

SATPAK

Support Package for SDR's
Version 3.0



Wildlife Computers

INSTRUCTION MANUAL

DECEMBER 1995

16150 NE 85th Street # 226 • Redmond, WA 98052 • USA
Tel: (206) 881-3048 • FAX: (206) 881-3405 • e-mail: 72102.721@compuserve.com

TABLE OF CONTENTS

INTRODUCTION	3
Notation Conventions.....	3
SATPAK SYSTEM OVERVIEW	4
General Description.....	5
Brief Description Of The Input Files	5
Brief Description Of The Output Files	5
Brief Overview of the Programs	6
INSTALLATION AND QUICK-START INSTRUCTIONS.....	8
To Install Satpak Onto Your Hard Disk	8
To Run The Programs:.....	8
SATPAK MENU SCREEN	10
SATSETUP: SET DEFAULTS.....	11
SATEDIT: DEFINITION FILE EDITOR.....	12
Customizing the Definition File.....	12
Format of the Definition File.....	14
Sample Definition File	15
SATLOC: LOCATION EXTRACT	16
Service Argos Location Processing Overview.....	16
Location Extract Program Overview	16
Detailed Execution Instructions	18
Outputs	22

SATDEX: DISPOSE FILE EXTRACT.....	23
SDR Data Overview.....	23
Dispose File Extract Program Overview	23
Detailed Execution Instructions	25
Outputs	26
SATSTAT: STATUS MESSAGE FORMATTER.....	27
Status Message Formatter Program Overview	27
Detailed Execution Instructions	27
Outputs	29
SATHIST: HISTOGRAM MESSAGE FORMATTER	30
Histogram Formatter Program Overview	30
Detailed Execution Instructions	30
Outputs	33
SATSEA: LAND/SEA REPORTER	34
Land/Sea Extract Program Overview.....	34
Detailed Execution Instructions	34
Outputs	36

INTRODUCTION

Wildlife Computers has developed an analysis package, called SATPAK, to help you extract and manage Satellite-linked Dive Recorder (SDR) data that have been transmitted and processed into Service Argos "Dispose" (also known as "DS" files, and usually have a filename with a ".DAT" extension) and "Diagnostic" (sometimes called "Wildlife" files, and usually have a filename with a ".DIA" extension) file formats.

Version 3 of this package consists of an integrated collection of files and programs. These programs run on an IBM or IBM-compatible personal computer running under PC-DOS or MS-DOS™. A mouse is highly-recommended. Once installed, SATPAK Version 3 may be set up to run under Windows™ as a non-Windows application.

The files and programs contained in SATPAK are designed to support the data collection/transmission characteristics of the internal, on-board software of your particular SDR. *TYPE3* is the standard, general-purpose collection/transmission regime, and various version numbers have slightly different characteristics. The version number of your particular unit is displayed when you communicate with the SDR.

Further information can be found in the following manuals:

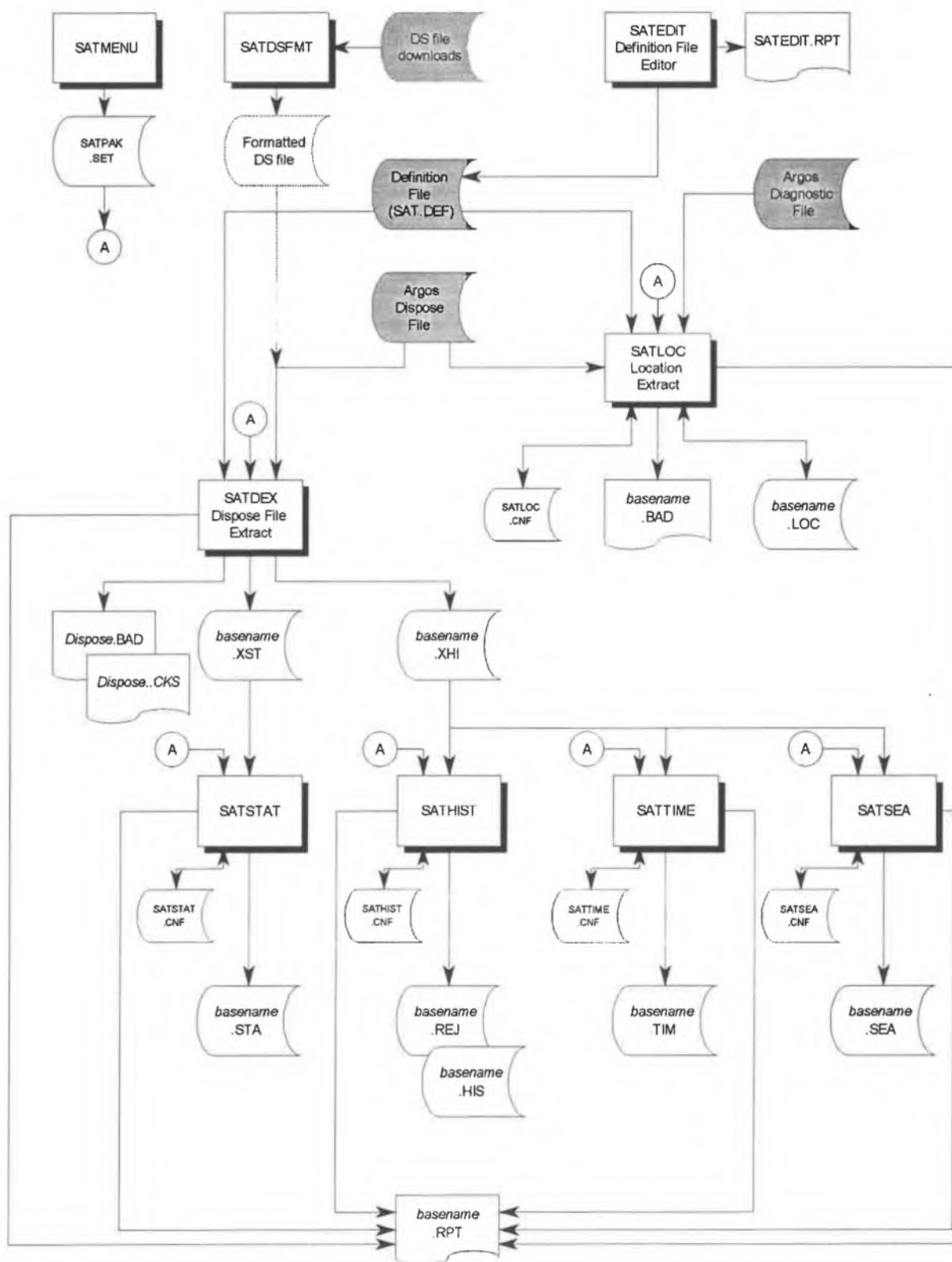
1. *Argos Users Manual*: This manual contains the description of the Argos system, the methods used to calculate locations, and the formats of the Dispose (DS) and Diagnostic files provided by Argos.
2. *Wildlife Computers Microprocessor-Controlled Satellite-linked Dive Recorder Instruction Manual*: This manual contains the detailed descriptions of how data are collected and transmitted by the SDR, and the formats of the transmitted data.

Notation Conventions

The following notation conventions are used:

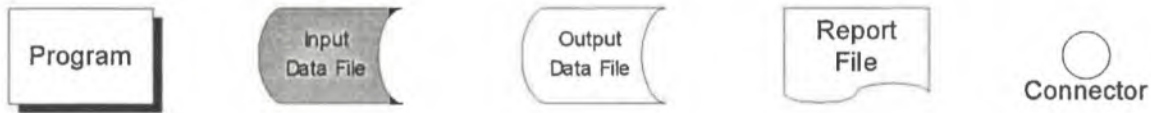
ENTER	Small capital letters are used for the names of keys and key sequences. For example ENTER means press the "enter" key.
ALT + F	A plus sign (+) between key names indicates a combination of keys. For example, ALT + F means to hold down the alt key while pressing the F key.
<OK>	Bold small capital letters within brackets (< >) are used for command buttons. Invoke these commands by moving the mouse pointer over the command button and clicking the left mouse button. If one of the letters of the command is highlighted, you can also invoke the command by pressing ALT + <i>HIGHLIGHTED LETTER</i>
satmenu	Text that you should type exactly as shown appear in bold.
<i>filename</i>	Italic words, when used in instructions, indicate placeholders for information you supply.
<i>definition file</i>	Words in italics also indicate specialized terms.
<i>Quick Start</i>	Bolded italic words refer to other sections of the manual or titles of other manuals.
SAT.DEF	Words in this font indicate filenames or constants

SATPAK SYSTEM OVERVIEW



General Description

SATPAK relies upon a combination of files and programs to process the Argos data. The system flow on the preceding page shows the inter-relationship between the files and programs. The symbols used in the diagram are:



Service Argos provides two files, the *Dispose* file, which contains locations and all the transmitted data, and the *Diagnostic* file, which contains more detailed location data. Two of the SATPAK programs, SATLOC and SATDEX, directly process the Argos data. Both programs edit the Argos data. SATLOC merges locations from the Dispose and Diagnostic files, and produces a formatted location file that can be easily processed by other spreadsheet and mapping programs. SATDEX reads the Dispose file, edits the data and validates the checksum of each message. The different “types” of data (*e.g.*, histograms, status messages) are written to *intermediate* files to be further processed by other SATPAK programs.

