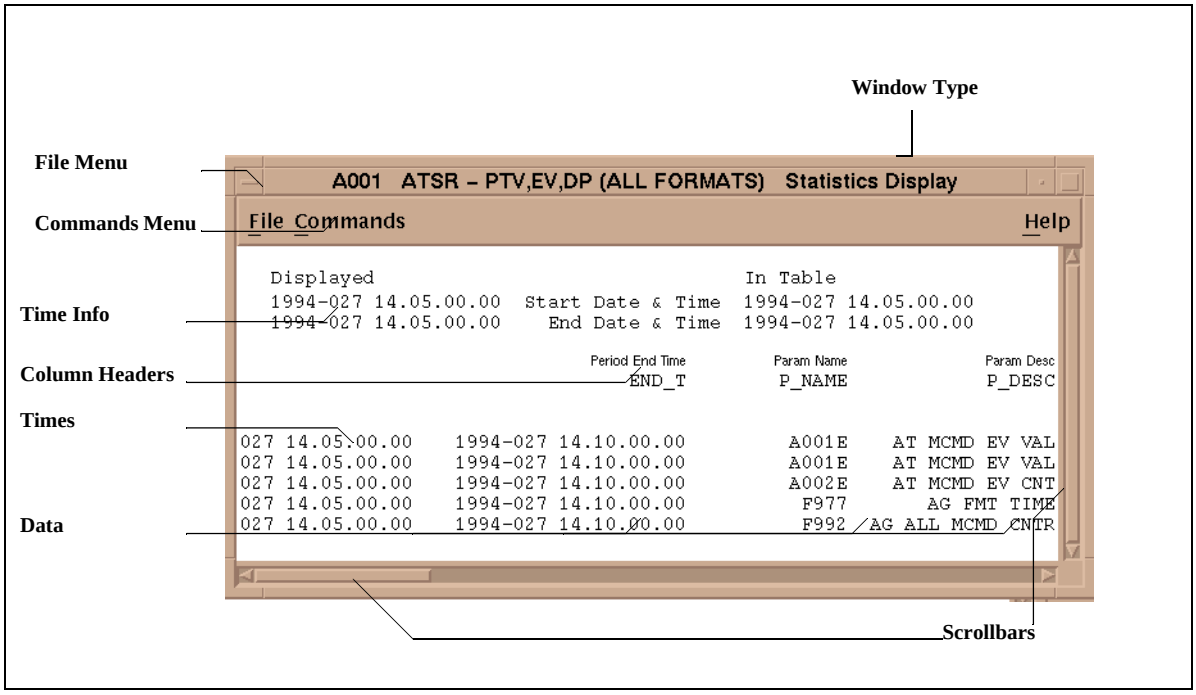


Figure 54Alphanumeric List Window (Statistics)

Description

The standard Alphanumeric List Windows offer a standardized display interface of data points for a certain time-span. After a successful Save Case submission, one or more of the windows will pop up on the screen, displaying the data you have requested for retrieval.
Currently, the types of windows belonging to this group are the following:

- The *TM (Alphanumeric List) Window*. This window is only displayed if you have specified the Save Case Display Type as Alphanumeric List.
- The *Statistics Display Window.* This window is only displayed if you have specified the Save Case Display Type as Stats.
- The *OOL (Out-of-Limits) Display Window.* This window is only displayed if you have specified the Save Case Data Type as Out of Limits.
- The *Totals Display Window.* This window is only displayed if you have specified the Save Case Output to *Totals From Data Points*, *All Already Calculated Totals*, or *Merge of All Already Calculated Totals*.

Each of the above window types are described in detail in the sub-sections.

The Standard Alphanumeric List Windows allows you to select any set of data for printing to printer or file. For the different selection modes, see the *Selecting Data* section below.

The Window consists of the following fields as indicated in Figure 54 on page 162:

File Menu

This pull-down menu only contains the *File | Exit* Button. Selecting this button will exit the current Window from the Display but does not influence other SPEVAL Windows.

Commands Menu

This pull-down menu contains two entries, the *Jump To Time* Button and the *Output* Button. The *Jump To Time* Button displays when pressed the *Jump To Time Dialog Window* as described in section 4.3 on page 55. The Output Button displays a pull-right menu with the following items:

Print

This option specifies that the window contents or selected data are printed on the default printer. The default printer queue name is displayed in the Message Window once a print request has been issued.

Text

This option specifies that the window contents or selected data are written to an ASCII file. The file structure is paginated exactly as for the *Print* option above and is suitable for printing.

Export

This option specifies that the window contents or selected data are written to an ASCII file. The file structure is suitable for import into spreadsheet packages (e.g. EXCEL) and is structured as follows:

- Line 1: the proforma ID, title, and display type
- Line 2: Start date and time of the dataset
- Line 3: End date and time of the dataset
- Line 4: Date and time that the file was produced
- Line 5, 6 and 7 contain column headers: the parameter description, ID, and units respectively
- Lines 8 to the end contain the time and data fields, delimited by semicolons, aligned under the column headers. If there is no data for an individual parameter for a specific time, the field between the semicolon delimiters is filled with blanks; the delimiters are still present.

Window Type

The *Window Type* is visible in the Window Header Pane. The field identifies the standard Alphanumeric List Window, as described above. For multiple sessions, the Window also includes the SPEVAL *Session ID.*

Time Info

These fields display the Start Date & Time and End Date and Time for the data which are displayed in the window as *year-day hh.mm.ss.tt*.

The entries in the *Displayed* column show the start and end time for the data which is visible in the Window.

The entries in the *In Table* column show the start and end time for the data in the complete window.

Times

This column will always be located in the far left of the window, even if the horizontal Scrollbar is moved. It displays all the unique times for which there exist data values and are displayed as *day hh.mm.ss.tt* for the retrieval. The entries are ordered from top to bottom for increasing times.

Note that for OOL and Totals Display Windows, there might be multiple entries having the same time, since in this case, each row in the table corresponds to the values for a parameter at a particular time instance.

Column Headers

These fields are located above each data column in the Window and remains positioned above the data columns also when the horizontal Scrollbar is moved. They display the name and the description of each data column. For the *TM Windows,*

the headers will always display the name and the description of the TM Parameters which have been retrieved. For the *Statistical, OOL and Totals Windows*, the column headers display the column type name and description. For a complete list of the possible column types for *Statistical, OOL and Totals Windows*, see the relevant sections.

Data

Each data column displays a data value for the corresponding time displayed in the *Times Column*. The data display format depends on the underlying data type and the display format which was specified in the *Save Case Proforma*. If an entry is blank, it indicates that no value has been found for this particular time instance.

The supported display formats are shown in Table 14:

Table 14: Alphanumeric Windows display formats

Format	Style	Comment
Decimal	<number>	A number without decimal places or trailing letters. This is the default format for Status Parameters without a Text Table.
Binary	<number>**b**	A number followed by the letter “b”
Octal	<number>o	A number followed by the letter “o”
Hexadecimal	<number>x	A number followed by the letter “x”
Fixed, Shortest, Engineering	<floating>	A number with a decimal sign and, for Shortest and Engineering an exponent.
Field width overflow	“*******”	A numeric value has been converted to a string, but would overflow the column width. This would e.g. be the case if you specifiy a binary display format for a large unsigned integer value.
Status Parameter (within range)	String	For Status parameters with a Text Table, the default format is the actual Status Text String
Status Parameter (without range)	“*******”	SPEVAL always displays out-of-range Status Values (parameter has a Text Table) as “********”. No “last-value” is supported.
ASCII String	String	The String will be truncated if its length is larger than the display column size.
Numeric overflow	“xxxx	Numeric overflow in conversion of numeric parameters.
Unconverted	“????????”	In this case, SPEVAL has failed to convert the data. The most plausible explanation id that the Proforma specifies an inconvertible data type. (E.g. a numerical parameter cannot be displayed as Text)Contact Software Support.

Scrollbars

The *Vertical* and *Horizontal Scrollbars* are used to navigate through the possible large Work Area of the Window. The *Horizontal Scrollbar* moves the *Column Headers* and *Data columns* left -right in order to see the Data columns which are

currently not visible. The Vertical Scrollbar moves each time - data row in the Window up- down in order to see the times which are currently not visible. The scollbar operations can be accelerated by the cursor keys as described in “Key Accelerators in Alphanumeric Windows” on page 160.

Cautions and Warnings

None. This is a read-only Window.

Syntax

Not Applicable.

Examples

Figure 54 on page 162 shows a Statistical Display Window. There are only 4 rows of data displayed, so the *Displayed* and *In Table* times shows the same time range. Two data column headers are visible, the “END_T” (end time) column an the “P_NAME” (Parameter Name) column. For explanation of the different column types for the Statistical Display Windows, see section 4.9.2 on page 168.

Possible Errors

None.

Cross Reference

Item
4.8 Key Accelerators in Alphanumeric Windows page 160
4.9.1 TM (Alphanumeric List) Window page 166
4.9.2 Statistics Window page 168
4.9.3 OOL (Out-of-Limits) Window page 171
4.9.4 Totals Window page 174

