

*Laser-Scan Ltd.*

*CONVERT PACKAGE*

*IFFOSTF Reference*

*Issue 1.1 - 26-November-1992*

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IFFOSTF - Change Record

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Version 1.0    S Townrow   17-June-1991

Module IFFOSTF    - Reorganised package documentation.

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Version 1.1    S Townrow   26-November-1992

Module IFFOSTF    - The DATA PREPARATION section has been revised to  
include details of the new lookup table pointed to  
by the logical LSL\$OS\_MH\_TABLE.

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## PREFACE

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### Intended audience

This manual is intended for users of a specific utility of the Laser-Scan CONVERT package running under the VAX/VMS operating system. Each manual contains the documentation for a particular CONVERT utility and a site will only receive new or updated documentation for those utilities which they have purchased.

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### Structure of this document

This document is composed of 2 major sections.

The Introduction is an overview of the CONVERT package and its purpose.

There then follow the User Guides for the individual modules which comprise CONVERT. Each individual module contains the same basic categories of information. These are:

- |                    |  |
|--------------------|--|
| MODULE             | - the name of the CONVERT module.  |
| FORMAT DESCRIPTION | - a description of the data format written or read by the utility programs in this conversion module.            |
| DATA PREPARATION   | - guidance on how to digitise or prepare the IFF and other data required by the utility programs in this module. |

For each utility program in the module, there will then be the following categories:

- |                    |   |
|--------------------|---|
| UTILITY            | - the name of the utility.  |
| FUNCTION           | - a synopsis of what the utility does.  |
| FORMAT             | - a summary of the utility command format and command qualifiers. Default qualifier settings are indicated.               |
| PROMPT             | - how it prompts the user.  |
| PARAMETERS         | - description of expected command parameters.   |
| COMMAND QUALIFIERS | - description of all command qualifiers. Qualifiers are ordered alphabetically and default argument values are indicated. |
| RESTRICTIONS       | - a summary of restrictions on the use of   |

	qualifiers
DESCRIPTION	- the definitive description of the utility action.
COMMANDS	- for interactive utilities only, a description of all commands. Commands are ordered alphabetically and default argument values are indicated.
EXAMPLES	- annotated examples of utility useage.
MESSAGES	- all classes of message are listed and described and suggested user action given. The messages are divided into sections according to message severity within which the messages are ordered alphabetically by message mnemonic.

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## Conventions used in this document

Convention	Meaning
<CR>	The user should press the carriage control key on the terminal
<CTRL/x>	The phrase <CTRL/x> indicates that the user must press the key labelled CTRL while simultaneously pressing another key, for example, <CTRL/Z>.
\$ <b>IFF2SIF</b> <CR>	Command examples show all user entered commands in <b>bold</b> type.
\$ <b>IFF2SIF</b> <CR> . . .	Vertical series of periods, or ellipsis, mean either that not all the data that CONVERT would display in response to the particular command is shown or that not all the data that the user would enter is shown.
file-spec...	Horizontal elipsis indicates that additional parameters, values or information can be entered.
[logical-name]	Square brackets indicate that the enclosed item is optional. (Square brackets are not, however, optional in the syntax of a directory name in a file-specification, or in the syntax of a substring specification in a VMS assisment statement).

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Convention	Meaning
-----	
'integer'	An integer number is expected in the specified input or output field. (See "Command line data types" below).
'real'	A real number is expected in the specified input or output field. (See "Command line data types" below).
'file-spec'	A VMS file specification is expected in the specified input or output field.
'device-name'	A VMS device specification (for instance, MTA0:) is expected in the specified input or output field.
-----	



## CHAPTER 1

### OSTF FORMAT DESCRIPTION

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## FORMAT DESCRIPTION

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### Introduction

DMC and OSTF are the Ordnance Survey's standard customer transfer format.

The original format was called DMC (for Digital Mapping Customer format), and later revisions have been renamed OSTF (OS Transfer Format).

The format is designed to be easily Fortran readable, with fixed size 8 character records. Different sections of the data are identified by negative flags.

Over the years OS have provided data to customers in several variants of the form, and contractors have been required to supply data in similar variation. The DMC and OSTF documentation has never specified any form of version number or issue date to allow these forms to be distinguished.

This section attempts to present information gathered by Laser-Scan about the variants. Some familiarity with the format is assumed.

---

### Versions of DMC/OSTF

The original version of DMC is well defined, but later amendments have occurred (producing a format normally referred to as OSTF) in a non-structured manner. For simplicity's sake, the various forms identified by Laser-Scan have been numbered OSTF-0 and upwards.