Brief Description Of The Input Files

Definition file. You create and name this file. We suggest using .DEF for the filename extension.

Dispose file. This file, provided by Service Argos, generally has a filename extension of .DAT.

Diagnostic file. This file, provided by Services Argos, generally has a filename extension of .DIA.

See the *Satpak Definition File* section of this manual beginning on page 11 for a detailed description of the Definition file, and the *Argos Users Manual* for the description of the Dispose and Diagnostic files.

Brief Description Of The Output Files

SATPAK Settings file. This file, named *satpak.set*, is created by SATMENU. It contains the *basename* for the output files.

Intermediate files. These files are created by SATDEX. They contain the checksum-validated messages from the Dispose file. The name of the status message intermediate file is named *basename.XST*, and the histogram intermediate file is named *basename.XHI*.

Formatted data files. These files contain the validated, formatted data. Their filenames end with filename extensions of .STA, .HIS, .SEA, and .TIM.

Error files. These files contain the messages that have been rejected. Their filenames end with filename extensions of .CKS, .BAD, and .REJ.

Report files. These files contain statistics and other run information (*e.g.*, number of messages processed).

Configuration files. These files retain information on the parameters and format of formatted data, so that the same parameters and formats will be selected as a default on subsequent runs of SATPAK.

Brief Overview of the Programs

- SATMENU:** This program is invoked when you type `\satpak30\satmenu` at the DOS prompt. It allows you to invoke other SATPAK programs. The other SATPAK programs will return you to this menu after successful completion. A check mark will appear next to each program that has been run.
- SATSETUP:** This program is invoked when you click the **<SETUP>** command button. It performs two functions:
- It allows you to set up the default subdirectory where your output files and reports will be written.
 - It allows you to setup a *basename*. This *basename* will be used to generate default filenames for your output and report files.
- SATEDIT:** This program is invoked when you click the **<EDIT>** command button. It allows you to edit the Definition file (*Note that the November 1994 version of SATEDIT has the "old-style" of selecting files and parameters. An updated version will be delivered shortly.*)
- SATLOC:** This program is invoked when you click the **<LOC>** command button. It merges locations from the Argos Dispose (.DAT) and Diagnostic (.DIA) files into a single output file.
- Run information (e.g., number of passes for each PTT id) is added to a report file named *basename.RPT*.
 - Errors (e.g., passes records on the Dispose file that do not have a corresponding pass record on the Diagnostic file) are added to a report file named *basename.ARG*.
- SATDEX:** This program is invoked when you click the **<DEX>** command button. It extracts valid data from the Dispose file.
- Each pass message (uplink) is extracted from the Dispose pass record
 - Concatenated messages (SDR version 3.10+) are separated
 - SDR messages have their checksum validated
 - Messages with a bad checksum are written to a file named the same as the Dispose file, except with a .CKS extension (*i.e.*, if the name of the Dispose file is JUN94.DAT, the rejected messages will be written to JUN94.CKS).
 - The format of the messages is validated.
 - Messages with invalid formats are written to a file name the same as the Dispose file, except with a .BAD extension (*e.g.*, JUN94.BAD)
 - The different types of SDR messages (*e.g.*, status messages, histogram messages) are written to separate intermediate files (*e.g.*, *basename.XST*, *basename.XHI*)
 - Run information (*e.g.*, number of passes for each PTT id) is added to a report file named *basename.RPT*.

- SATSTAT:** This program is invoked when you click the **<STAT>** command button. It decodes the Status messages from the intermediate file (*basename.XST*) generated by SATDEX.
- Individual status message parameters are extracted and scaled
 - The description of each of the status message fields is added to the *basename.RPT* file.
- SATHIST:** This program is invoked when you click the **<HIST>** command button. It decodes the Histogram messages from the intermediate file (*basename.XHI*) generated by SATDEX.
- The histogram collection date is assigned
 - The histograms are sorted, and duplicates are removed
 - The histograms are also checked to ensure the total number of dives for depth and duration histograms is the same for each period.
 - Rejected histograms are written to a file named *basename.REJ*
 - The description of the output is added to a report file named *basename.RPT*.
- SATSEA:** This program is invoked when you click the **<SEA>** command button. It extracts the date and time of each uplink of histogram message and the associated value of the on-land/at-sea indicator. Histogram messages are read from the intermediate file (*basename.XHI*) generated by SATDEX.
- SATTIME:** This program is invoked when you click the **<TIME>** command button. It decodes the timeline messages (SDR version 3.11+) (*Not included with the November 1994 release of SATPAK*)
- SATDSFMT:** This program is invoked when you click the **<DSFMT>** command button. It is a utility that formats Dispose data downloaded via modem to the monthly Dispose file format. This allows the downloaded data to be processed by SATDEX. (*Note that the included version of SATDSFMT has the "old-style" of selecting files and parameters. An updated version will be delivered shortly.*)

INSTALLATION AND QUICK-START INSTRUCTIONS

To Install Satpak Onto Your Hard Disk :

You must install all the programs in a subdirectory called \SATPAK30 (that is three-zero, not three "oh"). Your data (Argos and analysis files) may be kept in a different subdirectory, if you wish.

1. Create a subdirectory called SATPAK30. First change to the root directory of the drive where you want the programs to reside, then create the subdirectory.

```
cd c:\
mkdir satpak30
```

2. Change to the **satpak30** subdirectory, and run the installation program that is on the distribution diskette. This will decompress the SATPAK programs to the **satpak30** subdirectory.

```
cd \satpak30
a:install
```

3. Some of the SATPAK programs have several files open concurrently. Ensure that your PC environment can handle this by checking the **CONFIG.SYS** file in your PC's root directory. You need a **files=20** statement in the **CONFIG.SYS** file. Add that statement if there is no **files** statement, or if one does exist, ensure that the number is at least 20.
4. You may optionally add **\satpak30** to the path statement in your **autoexec.bat** file.

Note: For users of SATPAK version 2. All SATPAK program names now begin with SAT. You may, however, continue to use the version 2 definition file (SP.DEF) with the version 3 SATPAK programs.

To Run The Programs:

Note: Before starting SATPAK, you must ensure that your Dispose data are contained in one file. If your Dispose data span multiple files, concatenate them into one file via the DOS command:
copy first filename + second filename + ... + Nth filename
 All data will be concatenated onto **first filename**.

1. Start SATPAK from the DOS prompt:

```
\satpak30\satmenu
```

The SATMENU screen will be displayed. The other SATPAK programs can be invoked by clicking the desired program command key with the left mouse button, or by pressing the alt and highlighted shortcut key at the same time. Move from button to button by using the mouse or the TAB key. See the **SATPAK MENU SCREEN** beginning on page 9.

2. Click the <SETUP> command button. Establish the default drive, subdirectory, and “*basename*” for your output files.

Note: *Do not use the base of the Dispose filename for your default basename.* That is, if your Dispose filename is JUL522a.dat, do not use JUL522a for your default basename.

2. Click the <EDIT> command button to edit the *definition file*. This is a required file that you create. This file contains information about your particular PTT numbers, deployment year, and SDR parameters. The default name of the file is SAT.DEF, however, you may assign any name you wish. Make sure the definition file is correctly set up for your SDR units. See the **SATPAK Definition File** beginning on page 11.
3. Invoke the other SATPAK programs from the menu by clicking the desired program command button. Follow the prompts to select the input and output file names. You will also be prompted to select the output parameters and their formats.

Note: You must run SATDEX before running SATSTAT, SATHIST, SATSEA or SATTIME.

4. Look at or print the file named *basename.RPT*. This file, which is added to by each program, contains run information such as the names of the input and output files, the selected output parameters, the definition of those parameters, and counts of the number of messages processed.

SATPAK MENU SCREEN

SATMENU v3.03

SATPAK MENU SCREEN

(SATMENUF)

Click action:

<SETUP > Setup defaults

Default Output Directory =
 C:\MELIN\SDR
 Default base for filenames = JUN94

< LOC > Location Extract

< EDIT > Definition File Editor

< DEX > Dispose (DS) File Extract

<DSFMT > Dispose File Formatter

< STAT > Status Message Formatter

< HIST > Histogram Message Formatter

< TIME > Haulout Timeline Formatter

< SEA > Land/Sea Reporter

QUIT

This screen is displayed when you type \satpak30\satmenu at the DOS prompt. It is the screen which allows you invoke the other SATPAK programs.

The other programs are invoked by moving the mouse pointer over the command button (for example <EDIT>) and clicking the left mouse button. If one of the letters of the command is highlighted, you can also invoke the command by pressing ALT + *HIGHLIGHTED LETTER*.

The *Default Output Directory* is displayed on this screen. This is the subdirectory where all reports files will be written. This is also the default subdirectory to which your output data files will be written.

The *Default base for filenames* is also displayed on this screen. This base will be used for the report and error files generated (see *SATPAK System Overview beginning on page 4*). SATPAK will also use this base to generate default filenames for the intermediate and formatted data files.

All other SATPAK programs return you to this screen. A "check mark" (✓) appears to the left of the command button of programs that have successfully completed.

Note: Before starting SATPAK, you must ensure that your Dispose data are contained in one file. If your Dispose data span multiple files, concatenate them into one file via the DOS command:

copy first filename + second filename + ... + Nth filename

All data will be concatenated onto *first filename*.

SATSETUP: SET DEFAULTS

SATMENU

Double-click the default drive and directory. This is where your output files and reports are written.