4.9.1 TM (Alphanumeric List) Window

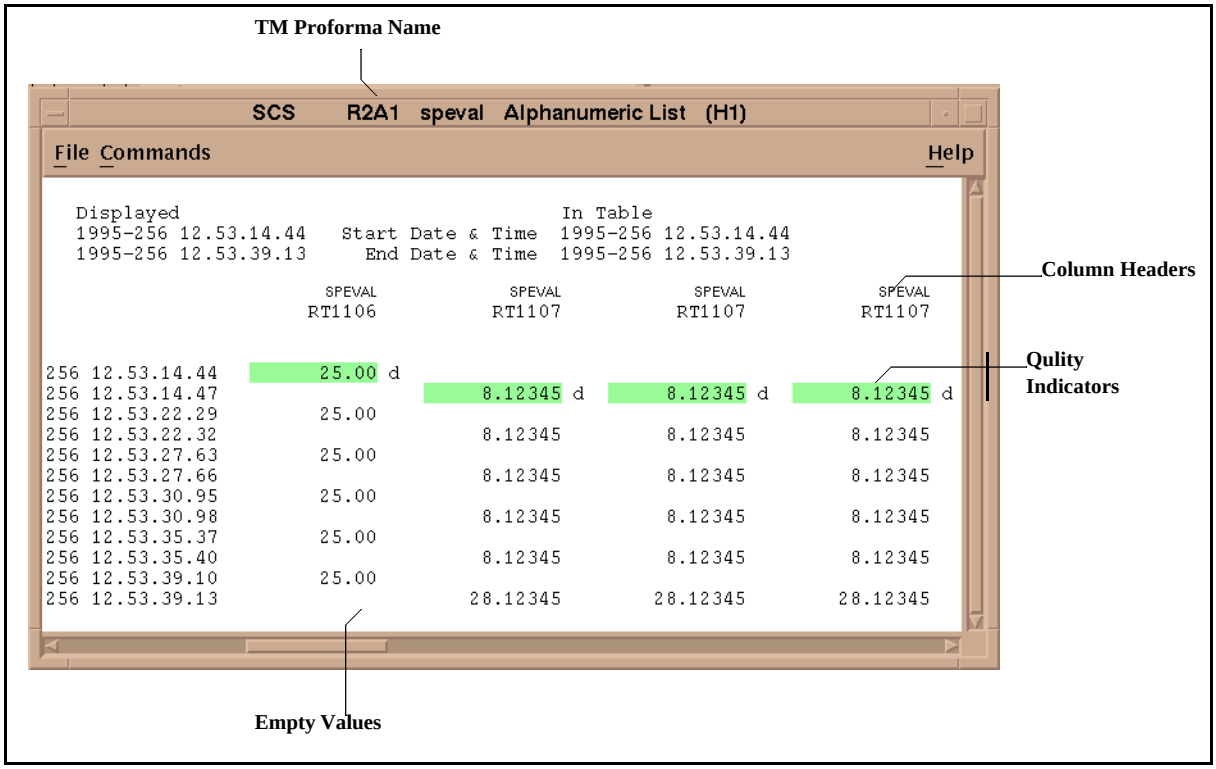


Figure 55TM (Alphanumeric List) Window

Description

This Window shows normal TM Parameter Values for the time range specified when submitting a Save Case. The window will only be created if you have specified the *Save Case - Data type* as TM, the *Save Case - Output - Output Type* to *Data Points* and the *Alphanumeric List* as an option in the *Save Case - Output - Display Type* .
The general window properties, (e.g. the *Commands Menu* and the *Scrollbars*) are described in section 4.9 on page 162. The following Window Items are special properties for the *Alphanumeric List Window*:

TM Proforma Name

The Header of the Window will display the TM Proforma name and description which have been used to select the TM Parameters displayed in the *Column Headers*.

Column Headers

The Column Headers show the name and description of each TM Parameter displayed.

Empty Values

Empty values (blanks) for a particular time simply means that no value was retrieved for the TM Parameter for this time.

Quality Indicators

The Quality Indicators indicates whether the datum is Bad Data Quality (BDQ), Bad Time Quality (BTQ) or Invalid (by mode-dependency). The Quality is indicated both with a colour code and a one character code to the right of the datum field. Note that only one code is displayed even if the datum might be e.g. both BDQ and BTQ. In this case, the BDQ code would be displayed since it has a higher

priority than BDQ. The different Quality types and their priority are shown in Table 14:

Table 15: Alphanumeric List Data Quality Codes

Priority	Quality Type	Colour	Code
1	Bad Data Quality (BDQ)	Green	d
2	Bad Time Quality (BTQ)	Yellow	t
3	Validity Quality	Grey	v

Cautions and Warnings

None. This is a read only window.

Syntax

Not Applicable.

Examples

Figure 55 on page 166 shows the Alphanumeric List Window. The TM Proforma used to generate the Parameters is “T027 - GYROS - COMBINED PARAMETERS(RTF)”. All the Parameter values are displayed in the decimal notation.

Possible Errors

If the Window fails to be displayed, the Message Area will display a failure message. For the possible error messages, see section 4.7.7 on page 83.

Cross Reference

Item
4.9 Standard Alphanumeric List Windows page 162
4.7.7 Save Case - Submit page 83
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.13.3 Save Case - Output - Display Type page 115
4.7.10.4 Save Case - Data - Data Type page 103

4.9.2 Statistics Window

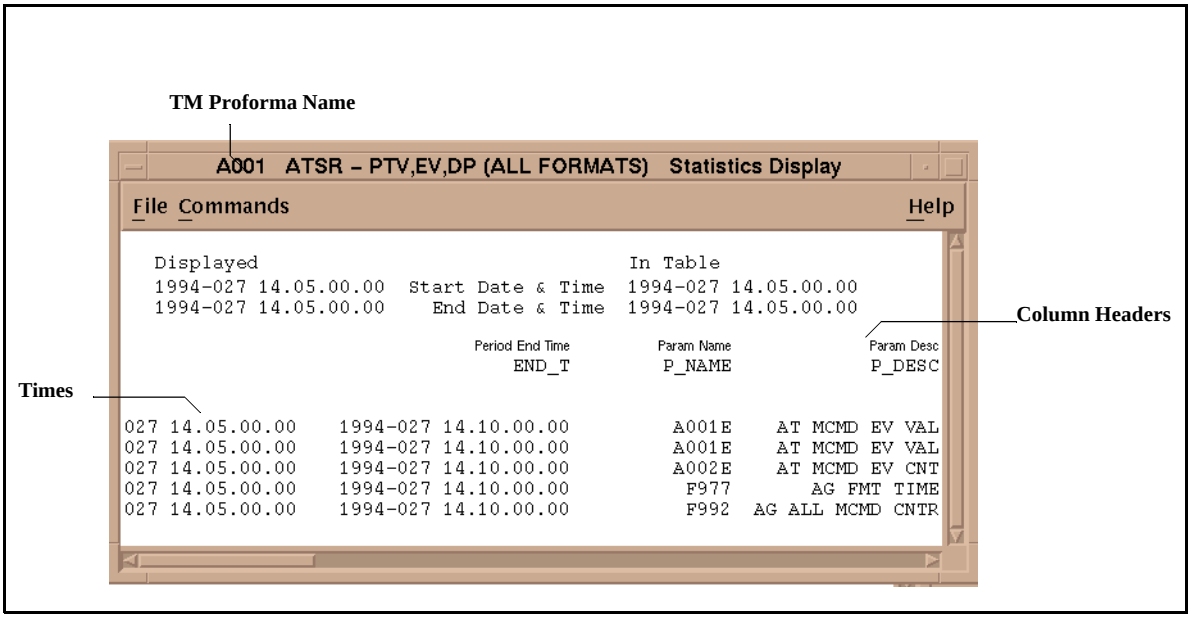


Figure 56Statistics Window

Description

This Window shows statistical information for the time range you specified when submitting a Save Case. The window will only be displayed if the following is satisfied:

- The *Save Case - Data - Data Type* must be TM.
- The *Save Case - Output - Output Type* must be *Data Points.*
- The *Save Case - Output - Display Type* radio buttons must have specified *Stats* as an option.
- Statistic filters must have been applied to at least one Parameter.

The general window properties, (e.g. the *Commands Menu* and the *Scrollbars*) are described in section 4.9 on page 162. The following Window Items are special properties for the *Statistics Window*:

TM Proforma Name

The Header of the Window will display the TM Proforma which have been used to select the Parameters which contribute to the Statistics.

Times

For the Statistical Window, the Times column displays the start time for the collection of the statistics. The end time for the collection is shown under the Column Header “END_T”.

Column Headers

The Column Headers shows the name and type of each Statistics field for which you have requested the output values. The number of columns and their placement depends on the *Field Proforma* which was specified in the *Save Case - Output - Field Proforma* Text field. The default field proforma name for statistics is called STAT, and contains all the possible statistics columns types. The types are

described in Table 16:

Table 16: STATS Column Headers

Name	Type	Format	Meaning
START_T	Statistics Period Start Time.	Day & Time	Gives the start time for all the statistics shown in the row. Will always be the same as the *Time Column* on the left.
END_T	Statistics Period End Time.	Day & Time	Gives the end time for all the statistics shown in the row. The start time for the row is shown in the *Time Column* on the left.
P_NAME	TM Parameter Name	Text	Name of the TM Parameter for which this data row is collected.
P_DESCR	TM Parameter Description	Text	Description of the TM Parameter.
MAX_T	Maximum Value Time Stamp.	Day & Time	Time for which the maximum value of the Parameter has been recorded within the data collection period. If the same value occurs several times in the period, this is the last time at which the value was observed.
MAX_V	Maximum Value	As for TM*	Maximum value of the Parameter within the data collection period. The format is dependent on the TM Parameter. (See footnote)
MIN_T	Minimum Value Time Stamp.	Day & Time	Time for which the minimum value of the Parameter has been recorded within the data collection period. If the same value occurs several times in the period, this is the last time at which the value was observed.
MIN_V	Minimum Value	As for TM*	Minimum value of the Parameter within the data collection period. The format is dependent on the TM Parameter. (See footnote)
AVGE	Average Value	Floating Point	Average Value of the Parameter within the data collection period.
SIGMA	Standard Deviation	Floating Point	Standard Deviation (σ) of the Parameter within the data collection period.
DATA_Q	% Data Quality.	Decimal	Gives the data quality for the data collection period (0-100)
TIME_Q	% Time Quality.	Decimal	Gives the time quality for the data collection period (0-100)
VLD_Q	% Validity Quality.	Decimal	Gives the Validity Parameter quality for the data collection period (0-100)
N_OF_D	Number of data points.	Decimal	Gives the number of data points used to generate the statistics for the Parameter for this collection period.

*As for TM**: The Value is displayed as specified by the Parameter Type and the display format in the TM Proforma used to generated the Parameters.

Cautions and Warnings

NOTE: For Long Term Archival (LTA) Statistics, the START_T and END_T fields will correspond to the defined collection window (retrieval window) as specified in the Save Case - Simple Time fields. For other data sources (UDS and Summary), the Start and End Times for the actual retrieved data. This differences is not a bug, but reflects the fact that the LTA retains all the data possible whereas the Summary and the UDS only contains a subset.

An example is if you have retrieved data between say, day 1 and day 10 from the LTA. A Parameter which only have values for day 2 and day 5, will still display the START_T as “day 1” and “END_T” as “day 10”. When however, the Parameter is retrieved from the Summary or UDS file (for day 1 to day 10), the START_T will display “day 2” and the END_T “day 5”.

Syntax

Not Applicable.

Examples

Figure 56 on page 168 shows the Statistical Window. The TM Proforma used to generate the Parameters is “A001”.

Possible Errors

If the Window fails to be displayed, the Message Area will display a failure message. For the possible error messages, see section 4.7.7 on page 83.