The following forms can be identified:

- o OSTF-0 - old DMC

this is the original customer format, and is what is generally meant by DMC. It uses entries -1 to -13, -15, -17

- o OSTF-1 - middle DMC or early OSTF

this was specified in Annex A of a draft document called **Beginner's guide to plotting Ordnance Survey digital data** at the beginning of 1983. The format was referred to as both DMC and OSTF.

The format is essentially the old DMC format with additional data entries - it uses entries -1 to -15, -17 to -21. Note the changes in entry -10, etc.

- o OSTF-2 - middle OSTF

this was specified to contractors digitising for OS around 1984/85.

The only variation from OSTF-1 is that the additional map header is slightly longer. It is thus still a direct extension of old DMC. It also uses entries -1 to -15, -17 to -21

- o OSTF-3 - late OSTF

this was specified to contractors after the above specification, and is current from (at least) February 1985. At some time between September 1985 and February 1987, entries -19 and -22 appear to have been withdrawn.

This format adds more data to the sheet header (which means that the previous formats are not valid any more), and adds even more fields to the additional map header. It uses entries -1 to -22, -44

- o OSTF-4 - current OSTF

this was specified in November 1988.

The only variations from OSTF-3 are changes to the secondary map header, the -20 entry. Some new fields have been added, while others have been rearranged.

- o OSTF+ - OSTF-3 and upwards with enhancements

this version provides enhancements to OSTF-3 and OSTF-4, and is only intended for use within Ordnance Survey. It was specified in the "OSTF+ supplement to 'Digital Map Data - OSTF'" (2nd amendment), dated 27th February 1987.

This format is identical to OSTF-3 or OSTF-4, with additional entries -23, -24 and -25. The coordinate record has also been modified to include the method of data capture for every point.

-----  
**Data entries - summary**

Entry	OSTF-0	OSTF-1	OSTF-2	OSTF-3	OSTF-4	OSTF+
coords	yes	yes	+ curve flag	+ curve flag ?	yes	+ capture method
* -1	yes	+ sim	+ sim	+ sim + job + digscale	+ sim + job + capscale	+ sim + job + capscale
-2	yes	yes	yes	yes	yes	yes
-3	yes	yes	yes	yes	yes	yes
-4	yes	yes	yes	yes	yes	yes
-5	yes	yes	yes	yes	yes	yes
-6	yes	yes	yes	yes	yes	yes
-7	yes	yes	yes	yes	yes	yes
-8	yes	yes	yes	yes	yes	yes
-9	yes	yes	yes	yes	yes	yes
* -10	as pt size	as mm/10	as mm/10	as mm/10	as mm/10	as mm/10
-11	yes	yes	yes	yes	yes	yes
+ -12	sometimes	yes	yes	yes	yes	yes
-13	yes	yes	yes	yes	yes	yes
* -14	no	yes	yes	yes	yes	yes
-15	yes	yes	yes	yes	yes	yes
* -16	no	yes	yes	yes	yes	yes
-17	yes	yes	yes	yes	yes	yes
* -18	no	yes	yes	yes	yes	yes
* -19	no	yes	yes	(yes)	no	no
* -20	no	20 records	22 records	54 records	54 records reformatted	54 records as OSTF-3/4
* -21	no	yes	yes	yes	yes	yes
* -22	no	no	yes	(yes)	no	no
* -23	no	no	no	no	no	yes
* -24	no	no	no	no	no	yes
* -25	no	no	no	no	no	yes
* -44	no	no	no	yes	yes	yes

Entries flagged with an asterisk before the entry number (\*) are either not used in all versions of OSTF, or differ significantly in their contents.

Note that entry -12 (rotation or alignment) may be absent in OSTF-0 for features with an angle of zero.

Note that the entries -16 (process code), -19 (left/right coding) and -22 (text cross reference) are not always required, although presumably their inclusion would not be regarded as illegal data.

For a fuller description of the differences for entries, see the next section.

-----  
**Data entries - analysis by version**

This section briefly describes each DMC/OSTF flag in turn, and states which versions it is used in. It also describes any changes over the versions.

cXXX YYY            - coordinate record

This contains the two coordinates (XXX and YYY respectively), offset within the current grid square. Note that these are in the range 0-999, being thousandths of a basic grid square. In OSTF-0 and OSTF-1, the 'c' character is always a space. In OSTF-2 and OSTF-3, it may be a curve flag, and is set as:

" "    - (space) - ordinary coordinate  
"1"    - this coordinate is at the start of a curve  
"2"    - this coordinate is at the end of a curve.