Quick Tip: If you know the name of the directory that you want to use, repeatedly press the first letter of the directory name until it is highlighted, then double-click it.

Note that the directory names may not be in sequence.

SET DEFAULTS (SatCurrent)

Drive: [C:] [A]

Directories:

C:\

MELIN
SDR

[B]

[C]

[D]

DEBUGF.TXT
JUN94.DAT
JUN94.DIA
SAT.DEF
SATLOC.CNF
SATPAK.BAD
SATPAK.LOC
SATPAK.RPT
SATPAK.SET

[E]

Default directory= C:\MELIN\SDR [F]

Default base for filenames= JUN94 [G]

OK

SATPAK writes its output to the *default* subdirectory. This screen allows you to change that default.

To change the drive. Double-click the Drive box [A]. A list of the drives available on your computer will appear. Double-click the desired drive.

To change the subdirectory. Double-click the subdirectory name [B]. The selected subdirectory name will be highlighted. You can scroll through your subdirectories by dragging the scroll bar [C], or clicking a scroll arrow [D]. The list of files in the selected subdirectory are shown in the box [E]. The full path of the selected subdirectory is shown at [F].

The subdirectories do not appear in alphabetical order. To quickly find a specific subdirectory, position the cursor to the first entry in the subdirectory box by single-clicking the first entry (it will become highlighted), then repeatedly press the first character of the desired subdirectory's name. This will search through and highlight all subdirectories that begin with that character. Continue pressing the first character until the desired subdirectory is highlighted. Double-click the desired name.

SATPAK generates default filenames using a *basename*. You can change the base by positioning your cursor in the box [G]. Make sure the basename that you select is valid for DOS filenames. This name must be one to eight characters long, with no embedded spaces, periods (.), asterisks(*), question marks(?), or backslashes(\).

Note: *Do not use the base of the Dispose filename for your default basename.* That is, if your Dispose filename is JUL522a.dat, do not use JUL522a for your default basename.

SATEDIT: DEFINITION FILE EDITOR

The Definition file contains the parameters for all your SDRs (all types, all program ids). This file is named SAT.DEF by default, however, you may assign a different, user-defined name. You must have one entry in the Definition file for each SDR, and it is important to have the correct SDR type and version number (*e.g.*, TYPE3.10) entered for each of the units. The SATPAK programs only process data for the PTT numbers contained in the Definition file. If you have multiple projects running concurrently, you may wish to segregate the PTTs for each project into its own Definition file, and run the SATPAK programs separately for each.

Customizing the Definition File

The program SATEDIT is used to create and update your Definition files. Invoke SATEDIT by clicking the <EDIT> command button on SATMENU. The SATEDIT logo screen will be displayed. Press ENTER to continue.

You are then asked if you wish to use the default SAT.DEF as your Definition filename. Press the end key to use SAT.DEF, or press any other key to enter a different name.

The following screen presents the parameters for each SDR unit, and you are prompted to accept or modify them.

```

Modifying Definition filename: SAT.DEF                                     Entry # 1
1>> Animal id ..... 11730
2>> SLTDR Type ..... TYPE3.10
3>> Year deployed ..... 1994
4>> Geolocation PTT ids ..... 11730
5>> Data-only PTT ids .....
6>> Clock correction (hours) ..... 0
7>> Error-checking algorithm version .... 1
8>> Depth resolution ..... 2
9>> Local time at 00 UT ..... 0
A>> Offset from 00UT to start period 0 .. 3
B>> Number of histogram bins ..... 6
C>> Number of bits per histogram ..... 8
D>> Duration of each bin ..... 6
E>> Number of histogram buffers ..... 4

-----VIEW MODE-----
Press {Enter}      Edit this entry
      {Page Down}  View the next entry
      {Page Up}    View the previous entry
      {End}        Save the Definition File and Exit
      {Esc}        Exit without saving any changes to the Definition File
  
```

You must have one entry for each SDR that you wish to process. To add an entry, press PAGE DOWN until the message No more entries in file, press {enter} to add a new entry is displayed, then press ENTER. Entries that already exist in the Definition file are displayed to you in *VIEW MODE*. Press ENTER to edit the displayed entry.

Once you press ENTER, SATEDIT is in *EDIT MODE*. Now press the number or letter to the left of the parameter that you wish to change.

Press the END key to save the updates that you made to the Definition file.

The description of the parameters are as follows:

- 1>> *Animal id.* An unique animal identifier (which you choose) to be associated with the SDR unit. This identifier must 1-8 characters long. The identifier must be valid to be used in DOS filenames (for example, do not use * in the name). Each SDR unit must have a *unique* animal id.
- 2>> *SDR type.* The model and version of your SDR. For example, this value would be TYPE3 for the standard SDRs which transmitted fixed length, 8-byte status messages and dive depth and duration histograms (pre-version 3.10), TYPE3.10 for the version 3.10 SDRs which transmitted variable-length histograms, or TYPE3.11 for the version 3.11 SDRs which could transmit haulout timelines.

You will first be asked to enter the "type" of SDR. This value is 3 for all TYPE3 SDRs. You will next be asked for the software version. This is the software version of the SDR. Enter A if your SDR had version 3.10, B for version 3.11, or C for any version earlier than 3.10.
- 3>> *Year deployed.* The year in which the SDR was deployed. For example, 1994.
- 4>> *Geolocation PTT ids.* You will be prompted for the number of location ptt ids associated with the SDR. This value is 1 for all TYPE3 SDRs. You will then be asked for the ptt id.
- 5>> *Data-only ptt.* You will be prompted for the number of data-collection-only ptt ids associated with SDR. This value is 0 (zero) for all TYPE3 SDRs.
- 6>> *Clock correction.* This value, in decimal hours. (nn.nn) may be negative. It will be subtracted from the SDR clock time to accommodate either an incorrectly programmed clock time, or clock drift.
- 7>> *Error-checking algorithm version.* As of December 1994, this value is always 1 (one), which means there is 256 checksum validation.
- 8>> *Depth resolution.* This will be a number from 1 (for 0-250m range instruments) to 7 (0-1750m).
- 9>> *Local time at 00 UT.* This is the time (0 - 23) at th place of deployment that corresponds to midnight UT (GMT). This must be the same value that was programmed into your SDR.
- A>> *Offset from 00UT to start period 0.* This value is always 3 (unless specified otherwise at the time you ordered your SDR).
- B>> *Number of histogram bins.* This number is always 6 for standard TYPE3 units. Set this value to 6 even if you specified a different number of histogram bins on a version 3.10+ SDR (this value will be ignored for version 3.10+ SDRs, since they transmit a variable number of bins).
- C>> *Number of bits per histogram.* This number is always 8 for standard TYPE3 units (unless specified otherwise at the time you ordered your SDR)..
- D>> *Duration of each bin.* This value is always 6 for standard TYPE3 units (unless specified otherwise at the time you ordered your SDR).
- E>> *Number of histogram buffers.* This number is always 4 for standard TYPE3 units (unless specified otherwise at the time you ordered your SDR).

Format of the Definition File

SATEDIT creates the Definition file in the following format. You may directly modify the Definition file using your editor, however, if you use a word-processor (e.g., WordPerfect), you *must* save the file as a DOS text file, not a word-processing file. Take extra care in ensuring that the file contains the proper values in the correct format, and that there are no blank lines at the end of the file. The subsequent SATPAK programs assume that the Definition file is correct, and will "blow up" on an improperly formatted file!

The definition file consists of one header line (*line 1*), followed by two or three lines per satellite pack. The definition of the fields are:

line 1 must be exactly

SATPAK DEFINITION FILE

line 2 Basic parameters of each unit.

FEMPUP,TYPE3,1991,1,0,0.00,1,2,8,3,6,8,6,4

a b c d e f g h i j k l m n

where

- a* *Animal id.* An unique animal identifier (which you choose) to be associated with the SDR unit. This identifier must 1-8 characters long. The identifier must be valid to be used in DOS filenames (for example, do not use * in the name). Each SDR unit must have a *unique* animal id.
- b* *SDR type.* The model and version of your SDR. For example, this value would be TYPE3 for the standard SDRs which transmitted fixed length, 8-byte status messages and dive depth and duration histograms (pre-version 3.10), TYPE3.10 for the version 3.10 SDRs which transmitted variable-length histograms, or TYPE3.11 for the version 3.11 SDRs which could transmit haulout timelines.
- c* *Deployment year.* The year in which the SDR was deployed. For example, 1994.
- d* *Number of geolocation-ptts.* The number of location ptt ids associated with the SDR. This value is 1 for all TYPE3 SDRs.
- e* *Number of data-only ptts.* The number of data-collection-only ptt ids associated with SDR. This value is 0 (zero) for all TYPE3 SDRs.
- f* *Clock correction in decimal hours.* (nn.nn). This value, which may be negative, will be subtracted from the SDR clock time to accommodate either an incorrectly programmed clock time, or clock drift.
- g* *Error-checking algorithm version number.* As of December 1994, this value is always 1 (one), which means that the last byte of the message is a 256 checksum.
- h* *Depth resolution of the SDR.* This will be a number from 1 (for 0-250m range instruments) to 7 (0-1750m).
- i* *Local time at 00 UT.* This is time (0 - 23) at the place of deployment that corresponds to midnight UT (GMT). This must be the same value that was programmed into your SDR.