Cross Reference

Item
4.9 Standard Alphanumeric List Windows page 162
4.7.7 Save Case - Submit page 83
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.13.4 Save Case - Output - Field Proforma page 117
4.7.13.3 Save Case - Output - Display Type page 115
4.7.10.4 Save Case - Data - Data Type page 103

4.9.3 OOL (Out-of-Limits) Window

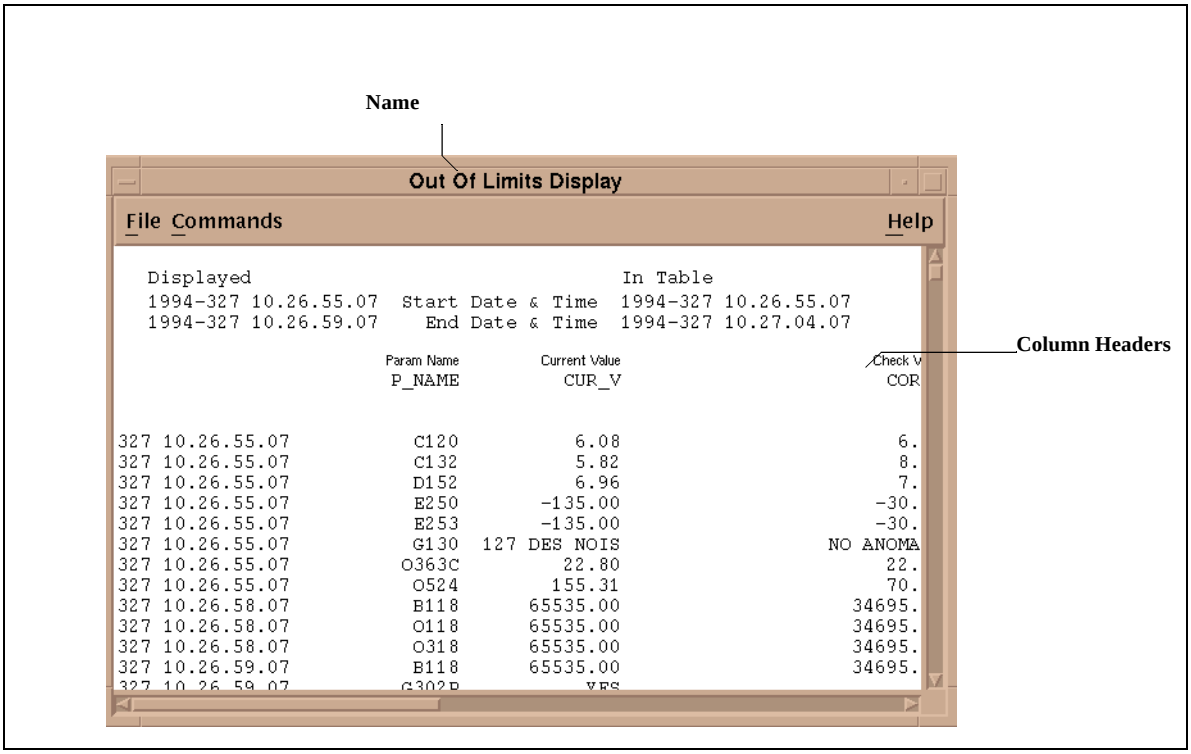


Figure 57OOL Window

Description

This Window shows OOL (Out-of-limits) information for the time range specified when submitting a Save Case. The window will only be created if the following conditions are met:

- The *Save Case - Data - Data Type* must be OOL.
- The *Save Case - Output - Display Type* must specify *Data Points.*

Note that no TM Proforma can be associated with a OOL Display. All the OOL Parameters for a particular time period will be displayed in this window.
The general window properties, (e.g. the *Commands Menu* and the *Scrollbars*) are described in section 4.9 on page 162. The following Window Items are special properties for the *OOL Window*:

Name

The Header of the Window will always display “Out of Limits Display”, since no TM Proforma are associated with the display.

Times

For the OOL Window, the time the OOL packet was generated, *not* the time the actual parameter generated an OOL record. For the actual time the parameter generated an OOL record, consult the column header name OOL_T below.

Column Headers

The Column Headers shows the name and type of each OOL field for which you have requested the output values. The number of columns and their placement depends on the *Field Proforma* which was specified in the *Save Case - Output - Field Proforma* Text field. The default field proforma name for OOL is called OOLS, and contains all the possible columns types for Out-of-Limits data. The

types are described in Table 17:

Table 17: OOL Column Headers

Name	Type	Format	Meaning
P_NAME	Parameter Name.	Text	Name of the Parameter which is OOL.
CUR_V	Current Value of the Parameter.	Parameter Default*	The Value of the Parameter for this time.
COR_V	Correct Value of the Parameter.	See right.	The correct value for the Parameter. Normally the same as Parameter Default. If the Parameter is Status and have a corresponding Status Check Set table, the field will display <SET *n*> where *n* identifies the Status Check Set number (1-16). (*See also Cautions and Warnings*).
P_UNIT	Parameter Unit	Text	Displays the Unit of the Parameter
P_DESC	Parameter Description	Text	Displays the description of the Parameter.
REL_P	Relational Parameter.	Text	Displays the name of the Relational Parameter for this Parameter. If the field is blank, the Parameter has no relational Parameter.
PIF_C	OOL Type (PC/IC/FC)	Text	Gives the Previous Check, Intermediate Check and Final Check results for this Parameter. The Column Field contains a 6 character long string. The first 2 characters are the Previous Check Result, the middle 2 the Intermediate Check Result and the last 2 the Final Check Result. E.g. as in the string “wl__HL”. The character codes are explained in Table 18:
FLAG	General Utility Flag	Decimal	Displays the General Utility Flag for the Parameter.
OOL_T	Time OOL record generated	Year & Day	Displays the time the Parameter generated the OOL record.

*Parameter Default**: The Value is displayed as specified by the Parameter Type (since no Proforma is associated with the OOL).:

Table 18: PIF_C (OOL character codes)

Code	Meaning
__	No value. For non-supercommutated, this will always be the Intermediate Check Code, since Intermediate Checks do not exists for these Parameters.
wL	Value within Limits.
HL	Value smaller than Hard Low Limit.
HH	Value larger than Hard High Limit.
SL	Value smaller than Soft Low Limit.

Table 18: PIF_C (OOL character codes)

Code	Meaning
SH	Value larger than Soft High Limit.
CO	Status Consistency Check has failed.
FX	The Fixed Status Check Set check has failed.

Cautions and Warnings

If you observe the value <SET **> in the COR_V column, note that this probably has to do with changes done to the SCOS derived file format (introduced in SCOS Version 17.1). If the OOL Values was generated with an earlier version of SCOS (e.g. Version 16.0) you should expect to observe this peculiarity. If you are sure that SCOS Version 17.1 or later was used to generate the values, please issue an SPR.

Syntax

Not Applicable.

Examples

Figure 57 on page 171 shows the OOL Window.

Possible Errors

If the Window fails to be displayed, the Message Area will display a failure message. For the possible error messages, see section 4.7.7 on page 83.

Cross Reference

Item
4.9 Standard Alphanumeric List Windows page 162
4.7.7 Save Case - Submit page 83
4.7.11 Save Case - Simple Extraction Processing (SEP) page 106
4.7.13.4 Save Case - Output - Field Proforma page 117
4.7.13.3 Save Case - Output - Display Type page 115

4.9.4 Totals Window

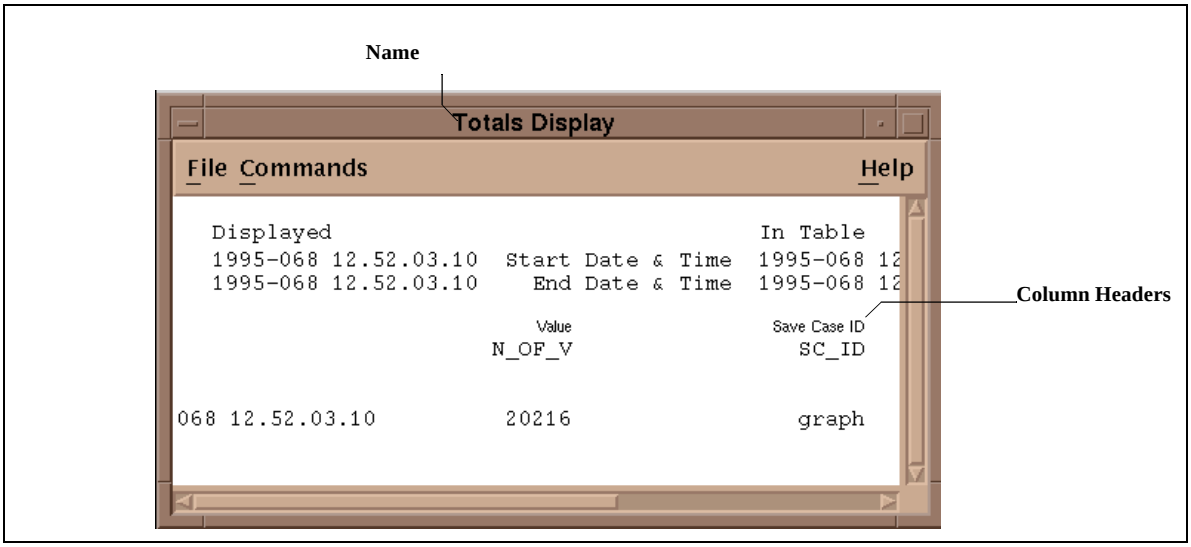


Figure 58Totals Window

Description

This Window shows Save Case Totals information for the Save Case which you have submitted. In the current SPEVAL Release Version 3.0, the Window will always display only one data row.
The window will only be created and displayed in the following cases:

- The *Totals From Data Points* or *All Already Calculated Totals* or *Merge of All Already Calculated Totals* must have been specified as an option in the *Save Case - Output - Display Type* .

NOTE: When SPEVAL retrieves from the LTA, there are some differences between the retrieval of “Data Points” and “Totals”. For data points, SPEVAL is able to trap (and filter) duplicate values. For Totals however, SPEVAL cannot check for duplicate values. Consequently, duplicates will cause double counting. I.e. for a given retrieval, the LTA Totals might be higher than the totals from a UDS (User Definition Set) File. The difference between the two will reveal the number of duplicates.

The general window properties, (e.g. the *Commands Menu* and the *Scrollbars*) are described in section 4.9 on page 162. The following Window Items are special properties for the *Totals Window*:

Name

The Header of the Window will display “Totals Display”.

Times

For the Totals Window, the time the Save Cases was submitted. Should always display the same time as the SUB_T column.