Note that curves are still fully interpolated (ie composed of straight line segments). IFF data does not support the use of start/end curve flags, so our programs will not output them.

In OSTF+, the 'c' character denotes the capture method. When it is left blank, the value of the last capture method specified is assumed. Values for the capture method are the same as those listed for the -24 entry. The default is "0".

-1 sim            - map header

This marks the start of a new sheet in the file. It is followed by:

Eastings  
Northings  
Basic grid size  
Source scale

and in OSTF-3 these are then followed by:

Job number  
Digitising scale

Note that the 'sim' flag is not used in OSTF-0.

-2 0            - end of sheet

Followed immediately by either flag -3, or another sheet starting with flag -1.

-3 0 - end of data, end of file

The rest of the current block is padded with flag -6, to the actual end of file.

-4 fsn - start of feature

This entry marks the start of a new feature - 'fsn' is the feature serial number, in the range 0-9999.

-5 0 - end of feature

-6 0 - dummy - used to pad the end of data

-7 fc - feature code - used for lines

-8 fc - feature code - used for texts and symbols

-9 0 - new grid square

The entry is:

-9 0  
EE NN

where EE and NN are the numbers identifying the grid square containing the coordinates following. This entry is output at the start of a feature, and whenever a feature crosses from one grid square to another.

EE and NN are normally in the range 0 to 9, but note that the coordinates along the northern and eastern edges of the sheet are actually in grid squares EE,10 and 10,NN - note that the coordinates in these cases are restricted to the boundary itself.

-10 cat - text description

This entry is:

-10 category  
style height

where 'category' is the OS text category, 'style' is the OS text style.

The character height in 'height' is stored as a point size for OSTF-0 (with a value between 1 and 24). For all other versions, the text height is stored as tenths of a millimetre, corresponding to the appropriate point size of the original text.

-11 cnt - text entry

This entry is followed by 'cnt' characters of text, 8 per record.

-12 ang            - orientation

- o For text features, the orientation gives the rotation of the text.
- o For symbols, it gives the angle of the symbol - this will only be relevant for oriented and scaled symbols.
- o For lines, the angle is calculated from the first two points of the line, and is used by OS when plotting the FSN next to the feature.

In all cases, the angle is stored in tenths of a degree (0-3600), measured anti-clockwise from the horizontal axis (ie in the standard direction). Note that in OSTF-0 the orientation entry may be omitted if the angle is zero.

-13 0            - invisible line flag

This indicates that the pen should be lifted when moving to the next coordinate - there is an invisible line to the next point.

-14 0            - external grid square

This entry is identical in form to the internal grid square entry, but is used to code entries which are outside the sheet boundary - ie marginal texts. Note that the grid squares with this entry may be negative. This flag is not used in OSTF-0.

-15 dis           - distance - scaled symbol size

'dis' is the size of a scaled symbol, in basic grid units.

-16 pc           - process code

This contains the process code (as used in OS IFF files), and was introduced in OSTF-1. This entry is not always required.

-17 ht           - contour height

This contains a contour height, in metres.

-18 loc           - original text location

This entry is:

```
      -18  location
          EE      NN
          XXX     YYY
```

The 'location' is the location number at which the text was originally digitised (0-8), and the coordinates following specify the original digitised position.

The normal coordinates passed for a text reflect its position when it is at location 0 (ie text origin is bottom left hand corner). This entry allows a program to know where and how the text was originally digitised.

This entry is not used in OSTF-0.

-19 0 - left/right coding flag

This indicates that a sequence of left and right boundaries will follow - for instance:

-7 fc	1st boundary FC
-19 0	boundary flag
-11 cnt	text count - left side
::::::::	the text
-19 0	boundary flag
-11 cnt	text count - right side
::::::::	the text
-7 fc	2nd boundary FC
--etc--	

This entry is not used in OSTF-0, and is not always required in the other forms.

-20 0 - secondary map header

This entry is followed by additional data for the map header. It is absent in OSTF-0. It is followed by 20 records in OSTF-1, by 22 records in OSTF-2, and by 54 records in OSTF-3 and OSTF-4. The OSTF-4 version differs from the OSTF-3 version; some fields have been renamed, replaced or discontinued, and new ones have been introduced. Note that the OSTF-3 and OSTF-4 versions contain a contractor identification code. This is assigned by OS and in OSTF-3 it is a number given to the supplier of the data; in OSTF-4 it consists of a customer code and a contractor code.