- j* *Internal offset of hours.* This value is always 3 (unless specified otherwise at the time you ordered your SDR). This establishes the beginning of histogram period 1 to be 0300 local time.
- k* *Number of histogram bins.* This number is always 6 for standard *TYPE3* units. Set this value to 6 even if you specified a different number of histogram bins on a version 3.10+ SDR (this value will be ignored for version 3.10+ SDRs, since they transmit a variable number of bins).
- l* *Number of bits per histogram.* This number is always 8 for standard *TYPE3* units (unless specified otherwise at the time you ordered your SDR)..
- m* *Duration in hours of each histogram bin.* This value is always 6 for standard *TYPE3* units (unless specified otherwise at the time you ordered your SDR).
- n* *Number of histogram buffers.* This number is always 4 for standard *TYPE3* units (unless specified otherwise at the time you ordered your SDR).

line 3 Geolocation ptt number(s) associated with each unit.

02320,0

aa *bb*

where

aa Geolocation ptt number

bb Always zero (reserved for the Service Argos program id)

line 4 Data-only ptt id numbers associated with each unit. This line is optional, to be included only if the SDR has data-only ptt.

14080,0,14081,0,14082,0,14083,0

cc *dd* *cc* *dd* *cc* *dd* *cc* *dd*

where

cc Data-only ptt number

dd Always zero (reserved for the Service Argos program id)

Sample Definition File

SATPAK DEFINITION FILE

FEMPUP,TYPE3,1994,1,0,0.00,1,2,8,3,6,8,6,4

1320,0

BIGMALE,TYPE3,1994,1,0,0.25,1,2,11,3,6,8,6,4

1321,0

PWS1,TYPE3,1994,1,0,-1.00,1,1,8,3,6,8,6,4

2338,0

BERING1,TYPE3.10,1994,1,0,0.00,1,1,13,3,6,8,6,4

14070,0

FUR1,TYPE3.11,1994,1,0,0.00,1,3,13,3,6,8,6,4

14073,0

SATLOC: LOCATION EXTRACT

Service Argos Location Processing Overview

Service Argos calculates location on those PTT numbers for which location processing was requested (Geolocation-PTTs). The location algorithms yield two possible positions. Usually, however, one position is obviously correct. See the *Service Argos Users Manual* for more details of Argos' location processing.

There are two types of location processing: *Standard* processing, and *Location Service Plus* (in Europe) or *Auxiliary Location Processing* (in North America). The *Location Service Plus/Auxiliary Location Processing* was called *Class 0* prior to 15 June 1994.

Note: For simplicity's sake, this manual will call Location Service Plus/Auxiliary Location Processing and the pre-15June94 Class 0 processing *non-Standard (non-std) Location processing*.

Non-Standard location processing is done when the number of messages received is insufficient to provide a reliable location fix. Standard location processing yields one location fix, while Non-Standard processing yields two possible fixes. The first Non-Standard location fix is considered the more probable result, based upon the previous fix.

The Argos *Dispose* (DS) file contains Standard location fixes. This file is provided monthly on diskettes, and typically has a filename with a .DAT extension. Prior to 15 June 1994, The Dispose file had references to Non-Standard location fixes (*i.e.*, a message to indicate that a Non-Standard location exists in the Wildlife Diagnostic file). After 15 June 1994, it contains both Standard and Non-Standard locations. Only the location that is more probable is reported on this file.

The Argos *Diagnostic* or *Wildlife* file contains both Standard and Non-Standard location fixes. This file is also provided monthly, and typically has a filename with a .DIA extension. Both solutions to the location algorithms are provided, with the first one being the most probable.

There should be a one-to-one correspondence of satellite passes reported by the Dispose and Diagnostic files. Service Argos has, however, experiences some problems in producing Dispose and Diagnostic files whose satellite passes are in correspondence. The Dispose file sometimes fails to note when a Non-Standard location was calculated, or refers to a Non-Standard location that does not exist on the Diagnostic file. The Diagnostic file does not always contain all the location fixes that appear in the Dispose file. Also, occasionally the second location fix provided in the Diagnostic file that is more in line with the previous fixes, rather than the first.

Additionally, Service Argos changes file formats and location processing algorithms. The format of the Dispose file changed on 01 January 1991. Refer to the *Service Argos Users Manual* and *Bulletin Insert Number 3* for details of the changes. A significant change to the location processing algorithms occurred on 15 June 1994. Refer to the *News Flash - New Argos Location* distributed by Service Argos for details of the changes.

Location Extract Program Overview

SATLOC extracts location fixes for the Geolocation-PTT ids associated with each animal identifier in the Definition file (see *SATEDIT: Definition File Editor* beginning on page 12). Locations from

both the Dispose and Diagnostic files are extracted and merged. Because there is no common identifier in the Dispose and Diagnostic files tying the passes together, SATLOC assumes a match between the files if the pass messages are within ± 10 minutes of each other. The two locations from the Diagnostic file are compared with the location, if any, on the Dispose file. The location that is closest to the previous pass location is used. The source of the location (Dispose file, first or second location from the Diagnostic file) is noted in the output formatted location file.

Pre-15June94 only: Location fixes from the Diagnostic file are expected if one of the following conditions occurs:

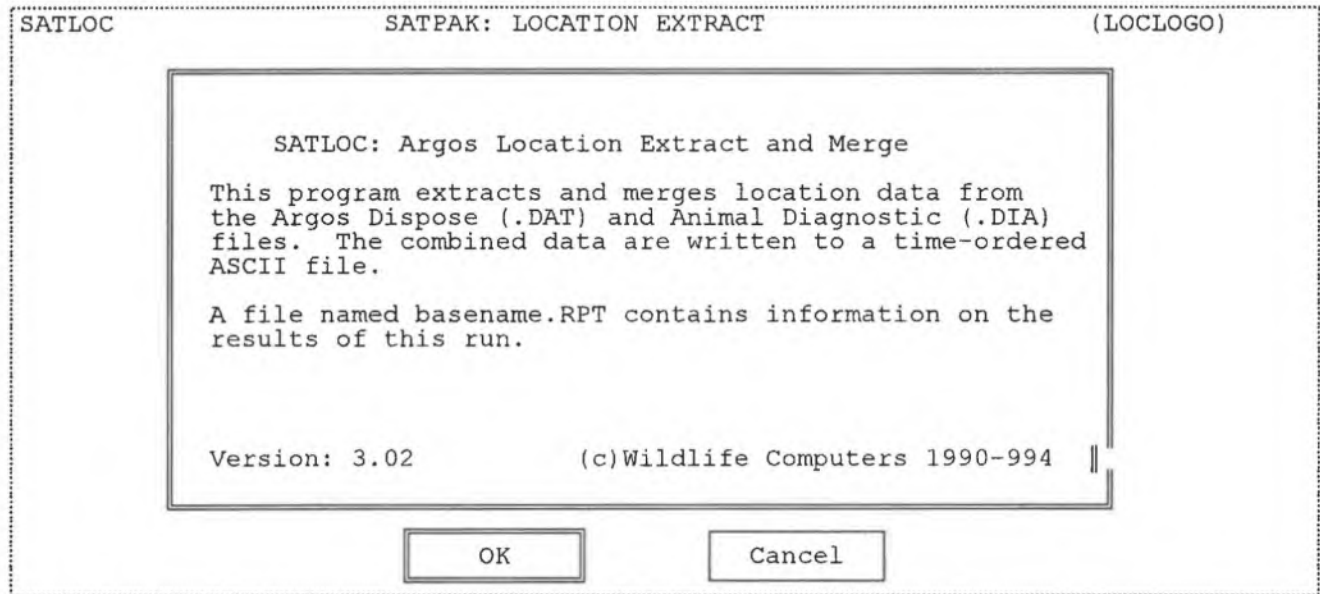
- The message NON-STANDARD LOC or NO LOCATION" appears in the location line of the Dispose pass message (for the pre-January 1991 format)
- The Dispose pass message contains the same latitude and longitude as the previous message (for the pre-January 1991 format)
- The location class is zero or blank (for the January 1991 format)

You will be prompted to select a location (*e.g.*, asked to select the location from the Dispose file, the first Diagnostic file location, or the second Diagnostic file location) for the first location for the animal, and anytime there was a large change in position from the previous fix.

Instances where SATLOC is unable to match the Dispose and Diagnostic pass messages are documented in a file called. **basename.BAD** (see **SATSETUP: Set Defaults**, on page 11, for the definition of **basename**). **basename.BAD** also contains a form letter to Service Argos explaining the error and documentation for your convenience, should you wish to forward the information to them.