Column Headers

The Column Headers shows the name and type of each Totals field for which you have requested the output values. The number of columns and their placement depends on the *Field Proforma* which was specified in the *Save Case - Output -*

Field Proforma Text field. The default field proforma name for Totals is called TOTS, and contains all the possible columns types for Totals data. The types are described in Table 19:

Table 19: Totals Column Headers

Name	Type	Format	Meaning
N_OV_V	Value	Decimal	The total number of values (data rows) which was found the last time the Save Case was submitted.
SC_ID	Save Case ID.	Text	Name of the Save Case.
SUB_T	Save Case submission time.	Year & Day	Last time the Save Case was submitted. Will always display the same value as the *Times* column.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 58 on page 174 shows the Totals Window. The Save Case ID is “totals”.

Possible Errors

If the Window fails to be displayed, the Message Area will display a failure message. For the possible error messages, see section 4.7.7 on page 83.

Cross Reference

Item
4.9 Standard Alphanumeric List Windows page 162
4.7.7 Save Case - Submit page 83
4.7.13.4 Save Case - Output - Field Proforma page 117
4.7.13.1 Save Case - Output - Output Type page 112

4.10 Alphanumeric Display Window

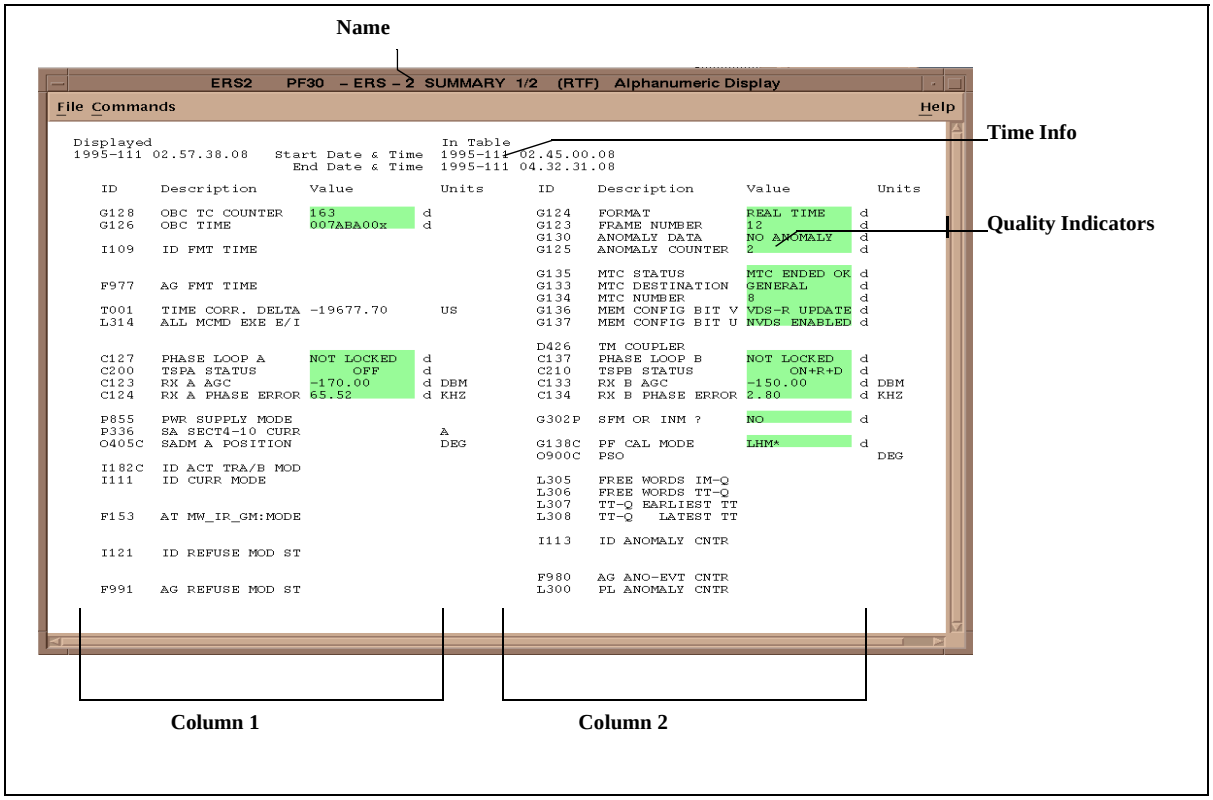


Figure 59Alphanumeric Display Window

Description

This Window shows all the TM Parameters defined in the Save Case TM Proforma for a particular point in time. By using the <PREV> and <NEXT> keys, you can navigate the window contents forwards and backwards within the time range defined for this submission as explained below.
The Window will only be displayed if the Save Case which has been submitted fulfils the following criteria:

- The *Save Case - Data - Data Type* must be TM.
- The *Save Case - Output - Output Type* must be *Data Points.*
- The *Save Case - Output - Display Type* radio buttons must have specified *Alphanumeric Display* as an option.
- As least one of the Parameters must *not* have the Statistic Filters applied.

The Window Data Area is divided into two main columns as indicated in Figure 60. Each column displays a maximum of 32 Parameters, corresponding to the maximum of 64 Parameter which you can define in a SCOS TM Proforma. Each column displays the Parameter ID, Description, Unit and the current value for the particular time.
The Window contains the following items:

File Menu

This pull-down menu only contains the *File* | *Exit* Button. Selecting this buttons will exit the current Window but does not influence other SPEVAL Windows.

Commands Menu

This pull-down menu contains two entries, the *Jump To Time* Button and the *Output* Button. The *Jump To Time* Button displays when pressed the Jump To Time Window as described in section 4.3.

Window Name

The *Window Name* is visible in the Window Header Pane. The field identifies the TM Proforma used, and the Window Type "Alphanumeric Display".

Time Info

These fields display the Start Date & Time and End Date and Time for the data which are displayed in the window as *year-day hh.mm.ss.tt*.

The entries in the *Displayed* column show the time for the data which is currently visible in the Window.

The entries in the *In Table* column show the start and end time for the data in the complete retrieved set.

Quality Indicators

The Quality Indicators indicate Bad Data Quality (BDQ), Bad Time Quality (BTQ) and Validity Quality. They have the same layout as described for "TM (Alphanumeric List) Window" on page 166.

Navigating Using the keyboard

When started, the *Alphanumeric Display Window* will display the Parameter values for the first time in the time range. You can navigate through all the unique times in the Retrieval by using the keyboard as described in "Key Accelerators in Alphanumeric Windows" on page 160.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 59 on page 176 shows the Alphanumeric Display Window.

Possible Errors

If the Window fails to be displayed, the Message Area will display a failure message. For the possible error messages, see section 4.7.7 on page 83.

Cross Reference

Item
4.8 Key Accelerators in Alphanumeric Windows page 160
4.7.7 Save Case - Submit page 83
4.7.13.3 Save Case - Output - Display Type page 115
4.7.13.1 Save Case - Output - Output Type page 112
4.3 Jump To Time Window page 55

4.11 Graphical Window

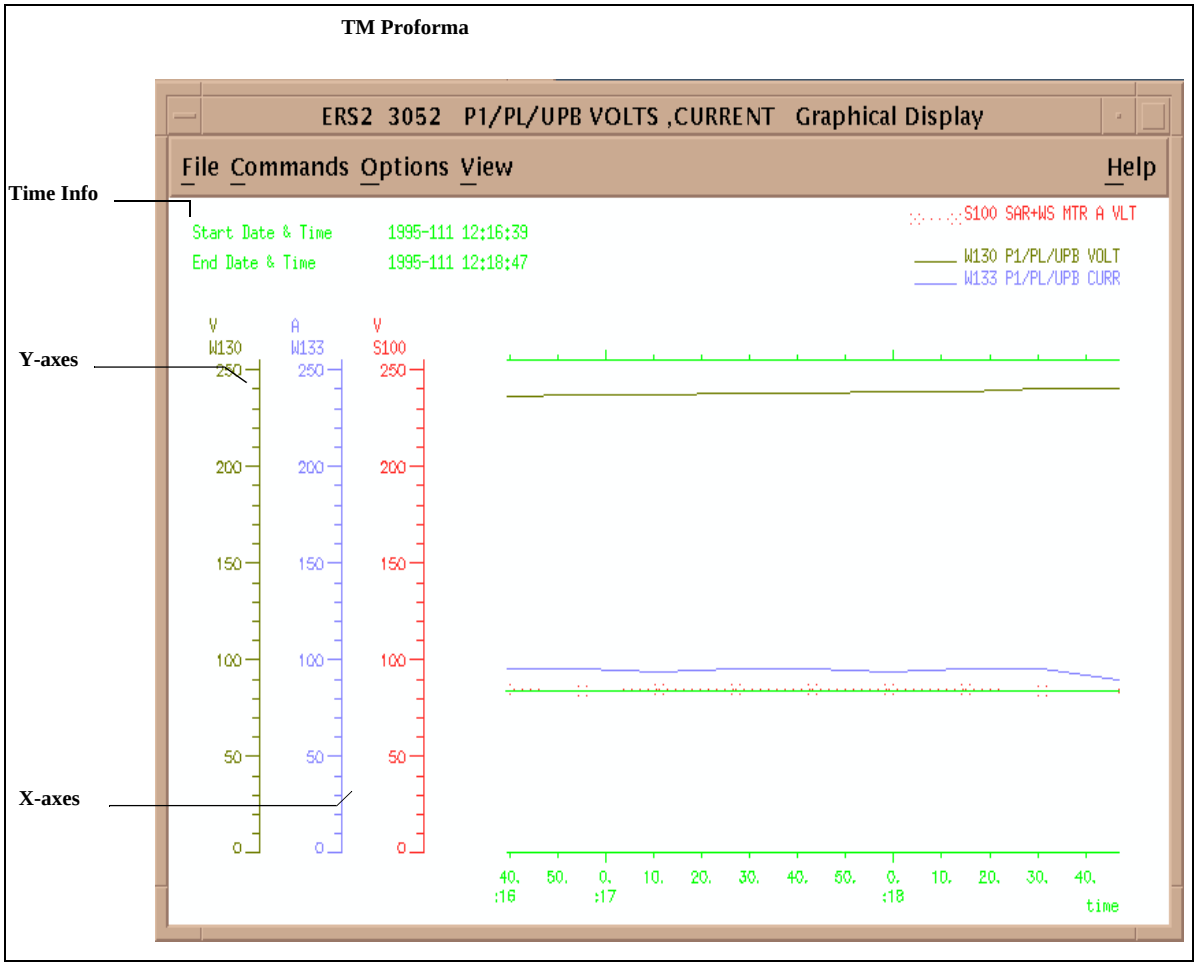


Figure 60Graphical Window (shown in reverse video)

Description

This SPEVAL Graphics Window offers high-resolution colour plots of parameters vs. time or parameters vs. parameters. There may be up to 4 graphs displayed in a *Graphical Window* as indicated in Figure 60 (shown on white background for visibility). Each Parameter can be plotted using different colours, line style and symbol style on a black background.