-21 cnt - sheet index start/end

In all forms except OSTF-0, the file starts with an index of the sheets in the file. This is of the form:

-21 cnt	how many sheets
EEEEEEEE	easting of SW corner, sheet 1
NNNNNNNN	northing of SW corner, sheet 1
EEEEEEEE	easting of NE corner, sheet 1
NNNNNNNN	northing of NE corner, sheet 1
--etc--	
-21 0	end of index



-22 cnt                      - text cross reference

This is followed by 'cnt' FSNs, one per record. The entry is used within a text feature, to point to the linear features with which this text is associated. This entry is not used in OSTF-0 or OSTF-1, and is not always required in the other forms.

-23 typ                      - feature history

This entry holds information on change type, survey date and change date, and applies only to the feature incorporating the record. The entry is:

          -23 type  
          YYMM YYMM

where 'type' is a character denoting the type of change. Values for this are:

- "0" - unknown
- "1" - feature no longer exists, i.e. deleted
- "2" - feature unchanged since survey date
- "3" - position of feature has changed due to resurvey
- "4" - position of feature has changed due to readjustment
- "5" - feature code or classification change
- "6" - other attribute change

The second record consists of two 4 byte fields, the first being the survey date, and the second the change date.

-24 diff                     - height

This entry holds information on difference in height between ground and top of feature, measured height and capture method. It applies to all succeeding individual points, up to the feature terminator unless updated by a further occurrence.

The entry is:

          -24 difference  
          c zzzzzz

where 'difference' is the difference in height in decimetres (4 bytes),  
'c' is a character denoting the capture method,  
'zzzzzz' is the z-coordinate in centimetres (6 bytes).

Empty (i.e. blank) 'difference' fields are inserted at the first occurrence of an unknown difference in height, and empty 'zzzzzz' fields at the first occurrence of an unknown measured height. Note that values of zero in either of these fields are regarded as valid. The difference in height is relative to the ground height.

Values for the capture method are:

"0" - unknown  
"1" - intelligence  
"2" - triangulation station - primary order  
"3" - triangulation station - secondary order  
"4" - triangulation station - tertiary order  
"5" - lower order control (MC)  
"6" - IDS 1:1250  
"7" - IDS 1:2500  
"8" - graphic survey 1:1250  
"9" - graphic survey 1:2500  
":" - graphic survey 1:10000  
";" - 1:1250 scale - original data source unknown  
<" - 1:2500 scale - original data source unknown  
=" - 1:10000 scale - original data source unknown  
>" - generated by spline fitting algorithm  
?" - generated by parallel or offset line algorithm  
@" - generated by squaring algorithm  
"A" - generated by part squaring algorithm  
"B" - generated arc or circle  
"C" - generated by unspecified algorithm  
"D" - vector data from raster to vector conversion  
"E" - PS 1:1250 aerial triangulation (ground control)  
"F" - PS 1:1250 aerial triangulation (master block)  
"G" - PS 1:1250 air machine (ground control)  
"H" - PS 1:1250 graphic  
"I" - PS 1:2500 aerial triangulation (ground control)  
"J" - PS 1:2500 aerial triangulation (master block)  
"K" - PS 1:2500 air machine (ground control)  
"L" - PS 1:2500 graphic  
"M" - PS 1:10000 aerial triangulation (ground control)  
"N" - PS 1:10000 air machine (ground control)

-25 0 - technical security

This entry indicates that the feature is deemed to be of a technically secure nature.

-44 fsn - start of feature with large FSN

This entry is used to store a large FSN, instead of the -4 flag. The actual FSN represented is 'fsn'+10000, allowing FSNs in the range 10000 to 19999 to be stored. This entry is only used in OSTF-3.

## CHAPTER 2

### OSTF DATA PREPARATION

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## DATA PREPARATION

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### Comparison of OSTF and IFF

Both OSTF and IFF are feature oriented data formats - data is separated into features, and each feature represents one 'thing' on the map. An integer feature code (FC) is used to say what type of thing it is that the feature represents. A feature might thus be a contour, or a house, or a river, depending on the type of map being digitised, and the way that the data is to be used.

OSTF requires that each feature has a unique feature serial number (FSN) - an integer number which is associated with the feature in addition to the feature code. Features in IFF also have feature serial numbers, although these need not be unique.