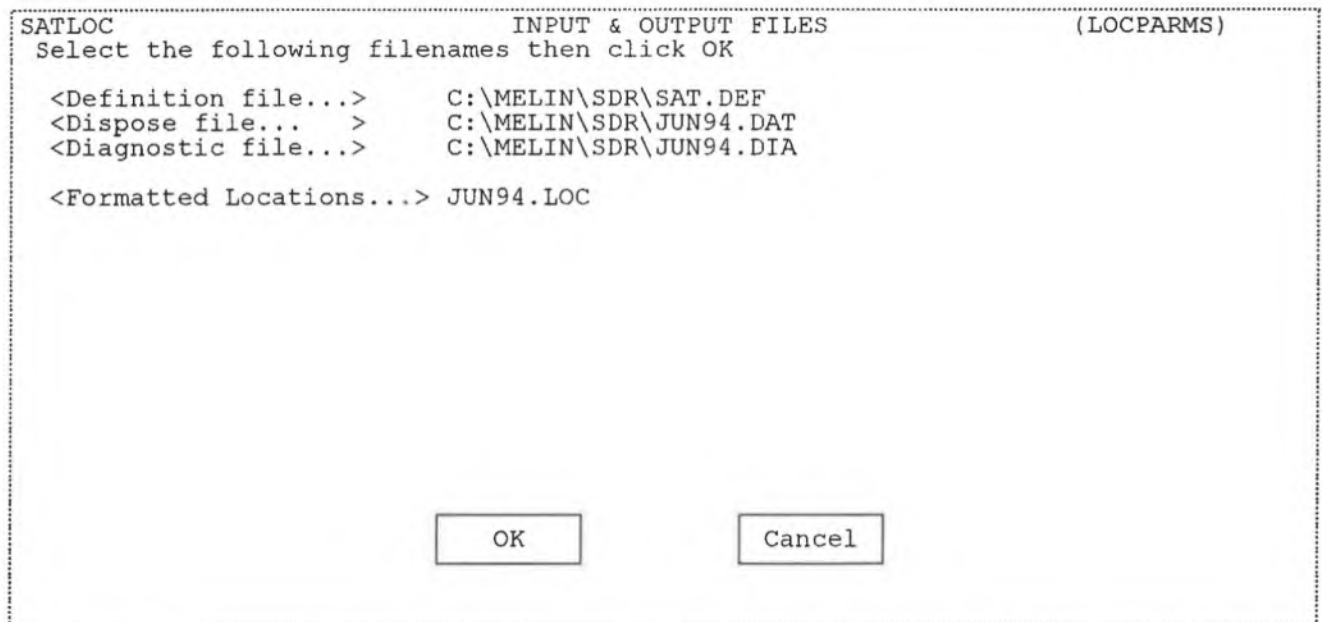
Detailed Execution Instructions

SATLOC is invoked from SATMENU by clicking the <LOC> command button. The following introductory screen appears:

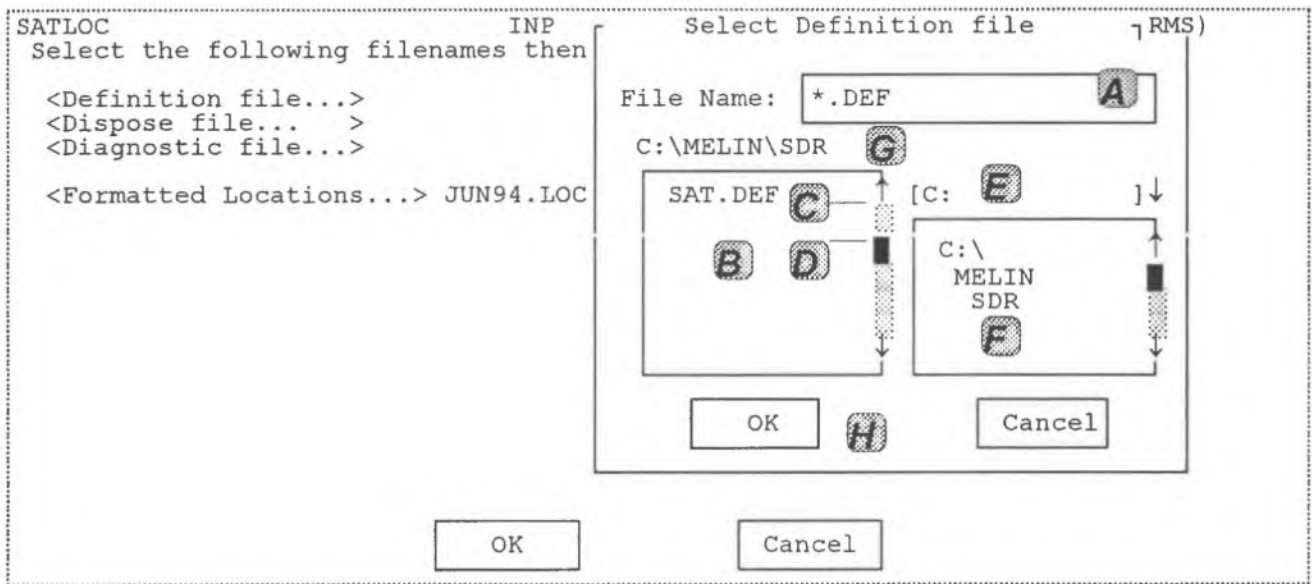


Click <OK> to continue.

The next screen that is displayed is called an *Input and Output Files screen*. It allows you to select the filenames of your input and formatted output locations:



All files are selected similarly in SATPAK. Each input and output file appear as a command button. Click the button, and a “pop-up” screen will appear that allows you to select the file. For example, when you click the <Definition File> command button, you will see:



The “pop-up” screen that is shown above is called the *File Selector screen*. It contains the following:

Filename box [A]. This box serves two purposes. You can directly type the name of the file in this box. Alternately, you could type in a “wildcard” search. In the above example, the “*.DEF” in the filename box means search for all filenames that end in .DEF. Use *.* in the filename box to list all files in the subdirectory.

File list box [B]. This is where all the files that match the search in (A) are listed. You can scroll through this list using the scroll arrows [C] or scroll bar [D]. Move a filename from this list to the Filename box by single-clicking the name. You can select a filename and close this “pop-up” screen by double-clicking the filename.

Drive list box [E]. This is the selected drive. If you wish to change the drive, click the down arrow (↓) to the right of this box. All available drives will be displayed. Double-click the desired drive.

Directory list box [F]. This is the list of the subdirectories on the selected drive. The selected subdirectory is highlighted. Double-click a subdirectory to select it. Use the scroll bar to move through the directory tree.

Selected path [G]. The selected drive and full path is displayed here.

OK command button [H]. Click this button once the desired drive, subdirectory, and file are selected. The filename will be selected, and this screen will close.

The filename selected on the file selector screen will appear next to the file command button. Default filenames that are generated as a default by SATPAK using the *basename* (see *SATSETUP: Set Defaults beginning on page 11*) are already selected. Click the command button for those default filenames only if you wish to change them.

If you select a filename for an output file, and that file already exists, the following warning “pop-up” screen will appear:

SATLOC	INPUT & OUTPUT FILES	(LOCPARMS)
Select the following filenames then click OK		
<Definition file...>	C:\MELIN\SDR\SAT.DEF	
<Dispose file...>	C:\MELIN\SD	WARNING (FILEEXIS)
<Diagnostic file...>	C:\MELIN\SD	WARNING: File exists.
<Formatted Locations...>	JUN94.LOC	Select action from below:
		☒ Overwrite existing file
		☐ Append to existing file
		☐ Re-enter another filename
		OK
	OK	Cancel

This is called the **File Exists screen**. The file that exists appears in red on the underlying screen. You can choose to:

Overwrite the existing file. The data in the existing file will be deleted.

Append to the existing file. New data will be appended to the existing data.

Re-enter another filename. You will be prompted to choose another filename.

Option buttons [A] allow you to make your selection. The selected action will have a dot in the option button that is next to it. Change to a different selection by moving the mouse pointer over the new selection and clicking the mouse, or using the tab key to move the dot to another option. Only one of the options may be selected..

Click the <OK> command button once you have selected the desired action. This will close the File Exists screen.

Once you have selected all your files on the **Input and Output Files** screen, click the <OK> command button. You will next be prompted to select your output parameters and their formats .

SATLOC		Output Parameters		(LOCCONF)
DS: C:\MELIN\SDR\JUN94.DAT		Output: C:\MELIN\SDR\JUN94.LOC		
DIA: C:\MELIN\SDR\JUN94.DIA				
Output Parameters. Checked items will appear in output file. Use the tab key and space bar, or the mouse, to select or deselect the parameters.				
☒ [X] Animal id ☒ [X] PTT number ☒ [X] Date of location ☒ [X] Time of location ☒ [X] Location class ☒ [X] Latitude ☒ [X] Longitude ☒ [X] Alternate Latitude ☒ [X] Alternate Longitude ☒ [X] Warning msgs	☒ [X] Date Format (.) mm/dd/yy () yyyyymmdd () dd/mm/yy () yyyyddd (day-of-yr)		☒ [X] Time Format (.) hhmmss () mins past midnight () secs past midnight () decimal day	
	☒ [X] Latitude Format (.) + or - 90 degrees () degrees N or S		☒ [X] Longitude Format (.) + or - 180 degrees () 0 to 360 degrees () degrees E or W	
	Prompt when location changes by more than n.n degrees per day. n.n= [10] Literal to designate missing values= [999999] Extract ==> (.) All Locations () Standard Locations Only () All Passes			
	OK		Cancel	

You will now be presented with a table of available location parameters (actual output fields or values) and options (which control how SATLOC will process locations). This screen is where you select/deselect those parameters you wish to appear/not appear in the formatted location output file and define the format of a selected parameters

Output parameters [A]. This is where you select or deselect which parameters you want to appear in your output file. An "X" in the selection box to the left of the parameters indicates that it will be written to the output file. Use the mouse and click the parameter to toggle selection/deselection. Alternately, you can use the tab key to position to the parameter, then use the space bar to toggle selection/deselection. The parameters are:

Animal id. The animal identifier you associated with the SDR unit.