The Commands Menu offers the possibility to dump the Window contents as Encapsulated Postscript (EPS), Normal Postscript (PS) and printed as numerical values.

The View Menu allows you to zoom the graphs in a number of different ways as well as scrolling the grahical data. See “Graphical Window - View” on page 181 for these options.

The Window will only be displayed if the Save Case which has been submitted fulfils the following criteria:

- The *Save Case - Data - Data Type* must be TM.
- The *Save Case - SEP- Proforma Type* must be *Graphical.*
- The *Save Case - Output - Output Type* must be *Data Points.*

- The *Save Case - Output - Display Type* radio buttons must have specified *Graph* as an option.
- The relevant Parameters must *not* have the Statistics Filters applied. In this case, only Statistics would be generated.

The Window contains the following items:

File Menu

This pull-down menu only contains the *File | Exit* Button. Selecting this buttons will exit the current Window but does not influence other SPEVAL Windows.

Commands Menu

This pull-down menu contains two entries, as follows:

Output

This Pull-right Menu gives the options to print the Graphics on a printer, output it to EPS (Encapsulated Postscript) File or PS (Postscript) File.

Dump for Interactive Wave

This Button dumps the data in a format which may be used in interactive PV-Wave sessions. See “Using Graphics output with PV-Wave” on page 35 for this option.

Option Menu

This Menu allows you to specify colour printing of the Graph (in conjunction with the *Commands - Output* option). Note that SPEVAL possibly directs the output to a different (colour) printer if this option is selected. If no colour printer exists, the plot will be printed in gray-scale.

Wiew Menu

This Menu displays a number of different zoom and view options. The options are described in “Graphical Window - View” on page 181.

Window Name

The *Window Name* is visible in the Window Header Pane. The field identifies the TM Proforma used.

Time Info

These fields display the Start Date & Time and End Date and Time for the data which are displayed in the window as *year-day hh.mm.ss.tt*.

Y-axes

For each Graph, there may be multiple Y-axis as indicated in Figure 60. For Status Parameters, each y-axis displays the corresponding Status Text String for the Parameter Value. The Parameter names associated with the plot will appear above the axes.

X-axes

For each graph, there will be one x-axis. Note that the time ranges displayed under the X-axis has a different format than for the Time Info. The x-axis displays the times as year-month-day-sec. Here <day> means day-of-month, *not* the day offset from the start of the year.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

Figure 60 on page 178 shows the Graphics Window.

Possible Errors

If the Window fails to be displayed, the Message Area will display a failure message. For the possible error messages, see section 4.7.7 on page 83.

Cross Reference

Item
4.7.7 Save Case - Submit page 83
4.7.7 Save Case - Submit page 83
4.7.13.3 Save Case - Output - Display Type page 115
4.7.13.1 Save Case - Output - Output Type page 112
4.3 Jump To Time Window page 55

4.11.1 Graphical Window - View

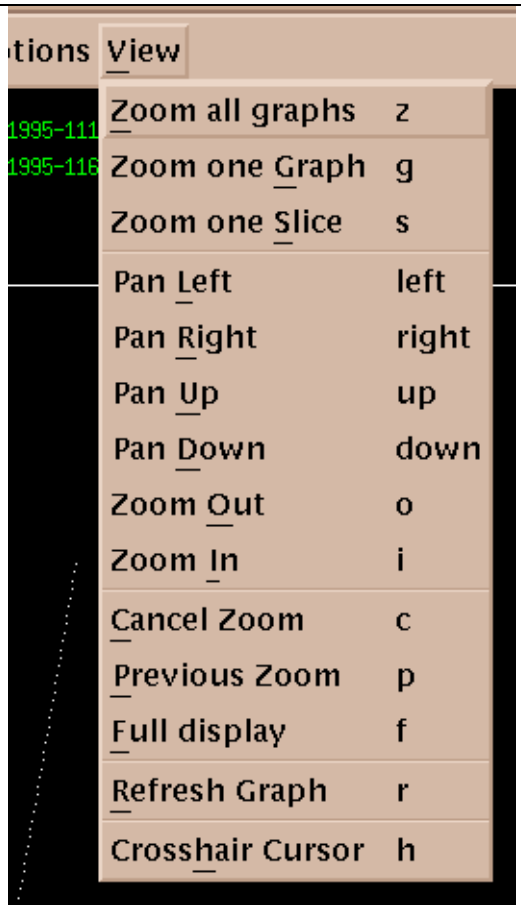


Figure 61Graphical Window - View PullDown Menu

Description

This Menu is located in the Window Pane of the Graphical Window . The View Menu allows you to zoom the graphs in a number of different ways, to define crosshair cursors and to scroll zoomed data.

Multiple Zooms

Since the SPEVAL Graphical Window may displays up to 4 graphs and each graph may contain several stacked y-axis, or slices, you may specify the slices to zoom using one of the *Zoom all Graphs*, *Zoom one Graph* and *Zoom one Slice* entries as described below.

Zoom and Mouse Button usage

When you select the *Zoom all Graphs*, *Zoom one Graph* and *Zoom one Slice* entries in the menu, one or several zoom rectangles will be displayed. You can manipulate the zoom rectangles with the 3 mouse buttons (MB) in the following ways:

- Pressing **MB1** on a zoom rectangle, then dragging the Mouse will move the zoom rectangle(s).
- Pressing **MB2** on a zoom rectangle, then dragging the Mouse will re-size the rectangle(s).
- Pressing **MB3** in the Graphical Window zooms the graphs using the current zoom rectangle(s).

The View Menu contains the following items:

Zoom all graphs

Creates one zoom rectangle for each graph in the graphical window. Stacked y-axis counts as several slices. E.g. if there are 3 graphs, one of which have 2 stacked y-axes, there will be 2 + 2 zoom rectangles. The zoom rectangles will move and rescale synchronously. When MB3 is pressed, each curve is rescaled to display the data in that zoom rectangle.

Zoom one Graph

Creates zoom rectangles only for one graph. If the graph contains stacked y-axes, each stacked y-axis will have a corresponding zoom rectangle. Clicking MB3 will zoom the Graph.

Zoom one Slice

For stacked y-axes, this option only creates one zoom rectangle. The zoom rectangle can be moved between different curves, but you cannot cover several curves. Pressing MB3 will only zoom the curve which the zoom rectangle covered. For non-stacked y-axes, the option is functionally identical to *Zoom one Graph*.

Pan Left

Pan Right

Pan Up

Pan Down

Moves the current data wiew window left, right up or down. The wiew window is always moved a half screen width or height for each operation. These 4 entries makes it possible to scroll zoomed data. Note that you can use the keyboard keys as accelerators for these options:

- <key-left> corresponds to *Pan Left.*
- <key-right> corresponds to *Pan Right.*
- <key-down> corresponds to *Pan Down.*
- <key-up> corresponds to *Pan Up.*

Zoom Out

Zooms each slice in the current display out with a factor of 2.

Zoom In

Zooms each slice in the current display in with a factor of 2.

Cancel Zoom

Cancels the zoom rectangles. In order to return to the un-zoomed display, use the “Full Display” option.

Previous Zoom

Displays the previous zoom view. The zoom view history only contains the current view and the previous view, so you cannot “rewind” more than one zoom.

Full Display

Re-creates the original (un-zoomed) display.

Refresh Graph

Redraws the graphic display.

Crosshair Cursor

Creates a crosshair cursor with vertical and horizontal crosshairs. Helpful to map data points to their numeric values. Re-selecting this option toggles between crosshair cursors and standard cursors.

Cautions and Warnings

None.

Syntax

Not Applicable.

Examples

N/A

Possible Errors

If a Zoom or Scroll operation results in zero data for a curve, the corresponding graph displays the message “No Data Points in selected range”. Note that the message is issued when there are no *underlying* data points inside the zoom rectangle, even if a connecting line intersects the rectangle Figure 62 illustrates this side-effect. Data poinst are marked as small rectangles. Since the zoom rectangle does not encompass any data points, a zoom operation would result in the “No Data Points in selected range” message..

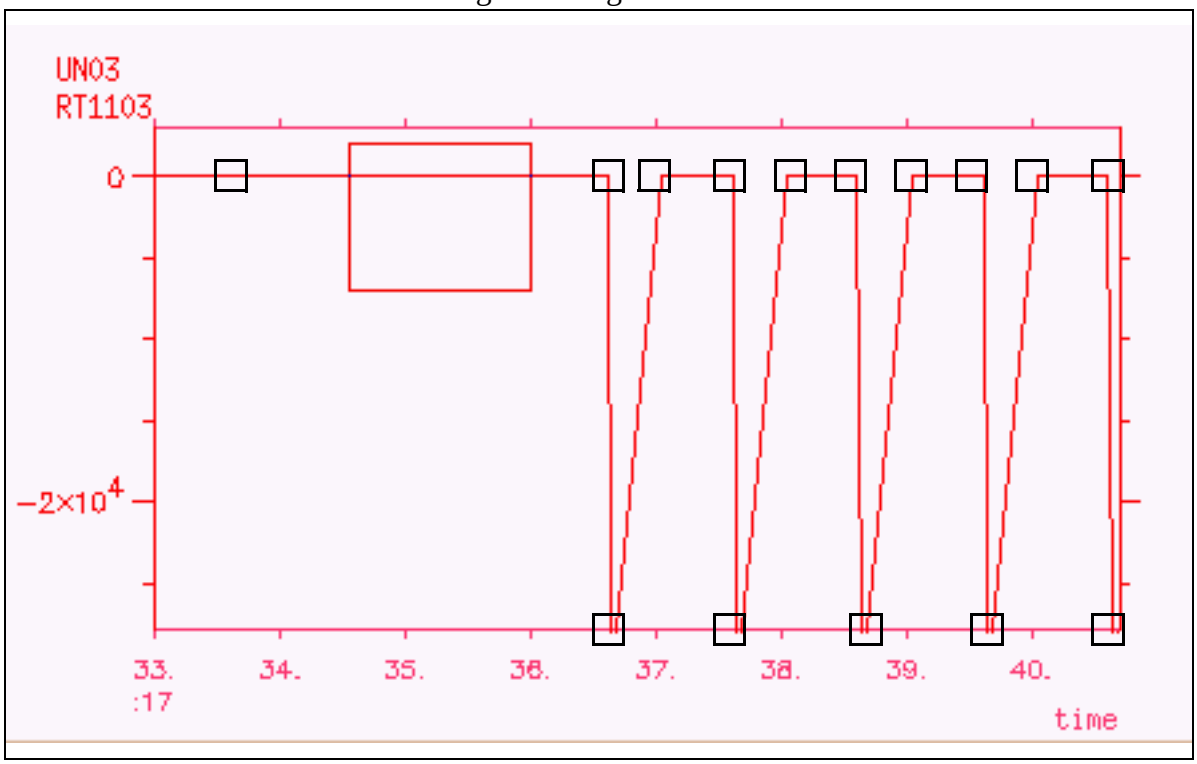


Figure 62Graph Zoom resulting in “No Data Points in selected range”

Cross Reference

Item
4.11 Graphical Window page 178
4.1.1 COMPILE page 41 (Stacked y-axis)

4.12 PV-Wave SPEVAL procedures

Description

SPEVAL offers the possibility to import TM User Data Set (UDS) files into PV-Wave and perform further operations on the data. By using the powerful PV-Wave Command Language, you can manipulate the data, defining your own plots, etc. SPEVAL currently offers to utility PV-Wave procedures, both described in the following sections:

- GRPH_LOAD_UDS. This procedure loads a TM User Data Set file into PV-Wave.
- GRPH_MATCH_DATA. This procedure is used to match the different data arrays to times and to select specific parameters for further processing.