PTT number. The Geolocation-PTT number associated with the location fix.

Date of location. The date Service Argos calculated the location. This date is taken either from the Dispose file's basic platform data line, or the Wildlife Diagnostic file's message date.

Time of location. The time Service Argos calculated the location. This time is taken either from the Dispose file's basic platform data line, or the Wildlife Diagnostic file's message date.

Location class. **15June94 and later:** This parameter contains the *Location Class*. **Pre-15June94:** This parameter contains either the Location Class (if the value is greater than 0) from the Dispose file's platform location data line or the Location Indicator from the Wildlife Diagnostic file (if the value is less than or equal to 0), depending upon which file the location fix is from.

Latitude. Latitude of the most likely of the two position calculations.

Longitude. Longitude of the most likely of the two position calculations

Alternate Latitude. Latitude from the second location solution (from the *Diagnostic file*)

Alternate Longitude. Longitude from the second location solution (from the *Diagnostic file*)

Warning messages. Informational/warning messages about the location. This parameter may be blank.

Formats [B]. This is where you set the format of the various fields. A dot appears in the option button to the left of the selected format. Click or use the tab key to change the selected format.

Maximum daily movement [C]. This is the maximum distance, in degrees, that you think your study animal can move. SATLOC will prompt you whenever the distance between two locations is such that the animal must have moved faster than this rate. Set this value to 99 if you do not want to be prompted.

Literal to designate missing values [D]. This option controls what appears when the value of a parameter is unknown (e.g., there is no alternate latitude and longitude because the pass on the Dispose file did not have a corresponding pass on the Diagnostic file). This literal may be either text or a number; its length must be no greater than 9 characters.

Extract Option [E]. This option controls which pass locations are written to the output file. Click the option button in front of the option you desire.

All locations. Passes which had either standard or non-standard locations will be written to the output file.

Standard locations only. Only passes with standard locations will be written to the output file. Passes with non-standard or no locations will be excluded.

All Passes. All passes, including those for which no location was calculated, will be written to the output file.

Note: SATLOC "remembers" the parameter and option settings. These settings are then offered as the defaults during subsequent executions of SATLOC. The parameter and option settings are saved in a small configuration file called **SATLOC.CNF**. If this file does not exist when you start SATLOC, the standard default values will be offered, and the file will be created.

Click the <OK> command button when you are happy with your selections.

SATLOC will begin extracting data. Messages will appear on your screen noting which animal id is being processed. You will be prompted to select the first location for each PTT id, and whenever there is a such a large change in location that the maximum daily movement rate was exceeded. SATLOC will return you to SATMENU upon completion.

Outputs

basename.loc. The formatted output location file. SATLOC writes the location parameters you selected to an ASCII file. Each line in the file contains data for one location fix (satellite pass). Specific location parameters are delimited by commas (",") Parameters are in the same order as they appear in the screen above..

basename.rpt. The Run Information Report file. This file contains information about the run (e.g., the date and time of the run, the filenames, parameters and formats selected, number of pass messages SATLOC read for each animal id, etc.). In addition, any warning messages will also appear in this file.

You should *always* look at or print this file at the end of each run. Note that this file contains the run information for all the SATPAK programs..

basename.bad. This file documents instances where SATLOC was unable to match the Dispose and Diagnostic pass messages, and other potential errors. The error and the pass messages in question are reported. In addition, there is a form letter to Service Argos for your convenience, should you wish to forward this error information to them for resolution.

SATDEX: DISPOSE FILE EXTRACT**SDR Data Overview**

Service Argos relays data transmitted by the SDR as *sensor data* in the Dispose file. The format for each sensor data value should be the decimal representation of an eight-bit *data byte* or *word*. This format is established by you with Service Argos when you begin your program.

The SDR encodes data for transmission into bit strings, and then packs the strings into the eight-bit data bytes. The number of data bytes per transmission can be variable. For SDRs whose internal software is earlier than version 3.10, each transmission contains eight data bytes. For version 3.10 and later, each transmission may contain 4 to 32 data bytes. See *Wildlife Computers Satellite-Linked Dive Recorder Instruction Manual* for a complete description of how the data are encoded and transmitted.

Dispose File Extract Program Overview

SATDEX reads the Dispose file, determines the Argos format (pre or post January 1991), and extracts the "sensor data" from the "platform sensor lines" into intermediate ASCII files (see *the Argos Users Manual* for a description of the Dispose file format). SATDEX reads the *Definition* file (see *SATEDIT: Definition File* Editor beginning on page 12) to determine how the data are encoded in the transmission. Each type of message your SDR transmits (*e.g.*, histogram messages, status messages) is written to a separate *intermediate* file. In addition, concatenated histogram messages (from SDR version 3.10 and later) are written as separate messages.

The beginning of each intermediate file contains the parameters from the Definition file. Following the parameter information are the data lines. Each data line represents one "message" of a "pass". All lines begin with message header information followed by the decimal representation of the sensor data values of the message. The format of these lines is:

id, ptt, Julian date, year, doy, hhmmss, nnn, v1, v2, ..., vn

where

id. Animal identifier

ptt. PTT number

julian date. Julian date/time of reception

year. Year of the reception (19*nn*)

doy. Day of the year of the reception (where 1 = 01 Jan)

hhmmss. Time of the reception (hours, minutes and seconds)

nnn. Reception count (the number of times Service Argos received a message with identical sensor values from this PTT within the pass)

v1 to vn. Decimal representation of each sensor value

For example:

FEMPUP,1954,33514.63563657407,1994,320,210159,1,255,93,79,179

Translates as:

FEMPUP is the animal identifier from the definition file

1954 is the PTT number that transmitted the message

33514.63563657407 is the julian date and time the message was received

1990 is the year the first iteration of the message was received.

320 is the day of the year the first iteration of the message was received. Day 320 in 1990 was 20 November

210159 translates to 21:01:59 GMT, or 09:01:59 P.M. This is the time the first iteration of the message was received.

1 is the number of iterations of the message that were received. Note that this value should always be 1 for standard Type 3 SDRs, and the SDR should never transmit the same message consecutively.

255, 93, 79, 179 Sensor or data values received:

SATDEX validates the data during the extract process. Two types of errors are checked for:

- Incorrect format of the sensor values. On occasion blanks or hexadecimal values, rather than decimal numbers, appear in the sensor value positions of the Dispose file message. These invalid messages, along with an explanation of the error, are documented. This error file is named using the base portion of the Dispose file with a .BAD extension (e.g., if your Dispose file was named jul522a.dat, the error file would be named jul522a.bad).
- Invalid checksums. Type 3 SDRs use a 256-checksum value (such that the sum of all sensor values is evenly divisible by 256) for its error-checking algorithm. SATDEX checks each message for a valid checksum. Messages that contain an invalid checksum are written to a file which is named using the base portion of the Dispose file and a .CKS extension (e.g., jul522a.cks).

SATDEX documents information about the run (files used, counts, etc.) in the Run Report file (*basename.rpt*).

Only data for PTT numbers that are referenced in the Definition file are extracted to the intermediate files. Any PTT numbers encountered in the Dispose file that were not referenced in the Definition file are also documented in the Run Report file.

Detailed Execution Instructions

SATDEX is invoked from SATMENU by clicking the <DEX> command button. The following introductory screen appears:

SATDEX	SATPAK: DISPOSE (DS) FILE EXTRACT	(DEXLOGO)
SATDEX: ARGOS Dispose File Extract This program extracts and reformats data from the ARGOS Dispose file. Each type of message (e.g., histograms, status messages) transmitted by your SDR will be formatted to a separate ASCII file. The expected format of the transmitted messages depends upon the version of SLTDR as specified in SAT.DEF. This program verifies the format and checksum of the data. 'Your dispose file name'.BAD contains messages rejected because of invalid formats, and 'your dispose file name'.CKS contains messages with bad checksums. A file named basename.RPT contains information on the results of this run. Version 3.03		
OK Cancel		

Click <OK> to continue.

The next screen that is displayed is the *Input and Output Files* screen for SATDEX. It allows you to select the filenames of your Definition, Dispose, and intermediate output files. You will be asked to name an intermediate file for each possible "type" of data transmitted by the SDRs defined in your Definition file. If you have only TYPE3 SDRs, you will be asked to supply the filenames for histograms and status messages. Note that these names are defaulted for you based on the basename you chose earlier using SATSETUP.

SATDEX	INPUT & OUTPUT FILES	(DEXPARMS)
< Definition file... > C:\MELIN\SDR\SAT.DEF < Dispose file... > C:\MELIN\SDR\JUN94.DAT		
Output files <Histograms/Timelines.> JUN94.XHI < Status Msgs... > JUN94.XST		
OK Cancel		

Select the files as described in the *Detailed Execution Instruction* for SATLOC, beginning on page 18.

Click the <OK> command button when you are happy with your selections.

SATDEX will begin extracting data. Messages will appear on your screen noting which animal id is being processed. SATDEX will return you to SATMENU upon completion.

Outputs

basename.XST. The intermediate file containing the Status message data.

basename.XHI. The intermediate file containing the Histogram message data.

basename.RPT. The Run Information Report. SATDEX adds to this report file information about the run (*e.g.*, number of pass messages read for each animal id) and warning messages, if any.

base of Dispose file.BAD. Messages with sensor data in an invalid format.

base of Dispose file.CKS. Pass messages that have an invalid checksum

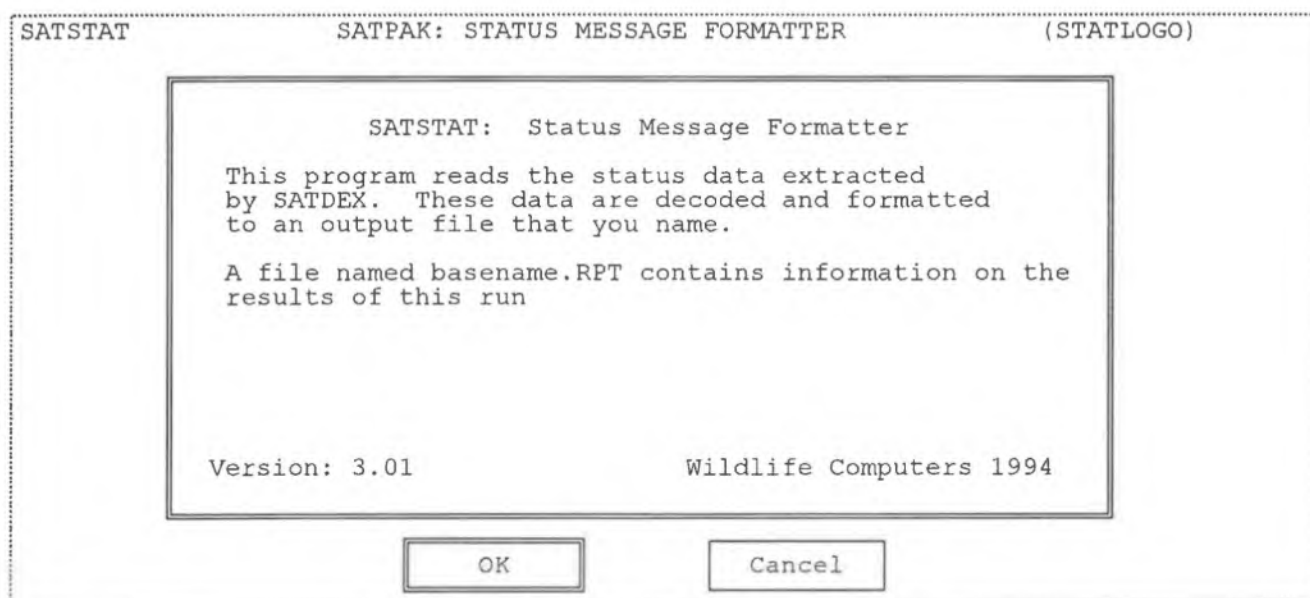
SATSTAT: STATUS MESSAGE FORMATTER

Status Message Formatter Program Overview

This program reads the status message intermediate file created by SATDEX. The status message data are decoded, scaled and formatted to an output file in an easily readable format. See *Wildlife Computers Satellite-Linked Dive Recorder Instruction Manual* for a description of the format of the status messages.

Detailed Execution Instructions

SATSTAT is invoked from SATMENU by clicking the <STAT> command button. The following introductory screen appears:



Click <OK> to continue.

The next screen that is displayed is the *Input and Output Files screen* for SATSTAT. It allows you to select the name of the input intermediate status message file created by SATDEX, and the output formatted file. Note that these names are defaulted for you based on the basename you chose earlier using SATSETUP.

SATSTAT	INPUT & OUTPUT FILES	(STATPARM)
Select the following filenames then click OK		
< Input Status file... > JUN94.XST		
<Output formatted file...> JUN94.STA		
OK Cancel		

Select the files as described in the *Detailed Execution Instruction* for SATLOC, beginning on page 18.

Click the <OK> command button when you are happy with your selections.

The *Output Parameters* for SATSTAT will be displayed next.

SATSTAT	Output Parameters	(STATCONF)
Reading from C:\MELIN\SDR\JUN94.XST		
Writing to C:\MELIN\SDR\JUN94.STA		
Output Parameters. Checked items will appear in output file. Use the tab key and space bar, or the mouse, to select or deselect the parameters.		
☒ Animal ID ☒ PTT number ☒ Date and time status message received Date Format (.) mm/dd/yyyy () yyyymmdd () dd/mm/yyyy () yyyyddd (day-of-year)		
The remaining parameters depend upon the type and version of the satellite-linked dive recorder. Each status parameter will be identified in the formatted output.		
OK Cancel		

Select the parameters and formats as described in the *Detailed Execution Instruction* for SATLOC, beginning on page 18.

Note: SATSTAT “remembers” the parameter and option settings. These settings are then offered as the defaults during subsequent executions of SATSTAT. The parameter and option settings are saved in a small configuration file called **SATSTAT.CNF**. If this file does not exist when you start SATSTAT, the standard default values will be offered, and the file will be created.

SATSTAT will begin formatting the status message data when you click <OK>. Messages will appear on your screen noting which animal id is being processed. SATSTAT will return you to SATMENU upon completion.

Outputs

basename.STA The formatted output file. Note that all parameters are labeled and scaled (that is, translated to voltages, meters, etc.). See *Wildlife Computers Satellite-Linked Dive Recorder Instruction Manual* for a description of the parameters.

basename.RPT The Run Information Report. SATSTAT adds to this report file information about the run (e.g., number of status messages read for each animal id) and warning messages, if any. This report will also give a very brief description of the status parameters.

SATHIST: HISTOGRAM MESSAGE FORMATTER

Histogram Formatter Program Overview

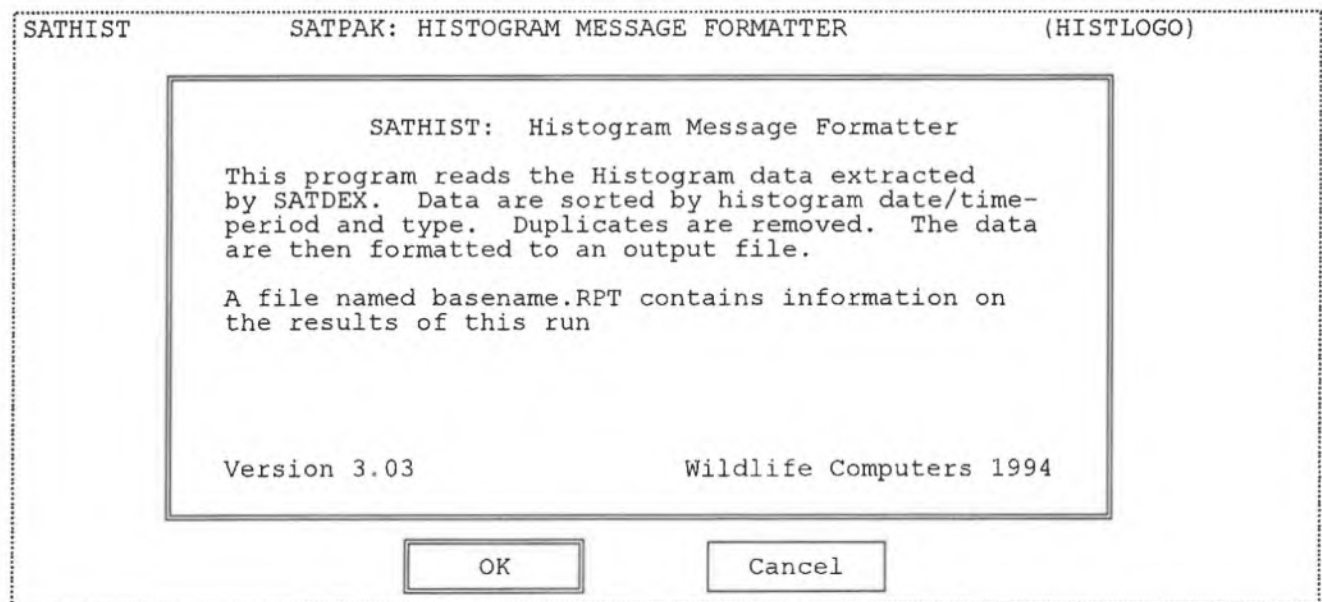
SATHIST reads the histogram message intermediate file created by SATDEX, and produces a outputs formatted, time-ordered histograms. See *Wildlife Computers Satellite-Linked Dive Recorder Instruction Manual* for a description of the how histograms are collected and encoded for transmission.

SATHIST performs the following processing:

- The date for which the histogram data were collected is calculated based upon the histogram period, the reception date and time, and the known pattern in which the SDR transmits the periods.
- The histograms are then sorted by histogram date, period and type, and duplicate messages for the same period are verified.
 - If there is both a depth and duration histogram for the period, the number of dive counts are compared.
 - Messages that do not match are evaluated to see if, due to a clock drift of ± 10 minutes, they could be matched to a different period. They are reassigned if possible.
 - The number of true duplicate messages are counted, and only one line for that message is written to the formatted histogram output file.

Detailed Execution Instructions

SATHIST is invoked from SATMENU by clicking the <HIST> command button. The following introductory screen appears:



Click <OK> to continue.

The next screen that is displayed is the *Input and Output Files screen* for SATHIST. It allows you to select the name of the input intermediate histogram message file created by SATDEX, and the output formatted file. Note that these names are defaulted for you based on the basename you chose earlier using SATSETUP.