Cautions and Warnings

None.

Syntax

In order to make the SPEVAL PV-Wave procedures available from within interactive wave, start up wave by the following command:

```
$ WAVE GRPH_USER
```

Alternatively, you can perform the setup from within Wave by at the Wave prompt typing:

```
WAVE> @GRPH_USER
```

Examples

For examples, see the sub-sections.

Possible Errors

If PV-Wave fails to find the GRPH_USER startup file, it will issue a message like

```
% Can't open file for input: grph_user
  no such file or directory
```

The only reason for this error message should be that the account you have started PV-Wave from is not an registered SPEVAL account. Contact Software Support in this case.

Cross Reference

Item
4.7.7 Save Case - Submit page 83
4.7.13.3 Save Case - Output - Display Type page 115
4.7.13.1 Save Case - Output - Output Type page 112
4.3 Jump To Time Window page 55

4.12.1 GRPH_LOAD_UDS

Description

This is one of the SPEVAL PV-Wave procedures made available for interactive PV-Wave usage. It takes as argument the name of a existing User Data Set file (must contain TM data) and loads the contents into the following PV-Wave data structures:

- PARAMETER
- DATA
- TIMES
- TIME
- TEXT_TABLES

The GRAPH and DISPLAY structures are not initialised. See Appendix B for an explanation of the SPEVAL PV-Wave variables.

Cautions and Warnings

Loading very large UDS files into PV-Wave may take a considerable amount of time. It is recommended to start of with smaller UDS files.
GRPH_LOAD_UDS cannot load non-TM UDS files. Files containing e.g. TC,OOL or Statistics data but no TM data will be rejected.

Syntax

PV-Wave must have been started with the “WAVE GRPH_USER” option.

```
WAVE > GRPH_LOAD_UDS,'<uds_file_name>'
```

<uds_file_name> : full filename of an existing User Data Set file to load into PV Wave. Must be surrounded by single quotes.

Examples

The following example starts up PV-Wave from the command line, then load in the User Data Set “MY_UDS” from the standard “Private” User Data Set directory. The User then prints out a list of all the Parameters which have been loaded.

```
$ WAVE GRPH_LOAD
....
....
WAVE> GRPH_LOAD_UDS 'SPVL_PRIVATE_USER_DATA_SETS:MY_UDS.UDS'
Loading SPVL_PRIVATE_USER_DATA_SETS:MY_UDS.UDS
% Compiled module: GRPH_READ_PTVS_DATA.
WAVE> PRINT, PARAMETER.NAME
C124   C134   F980   G126   G128   G134   I109   I113   L300
WAVE>
```

Possible Errors

The following SPEVAL error messages may be issued:

Error Message	Meaning
`Failed to load <file_name>`	General error message. Signals that load of the UDS file has failed. Previous error messages should explain the cause of error.
`File <filename> not a UDS file`	The named file could not be interpreted as a SPEVAL UDS file. Check file name and file extension.
`Unexpected argument(s) UDS_FILE_NAME, expected STRING`	PV-Wave function has been called with wrong arguments. Check allowed syntax as listed in the SUM
`UDS file contains no TM Parameters`	The UDS file contains no Telemetry Parameters. Check the Save Case used to generate the file
`The UDS file contains no Telemetry Data`	Check the Save Case used to generate the file
`UDS file contains no TM data - Cannot be loaded into Wave`	The User Data Set file contained no Telemetry data. This message will appear if you try to load a UDS file containing e.g. TC, OOL etc. Select a UDS file containing TM data.
`Internal Error - Contact Software Support`	A low-level error has occurred.

Cross Reference

Item
4.12 PV-Wave SPEVAL procedures page 184
Appendix B SPEVAL PV-Wave Variables page 197

4.12.2 GRPH_MATCH_DATA

Description

This is SPEVAL PV-Wave procedure made available for interactive PV-Wave usage. It is used to match the different TM Parameters DATA arrays against each other and against the TIME array. See Appendix B for an explanation of the SPEVAL PV-Wave variables DATA and TIMES.
When data for several TM Parameters are imported into PV-Wave, SPEVAL stores all the discrete times in the TIME structure. The TIMES structure (parallel to the DATA) structure is used to index each data point into the TIME structure. GRPH_MATCH_DATA creates new data structures in order to make the plotting and manipulation of data easier. After a successful run of GRPH_MATCH_DATA, the following new data structures are created:

- NEW_DATA. This is a structure containing all the matched data for the selected parameters. As opposite to the DATA structure, all the data arrays in the NEW_DATA structure have the same number of elements, and match the number of elements in the TIME array or the NEW_TIME array (see below)
- NEW_DATA_VALID. This is a structure parallel to the NEW_DATA structure. Each element flags whether the corresponding element in the NEW_DATA structure is original data or padded data. If 1, the corresponding data element is original, if 0 padded.
- NEW_TIME. This array is only created if the /MATCH qualifier is specified. It contains a subset of the elements in the TIME array. The NEW_TIME and NEW_DATA arrays have a one-to-one match. E.g. NEW_DATA(0).(10) always corresponds to the time NEW_TIME(10).

Cautions and Warnings

None.

Syntax

PV-Wave must have been started with the “WAVE GRPH_USER” option.

```
GRPH_MATCH_DATA, [SELECT = <parameters>] /MATCH
[/NONE | /AFTER | /ALL]
```

SELECT= <parameters>
This optional qualifier specifies a list of parameters to be selected from the original PARAMETER structure. The NEW_DATA and NEW_DATA_VALID structures will only contain elements appearing in the <parameters> list. E.g. SELECT=[‘G123’,’F123’] only includes Parameter G123 and F123 in the NEW_DATA and NEW_DATA_VALID structures. If unspecified, all parameters in the PARAMETER array will be selected.

/MATCH
This qualifier is used to match the NEW_DATA TM data arrays to start from the time where all the Parameters have at least one valid value. E.g. if there are two parameters in the DATA array, the first parameter has the first value at time t_1 and the second parameter at time t_2, a NEW_TIME array will be generated, starting from time t_2. The NEW_DATA and NEW_DATA_VALID are changed to match the NEW_TIME array. If unspecified, the NEW_TIME structure will be unde-

fined.
NOTE: If the MATCH qualifier has been used, always refer to the NEW_TIME, not the TIME array.

[/ALL | /AFTER | /NONE]
These qualifiers specifies how to process invalid data elements, i.e. times for where the corresponding Parameter has no data. The default is /NONE. Note that none of the qualifiers affect the NEW_DATA_VALID structure.

/NONE
Invalid numeric data elements are left as zero. Invalid strings are left as blank padded strings.

/AFTER
Invalid data elements before the first valid element are left as zero or blank strings. Invalid elements occurring after than the first valid element inherits the value of the last valid element.

/ALL
Invalid data elements before the first valid element are set to the first valid element. Invalid elements after than the first valid element inherits the value of the last valid element.

Examples

The following example starts up PV-Wave from the command line, then load in the User Data Set “MY_UDS” from the standard “Private” User Data Set directory. The User then plots parameter C124 against parameter C134. Empty data values are filled with the previous valid value.

```
$ WAVE GRPH_LOAD
....
....
WAVE> GRPH_LOAD_UDS ‘SPVL_PRIVATE_USER_DATA_SETS:MY_UDS.UDS’
Loading SPVL_PRIVATE_USER_DATA_SETS:MY_UDS.UDS
% Compiled module: GRPH_READ_PTVS_DATA.
WAVE> PRINT, PARAMETER.NAME
C124   C134   F980   G126   G128   G134   I109   I113   L300
WAVE> GRPH_MATCH_DATA,SELECT=[‘C124’,’C134’],/MATCH,/AFTER
WAVE> PLOT,NEW_DATA._C124,NEW_DATA._C134
WAVE>
```

This example assumes that a UDS file already has been loaded with GRPH_LOAD_UDS. GRPH_MATCH_DATA is used to prepare for a plot of the Parameter C124 .The sinus function of the parameter is then plotted against time.

```
WAVE> GRPH_MATCH_DATA,SELECT=[‘C124’],/MATCH,/AFTER
WAVE> PLOT,NEW_TIME, SIN(NEW_DATA._C124), XTYPE = 2
WAVE>
```

The following example demonstrates the difference between the /NONE, /AFTER and /ALL qualifiers. A UDS file containing 5 times have been loaded. Parameter C124 has values 1.1, 3.3 and 5.5 occurring at t_1,t_3 and t_5. Note that the NEW_DATA_VALID is unaffected by the qualifiers.

```
WAVE> GRPH_MATCH_DATA,/NONE
WAVE> PRINT,NEW_DATA._C123, NEW_DATA_VALID._C123
0.000000    1.100000    0.000000    3.300000    0.000000
   5.500000
   0 1 0 1 0 1
WAVE> GRPH_MATCH_DATA,/AFTER
WAVE> PRINT,NEW_DATA._C123, NEW_DATA_VALID._C123
0.000000   1.100000   1.100000   3.300000   3.300000
   5.500000
   0 1 0 1 0 1
WAVE> GRPH_MATCH_DATA,/ALL
WAVE> PRINT,NEW_DATA._C123, NEW_DATA_VALID._C123
1.100000    1.100000    1.100000    3.300000    3.300000
   5.500000
   0 1 0 1 0 1
```

Possible Errors

The following SPEVAL error messages may be issued:

Error Message	Meaning
`Unexpected argument(s) <argument name>, expected <argument type>`	PV-Wave function has been called with wrong argument type for <argument name>. Check allowed syntax as listed in the SUM
`Parameter <param> not found in the PARAMETER array`	PV-Wave function has been called with a TM parameter name which is not found. Use “PRINT,PARAMETER.NAME “ to get a list of all existing parameter
`PV-Wave data <data_name> not existing or unexpected type, use INFO`	SPEVAL PV-Wave procedure has been called with unexpected data. This message will appear if you call GRPH_MATCH_DATA before calling GRPH_LOAD_UDS. In this case, SPEVAL has no data to operate on. Use the PV-Wave INFO command to list all available data.

Cross Reference

Item
4.12 PV-Wave SPEVAL procedures page 184
4.12.1 GRPH_LOAD_UDS page 185
Appendix B SPEVAL PV-Wave Variables page 197

4.13 Hex Dump

Description

The Hexadecimal dump utility can be used to examine the SPEVAL Time-ordered Record Set (TRS) files used for archiving SCOS packets, Telecommand History and Scrolling Logs. Database files cannot be examined with this utility.

The utility allows you to:

- Dump the contents of a TRS file (dump record keys). In this mode, Hex Dump displays the time-key and the record length.
- The contents of records stored in a TRS file (full mode). In this mode, Hex Dump displays the actual record contents in different formats (e.g. INTEGER*2, INTEGER*4).

Syntax

Hex Dump should be started from DCL prompt, as follows

```
$ hexd_dump
```

The user is requested to answer the following questions:

```
Enter the id of the spacecraft ? (max 4 chars-"SCS_")
```

A string of up to 4 char. is expected. It represents the spacecraft identification.

```
Enter the id of the packet ? (max 8 chars-"SWS.EXP")
```

A string of up to 8 char. is expected. This string represents the packet identification, with format XXXX.XXX.

```
Enter the datastream number ?
```

A number from -127 to 127 is expected. It represents the datastream number, if empty then all datastreams are valid.

Entering Ctrl-Z to any of the above questions will cause the utility to exit directly.

The key span of the TRS file is then displayed:

```
KEY SPAN IS zzzzzzzzzzzzzzzz - zzzzzzzzzzzzz   (HEX)
yyyy.ddd.hh.mm.ss.xxx - yyyy.ddd.hh.ss.xxx (ASD TIME)
```

showing the lowest and the highest keys (note that the ASD format is only displayed for valid time key values).

The next question:

```
START and STOP keys?
```

requests the user to define the range of the records to be examined. No records below the spec-

ified start key or above the specified stop key will be processed. If the start key is omitted, all records up to the stop key will be processed. If only the start key is supplied, all records above the specified key will be processed.

Both values will be separated by a coma. If only an end key is to be supplied (defaulting the start key to the lowest in the file), input a comma followed by the end key.

Care must be taken when using ASD time format, the following formats will be accepted:

```
YYYY.DDD.HH.MM.SS.MSC
```

or

HH
HH.MM
HH.MM.SS
HH.MM.SS.MSC
DDD.time (where time is one of the above)
YY.DDD.time
YYYY.DDD.time

That format is less accurate than the VAX time format displayed in HEX. form. Two different but close key values can be displayed within the same ASD form.

The utility will then enter the brief (or key) mode.

The screen will be cleared and the display format described in Table 20: appears.

In line 1, the TRS directory name and file name are displayed in BOLD characters. Line 3 is a title line describing the information displayed in lines 4 to 23.

Table 20: Hex Dump display formats

Key (HEX)	record in hexadecimal format
Key (ASD)	record key in ASD time format
R. Len.	record length in bytes

Line 24 displays the commands available

After displaying the first 20 keys (if any) from the key window supplied by the user, the first line rendition is changed to bold.

The BOLD line indicates the "current record". Pressing the M key will switch the display mode to full (or record) mode and will give the user the possibility to examine the contents of the current record.

Table 21: summarises the commands available and their use in both modes.

Table 21: Hex Dump Commands

Command	Brief (or Key) mode	Full (or record) mode
<KEY-UP>	Gets previous record as current one (Previous line becomes BOLD)	Scrolls up screen one line (no action if already on beginning of record
<KEY-DOWN>	Gets next record as current record (Next line becomes BOLD)	Scroll down screen one line (no action if already end of record)
F	Forward one screen	Forward one screen
B	Backward one screen	Backward one screen
1 2 4 8	Not Applicable	Sets type of dumps in full mode into dump as byte array dump as integer*2 array dump as integer*4 array dump as integer*8 array
M	Switch into Full mode	Switch back to brief mode
+	N/A	Get next record
-	N/A	Get previous record
P	Print current record	Print current record
Ctrl-Z	Exit from Hex Dump	Exit from Hex Dump

When switching into full mode, the central portion of the screen is cleared and the current record is dumped in the mode selected. If no mode has been selected yet, the record buffer is dumped as a byte array. In all modes (1,2,4 or 8), 32 bytes are dumped on each line.

In modes 1,2 and 4, bytes are grouped and ordered 1, 2, or 4 at a time. Changing from one mode to another will ease the reading of the data. In front of each line, the offset number of the first displayed unit is given, i.e. if mode 1 is selected, the number of the first byte is given.

Note that printouts will be made in the currently selected mode and sent to the default printer.

Examples

The following example read for spacecraft ERS-2, the content of the records stored for Packet Id A023.SPS in the period of time 16:10 to 16:12 day 115 in 1995.

```
$ hexd_dump

Enter the id of the spacecraft ? (max 4 chars-"SCS_"
ers2

Enter the id of the packet ? (max 8 chars-"SWS.EXP")
a023.sps
Enter the datastream number ?
<RETURN>
Key span is    0097279FAA214720     -    0098F6B01ECC1D30    (HEX)
            1993.256.09.20.19.090   - 1995.115.16.14.35.139(ASD TIME)
```

```
START and STOP keys ..................... ?
1995.115.16.00,1995.115.16.12
```

Then the first 20 records in this period appear on the screen (if they exist) displayed in Brief Mode format

```
      Packet Name:  SPVL_TRS_ERS2_DIR:ERS2_A023_SPS

         Key (HEX)      Key (ASD)               len
         98F6AF5D150CB0 1995.115.16.09.10.139   512
```

and one record at a time when changed to Full mode by pressing M:

```
     Packet Name:  SPVL_TRS_ERS2_DIR:ERS2_A023_SPS

     98F6AF5D150CB0 1995.115.16.09.10.139   512

     1   0B01FBE6 00004000 B00C155D AFF69800 00000000 00000000 00000000 00000000
     33  31393935 2E313135 2E31362E 30392E31 302E3133 39D8004B 44303032 30343338
     65  36374646 46464639 43303032 30343338 37374646 46464639 43303032 30343338
     97  38374646 46464639 43303032 30343338 41374646 46464639 43303032 30343338
     129 39374646 46464639 43303032 30343338 42374646 46464639 43353032 30343733
     161 36374646 46303037 44303032 30343834 44303731 37463845 39353032 30343333
     193 41303039 43303038 42353032 30343333 42303039 43303038 42353032 30343333
     225 43303039 43303038 42353032 30343333 44303039 43303038 42353032 30343930
     257 32374646 46303530 30303032 30343333 41303038 35303036 44353032 30343333
     289 42303038 35303036 44303032 30343333 43303038 35303036 44353032 30343333
     321 44303038 35303036 44303032 30343130 41374646 46303037 42303032 30343130
     353 42374646 46303036 46303032 30343930 43303039 32303038 36303032 30343930
     385 44303039 46303039 33303032 30343930 45303041 38303039 43303032 30343930
     417 46303038 44303038 33303032 30343931 30303042 38303041 43303032 30343931
     449 31303041 43303041 32303032 30343931 32303042 32303041 36303032 30343931
     481 33303042 38303041 43303030 30303030 30303030 30303030 30000000 00000000

     VALID commands are : Down/Up arrow,F,B,1,2,4,8,M,+,-,P,Ctr-Z ?
```

now pressing M again changes back to Brief Mode.

Pressing Ctrl-Z, you can exit.

Possible Errors

Error Message	Meaning
`Invalid Spacecraft Id`	Spacecraft ID should have have 4 characters, ie ISO_
`Invalid Packet format`	Packet ID should be in same way as for SCOS: <Process ID (4 char.)> . < Packet type (3 chars.)>
`Invalid datastream number`	Valid values are between -127 and 127, including 0 and -0
`Error opening the file <file_name>`	The file does not exist a file for this packet Id, or there was a typing error
`No data found for this Packet Id and this Datastream`	The file does not contain data for the search criteria entered..
`BEG. of window/file reach`	When moving backwards the first record in hte file or in the window (up 1000 records backwards) was reached
`END of window/file reach`	When moving forwardslast record in hte file was reached

Cross Reference

None.

4.14 X_Clear

Description

Occasionally, when first starting a new session after a network or X server failure, it may be impossible to start DECterms or SPEVAL sessions. This is due to existing processes not having been correctly notified of the failure.

The x_clear command has been provided to remove any such defunct processes.

Syntax

The command is issued from the DCL prompt:

```
$ x_clear
```

The user is requested to confirm the action:

```
      Warning: All your SPEVAL windows and all your DECterms on ALL displays
will be terminated
      Continue with clear-up? [NO]:
```

Type `yes` to continue. After a few seconds, it should now be possible to start DECterms or SPEVAL sessions from the Session Manager menu as normal.

Since, if this command is needed, there is probably no DECterm to issue it at, there are two other ways to get a DCL prompt:

1. Log into the system remotely using e.g. telnet and issue the command from there
2. From the Session Manager “Applications” menu, select the option “FileView”. When the FileView window appears, select from the “Utilities” menu the option “DCL Command”. This will in turn produce a window similar to a DECterm in which you can enter `x_clear` as described above.

Examples

```
$ x_clear
Warning: All your SPEVAL windows and all your DECterms on ALL displays will
be terminated
Continue with clear-up? [NO]: y
%RUN-S-PROC_ID, identification of created process is 00027B56
```

Possible Errors

None.

Cross Reference

None.