SATHIST	INPUT & OUTPUT FILES	(HISTPARM)
Select the following filenames then click OK		
< Input Histogram file...> JUN94.XHI		
<Output formatted file...> JUN94.HIS		
OK Cancel		

Select the files as described in the *Detailed Execution Instruction* for SATLOC, beginning on page 18.

Click the <OK> command button when you are happy with your selections.

The *Output Parameters* for SATHIST will be displayed next.

SATHIST	OUTPUT PARAMETERS	(HISTCONF)
Reading from C:\MELIN\SDR\JUN94.XHI		
Writing to C:\MELIN\SDR\JUN94.HIS		
Output Parameters. Checked items will appear in output file. Use the tab key and space bar, or the mouse, to select or deselect the parameters.		
☒ Animal id ☒ PTT number ☒ Date and time histogram received ☒ Period histogram received ☒ Sum of counts in all histogram bins ☒ Status (for pre-version 3.10) ☒ State (on land/at sea) ☒ Number of duplicate messages received ☒ Warning msgs from SATHIST ☒ Date histogram collected ☒ Period histogram collected ☒ Histogram type ☒ Histogram bins	Date Format (.) mm/dd/yy () yyyyymmdd () dd/mm/yy () yyyyddd (day-of-year) Time Format (.) hhmmss () minutes past midnight () seconds past midnight () decimal day	
OK Cancel		

Select the parameters and formats as described in the *Detailed Execution Instruction* for SATLOC, beginning on page 18. The parameters are:

- *Animal id.* The animal identifier you associated with the SDR unit in the Definition file..
- *PTT number.* The PTT number associated with the SDR unit.
- *Date and time histogram received.* This will be UT/GMT. If the histogram was received multiple times, this will be the date and time of the latest reception.
- *Period histogram received.* The histogram period (0 to 3, based upon the reception date and time) the message was received. If the histogram was received multiple times, this will be the period of the latest reception.
- *Sum of counts in all histogram bins.* For depth and duration histograms, this represents the total number of dives for the period.
- *Status (for pre-version 3.10).* SDRs with internal software versions earlier than version 3.10 encoded a "status" bit. "0" means the dive data were collected over the entire histogram period, "1" means data were not. The status should be "1" only for the first depth/duration histograms collected after deployment. ***This parameter should not be selected for SDRs with version 3.10 and later, as it not relevant.***
- *State.* This is the repetition rate of the SDR at the time the message was transmitted.
 - "0" means the SDR was at the "on land " rate
 - "1" means the SDR was at the "at sea" rate

If the histogram was received multiple times, this will be the state of the SDR as of the latest reception. See Wildlife Computers Satellite-linked Dive Recorder Instruction Manual for the description of how the SDR changes from the on-land to as-sea repetition rates.

- *Number of duplicate messages received.* The number of times this histogram was received. This reflects both the number of messages Service Argos reports, plus the duplicates combined by SATHIST..
- *Warning msgs from SATHIST.* This parameter reports
 - When histograms are assigned to a period 24 earlier or later, due to clock drift.
 - Single receptions of histogram near ~~period~~ the beginning or end of a period. These histograms may actually belong to the period 24 hours earlier or later, if there is clock drift.
- *Date histogram collected.* The date of the beginning of the period over which the histogram data were collected (GMT)..
- *Period histogram collected.* The period (0 to 3) over which the histogram data were collected.
- *Histogram type.*
 - 0 = Depth,
 - 1 = Duration
 - 2 = Time-at-Depth (TAD)
- *Histogram bins.* The counts in each of the histogram bins.

Note: SATHIST "remembers" the parameter and option settings. These settings are then offered as the defaults during subsequent executions of SATHIST. The parameter and option settings are saved in a small configuration file called **SATHIST.CNF**. If this file does not exist when you start SATHIST, the standard default values will be offered, and the file will be created.

SATHIST will begin formatting the histogram message data when you click <OK>. Messages will appear on your screen noting which animal id is being processed. SATHIST will return you to SATMENU upon completion.

Outputs

basename.HIS. The output file for formatted, valid histograms. Each line in the file represents one histogram. Fields are delimited by commas (",").

basename.REJ. Histograms messages that were rejected. The reason each message was rejected is included.

basename.RPT. The Run Information Report. SATHIST adds to this report file information about the run (e.g., number of histogram messages read for each animal id) and warning messages, if any.

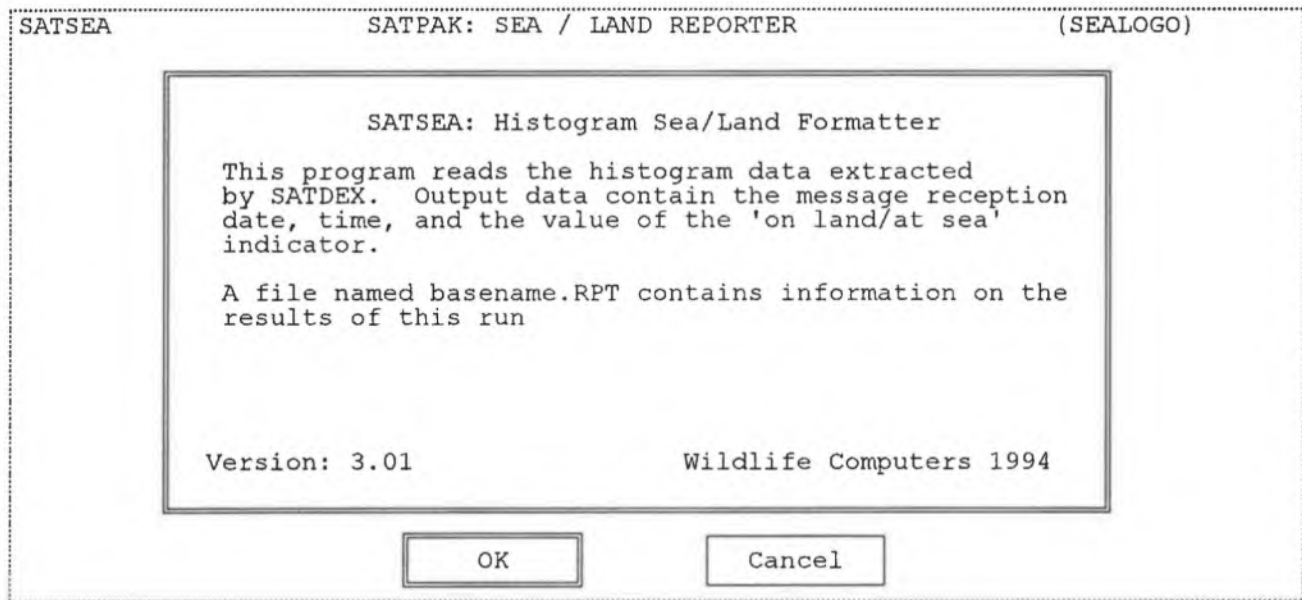
SATSEA: LAND/SEA REPORTER

Land/Sea Extract Program Overview

This program also reads the histogram intermediate file created by SATDEX. The reception date and time is written for each individual message, along with the "state" (whether the SDR was at its on-land or at-sea repetition rate).

Detailed Execution Instructions

SATSEA is invoked from SATMENU by clicking the <SEA> command button. The following introductory screen appears:



Click <OK> to continue.

The next screen that is displayed is the *Input and Output Files screen* for SATSEA. It allows you to select the name of the input intermediate histogram message file created by SATDEX, and the output formatted Land/Sea file. Note that these names are defaulted for you based on the basename you chose earlier using SATSETUP.

SATSEA	INPUT & OUTPUT FILES	(SEAPARM)
Select the following filenames then click OK		
< Input Histogram file...> JUN94.XHI		
< Output Sea/Land file...> JUN94.SEA		
OK Cancel		

Select the files as described in the *Detailed Execution Instruction* for SATLOC, beginning on page 18.

Click the <OK> command button when you are happy with your selections.

The *Output Parameters* for SATSEA will be displayed next.

SATSEA	Output Parameters	(SEACONF)
Reading from C:\MELIN\SDR\JUN94.XHI		
Writing to C:\MELIN\SDR\JUN94.SEA		
Output Parameters. Checked items will appear in output file. Use the tab key and space bar, or the mouse, to select or deselect the parameters.		
☒ Animal ID ☒ PTT number ☒ Reception Date ☒ Reception Time ☒ State (0=on land 1=at sea)	Date Format (.) mm/dd/yyyy () yyyymmdd () dd/mm/yyyy () yyyyddd (day-of-year) Time Format (.) hhmmss () minutes past midnight () seconds past midnight () decimal day	
OK Cancel		

Select the parameters and formats as described in the *Detailed Execution Instruction* for SATLOC, beginning on page 18. The parameters are:

- *Animal id.* The animal identifier you associated with the SDR unit in the Definition file..
- *PTT number.* The PTT number associated with the SDR unit.
- *Date and time histogram received.* This will be UT/GMT. If the histogram was received multiple times, this will be the date and time of the latest reception.

- *State*. This is the repetition rate of the SDR at the time the message was transmitted.
 - "0" means the SDR was at the "on land" rate
 - "1" means the SDR was at the "at sea" rate

Outputs

basename.SEA. The output file for land / sea indicator from the histogram messages. Each line in the file shows the reception time and the value of the sea/land indicator from each histogram message.

basename.RPT. The Run Information Report. SATSEA adds to this report file information about the run (e.g., number of histogram messages read for each animal id).