Appendix A SPEVAL file types

SPEVAL file types and their meaning are listed in Table 19:. The table contains the following columns:

- Extension. The file extension. E.g. file “ERS2__SAVE_CASE.SVC” has Extension SVC.
- Format. ASCII or Binary. ASCII files can be loaded into a Text Editor. Binary files are in SPEVAL specific format
- Comment. Explains the file usage.

Table 22: SPEVAL file types

Extension	Format	Comment
SVC	Binary	Save Case file definition. This file is loaded into the Save Case Definer on a “Load: operation. File name is always preceded by the spacecraft name,
PROFORMA	ASCII	Proforma source file definition.
GRAPH	Binary	Compiled Graphical Proforma file
ALPHA	Binary	Compiled Alphanumeric Proforma file
PARAM	Binary	Compiled Parameter Proforma file
FIELD	Binary	Compiled Field Proforma file
UDS	Binary	User Data Set file.
UCH	Binary	User Data Set file - special for Cluster Command History
TDS	Binary	Temporary User Data Set File
TCH	Binary	Temporary Cluster Command History user data set file
DUMP	Binary	PV-Wave output file from the Graphical Window - *Dump data to PV-Wave*.
PS	ASCII	Postscript file. Output from Graphical Window
PSC	ASCII	Colour Postscript file. Output from Graphical Window
EPS	ASCII	Encapsulated Postscript file. Output from Graphical Window.
EPSC	ASCII	Colour Encapsulated Postscript file. Output from Graphical Window
TXT	ASCII	Alphanumeric data. Output from Alphanumeric Windows
DAT	ASCII	Alphanumeric Export data. Output from Alphanumeric Windows.

Appendix B SPEVAL PV-Wave Variables

This section describes the SPEVAL exported PV-Wave variables. The section might be useful when using PV-Wave to examine dumped SPEVAL variables (from the Graphical Window) or you are using the SPEVAL PV-Wave procedures GRPH_LOAD_UDS and GRPH_MATCH_DATA.
The data imported from SPEVAL to PV-Wave format is listed below
NOTE: PV-Wave array indexes always start at 0 (first element)

TIME

This is an array of time points in double-precision floating-point format. Times are represented as Julian days from the PV-Wave base date (1-Jan-1752). The array contains all the unique times contributing to the dumped plot or which are existing in the UDS file. (See also TIMES)

NEW_TIME

This array is generated by a call to GRPH_MATCH_DATA with the /MATCH qualifier specified. It contains a subset of the values in the TIME array. See GRPH_LOAD_DATA for further information.

DISPLAY

This is a single structure defining the overall display information for the dumped plot. The structure is left un-initialised if the data has been imported via GRPH_LOAD_UDS. The structure contains the following entries:

MISSION

This identifies the current mission (e.g. ERS2).

ID

This is the Display ID, generated from the SPEVAL Proforma ID.

HEADER

This is the Display Header, generated from the SPEVAL Proforma Header.

TYPE

The Proforma type. This is an internal SPEVAL variable.

NUM_PARAMETERS

The number of total parameters displayed in the plot.

NUM_GRAPHS

The number of graphs displayed in the plot.

PARAMETER

This is an array of structures. Each structure corresponds to a Parameter, contain-

ing the following entries:

NAME
Parameter Name.

DESCRIPTION
Parameter Description.

UNITS
Parameter Unit.

Y_MIN
Minimum Y-Value when plotting the Parameter.

T_MAX
Maximum Y-Value when plotting the Parameter.

COLOUR
Plot colour.

CALIBRATED
1: Parameter values are calibrated. 0: Parameter values are uncalibrated.

VALUES
Number of total values which the Parameter contains for this plot.

TEXT_TABLE
Index into the TEXT_TABLE array for the Parameter. (0 if no Text Table)

DATATYPE
The Parameter data type. (As string)

LIMITS_VALID
Array (4 elements). If one element is 1, the corresponding LIMITS element displays a valid Hard Limit for the Parameter.

LIMITS
Array (4 elements). Gives the Hard Limit for the Parameter.

LINESTYLE
Gives the plot linestyle as a number

SYMBOL
Gives the plot symbol as a number.

LIMIT_DISPLAYED
If 1, the Limits are displayed for this Parameter. If 0, no Limits are displayed for the Parameter.

STATUS_AS_NUM_ON_AXIS
If 1 and Status Parameter, the y-axis displays numerical values instead of the actual Status Texts. If 0, Status Texts are displayed.

DATA

This is one single structure. Each structure member is named after the parameter which is corresponds to. Each structure member is an array (of varying size).
E.g. if two Parameters “O321” and “O322” has been plotted, the DATA structure will contain two structure members. The arrays can be accessed in two different ways, namely:
DATA._O321 (note the underscore)
or, by index
DATA.(0)
Individual array components are indexed by e.g. DATA.(1)(9) (to index the 10’th element).

NEW_DATA

This structure is generated by a call to GRPH_MATCH_DATA. The structure type is similar to the data structure, but each data element has a one-to-one correspondence with the corresponding time in the TIME array (or the NEW_TIME array if the /MATCH qualifier has been used). E.g. the corresponding data element for the 10'th time in the TIME array for parameter 0321 is given by
NEW_DATA._0321(9).

NEW_DATA_VALID

This structure is generated by a call to GRPH_MATCH_DATA. The structure members and array sizes are the same as in NEW_DATA, but each value signals whether the corresponding data element existed (=1) or did not exist (=0) for the corresponding time. E.g. to check if a value exists for the 10'th time in the TIME array for parameter 0321, inspect NEW_DATA_VALID._0321(9).

TIMES

This is a structure parallel to the DATA structure (each structure field is the name of a Parameter), but each array element index into the corresponding TIME element for the corresponding data point. E.g. the corresponding time for the 10'th Y value for parameter O321 is given by TIME(TIMES._O321(9)) or alternatively with indexes
TIME(TIMES.(0)(9))

GRAPH

This is an array of structures, sized to the numbers of graphs which have been displayed in the plot. The structure is left un-initialised if the data has been loaded via GRPH_LOAD_UDS. Each structure contains the following members:

X_AXIS_TYPE

This string defines the plot type as 'TIME' (plot against time) or 'PARAM' (plot against parameter).

X_AXIS_PARAMETER

This integer indexes into the PARAMETER array, identifying the X-axis Parameter for the plot.

Y_AXIS_PARAMETER

This array (size 8) indexes into the PARAMETER array, identifying the Y-axis Parameters for the plot.

N_OF_Y_AXIS_PARAMETERS

The number of y-axis parameters plotted in this graph.

COLOUR

Graph x-axis colour.

TEXT_TABLE

This is an array of structures. NOTE: even if there are no Status Parameters in the plot, there will always be 1 or more TEXT_TABLE structures (because PV-Wave cannot handle arrays of 0 elements). Each structure has the following members:

ID

Text Table ID.

N_INIT_STRINGS

Number of Status Text Strings defined for this Text Table.

STRING

Array of strings (maximum 256). Each string gives the Status Text for the corresponding Status Value. Unused strings are initialised with the "********" string.

Appendix C SPEVAL Messages

This list shows the messages displayed in the SPEVAL Session Control Message Area. The page numbers refer to the page on which the message meaning and help text is defined. For messages which may be issued by several Speval Items (e.g. "File not Found"), the second indentation level refers to the corresponding item.

Looking up messages

When the SPEVAL Session Control WIndow displays a message, it will always be on the form:

```
[<message_originator> :]  <message_text>
```

where the optional <message_originator> is the SPEVAL object (e.g. the "Save Case ~ Simple Time" Window) originating the message, and <message_text> is the actual message. The colon (":") is used to separate the two items.

Note that this appendix is indexed on the message_text only.
Examples are:

```
"Save Case ~ Simple Time: End time is equal to or before start
time"
```

Here, the refererence page is listed under E ("End time is ....").

```
"No data found for this retrieval"
```

Here, the <message_originator> is missing, and the reference page is listed under N.

Message List

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Appendix D Glossary

<key-down>: The key used to navigate down
<key-left>: The key used to navigate left
<key-left>:The key used to navigate left
<key-right>: The key used to navigate right
<key-up>: The key used to navigate up
<next>: the key used to navigate to the next page
<prev>: The kay used to navigate to the previous page
BDQ: Bad Data Quality
BTQ: Bad Time Quality
DCL: Digital Command Language
DECTERM: Standard DEC Command Language interface window
EDEF: External Definition (Save Case)
EPS:Encapsulated Postscript
eXceed: PC Software supporting the X11 protocol
ID: Identifier or Invalid Data
LTA: Long Term Archieve
MB1: Mouse Button 1
Navigating:in Alphanumeric Window;Keys:navigating with in Alphanumeric Window
OOL: Out of Limits
PS: Postscript
PV-Wave: Tool to display graphics
Save Case: SPEVAL Window defining a Retrieval & Display strategy
SCOS: Sattelite Control & Operating System
SEP: Simple Extraction Processing (Save Case)
Session ID: A two character field displayed in the Window Header.
Identifies the User and the Session Number (e.g. H1)
SPEVAL: Acronym for SPacecraft EVALuation
TM: Telemetry
TME: TM Extraction (Save Case)
TRS: Time-ordered Record Set
UDS: User Data Set
X-11: Standard Network protocol supporting X-Windows
X-Server: Terminal displaying X-Windows

Appendix E Index

Symbols

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SPEVAL SOFTWARE PROBLEM REPORT			SPR No:	
			TYPE:	
			OD Ref:	
Title:			Date:	
			Originator:	
			System:	
			Facility:	
Problem description:(Originator)				
Description of environment: (Originator)				
Attatchment(s): (Originator)				
Recommended solution: (Investigator)			Date:	
			Investigator:	
Board	Status		Release	
	Date		Fac release	

SPEVAL SOFTWARE PROBLEM REPORT	SPR No:	
	TYPE:	
	OD Ref:	***QER-12***
Title: ***ERS 2 Scrolling Log Internal error message***	Date:	***95.11.22***
	Originator:	***Q.ERULANT***
	System:	
	Facility:	

Problem description:(Originator)

When retrieving the ERS-2 scrolling log using the save case QER_12, the SPEVAL Session Control Window displays the message "Alphanumeric List: Internal Error - This task is now exiting". (The message is not listed in the SUM).

Time of Submission : 3-MARS 1996, ca. 13:30

Description of environment: (Originator)
Machine : E2SPVL.
Spacecraft: ERS-2
Save Case: QER_12.

Attatchment(s): (Originator)
Printout of SPEVAL Session Control message.

Recommended solution: (Investigator)	Date:	
	Investigator:	

Board	Status		Release	
	Date		Fac release	