IFF allows features to be grouped into separate layers, a capability which OSTF does not have. IFF also allows more graphical types (the way a feature is to be drawn) than OSTF which only allows for lines, symbols and names.

IFF therefore has the capability to contain more information about particular features or groups of features than OSTF, and is a more versatile format. Nevertheless, transfer of data between the two formats is relatively easy with no loss of information.

---

### Preparation for digitising data to be output to OSTF

This section is aimed at contractors who intend to digitise data for Ordnance Survey, and describes how to prepare data in IFF revision 0 files. Note that OSTF+ is not intended for use outside Ordnance Survey, and so the representation of such data in IFF revision 1 files is not covered. The **Contractors Specification for Digital Mapping** published by the Ordnance Survey should be consulted prior to digitising data for subsequent output to OSTF.

For digitising within IFF, Ordnance Survey feature codes must be used, and an appropriate FRT file (together with SRI and TRI files) created.

The data should be digitised into layer 1 and sorted into order by FSN. FSNs must be unique within the layer, numbered from 1 upwards, and may not be larger than 19999, or 9999 for OSTF-0. If a grid is included in the IFF file, it should be in layer 0 with FSNs numbered from 1 upwards. Note that the grid should not appear in OSTF format, and will not be transmitted by I2OSTF. The only Ancillary Code (AC) entries present should be types 2, 4 and 5, and these should only occur within line features.

The data can be sorted using the IMP utility ISORT, and should also be clipped square using the IMP utility IWINDOW.

A standard type 2 OS map header should be used in the IFF file, with the following values set :-

- map scale
- data capture scale
- basic grid interval
- origin
- contractors ID

The map header can be set using OSMHED, which will also ensure that the scale and origin offset are set in the type 2 Map Descriptor (MD) if the IFF file is a new style one. Such IFF files will also contain a HHistory (HI) entry. It is assumed that the map is square. Note that a contractors ID for onward transmission to OSTF can be specified with the I2OSTF /CONTRACTOR qualifier.

Text heights in the IFF file should be stored as point sizes. These are converted to tenths of a millimetre on output to OSTF.

OS IFF files should not normally contain 3-d string (ZS) or Text Status (TS) entries. However, their presence may be advantageous to some users and they are therefore not specifically prohibited.

-----  
**Attribute Definitions**

OSTF+ data can be translated into IFF revision level 1, which includes the capability to handle attributes at both feature and point level. The former appear in the IFF file as AC (Ancillary/Attribute Code) entries, while the latter are included in CB (Coordinate Block) entries. A set of standard attributes is available by default, and these can be supplemented by additional attributes defined by the user. For further details, see the "IFF User Guide".

If IFF revision level 1 output is required, an FRT file containing ACD definitions must be specified (see the "FRT User Guide" for further details). The standard definitions referenced by the OSTF translation programs at point level (i.e. within CB's) are:

X	- x-coordinate
Y	- y-coordinate
Z	- z-coordinate
DHeight	- difference in height

Those referenced at feature level (i.e. in AC's) are:

CONTOUR	- contour height
LH_boundary	- left boundary
RH_boundary	- right boundary

Additional definitions referenced by the programs **must** be defined in the ACD table. At the point level these are:

CAPTURE_XY	- plan capture method
CAPTURE_Z	- height capture method

At feature level they are:

SURVEY_DATE	- survey date
CHANGE_DATE	- change date
CHANGE_TYPE	- change type
SECURITY_MARKER	- security marker

-----  
**OS Map Header Translation Table**

Several utilities within IFFOSTF have the ability to copy OSTF and CITF headers to and from IFF as ASCII character blocks which can be interfaced with map header editors developed by Ordnance Survey (Great Britain).

**Warning**

Map headers in this form are not intended to be used outside OS, and Laser-Scan recommend that other users use type 2 map headers which can be edited using OSMHED.

In order to facilitate the future expansion of OS map header fields, a translation table in the form of a parameter file is used which contains two sections. These sections define the positions and sizes of various fields within a type 3 (OSTF) or type 4 (CITF) OS Map Header.

Each line of the file is prefixed with a command which identifies the line as belonging to that section. The lines are free format and their position within the file is not important. However, entries on a given line must occur in a fixed order. Commands may be in upper or lower case.

A maximum of 255 commands will be allowed per parameter file.

Any text starting with the "!" character is regarded as a comment, and is ignored. Comments can appear on the same lines as commands, or on separate lines.

The header positions and sizes given in the table must accurately reflect that of the actual map header, particularly when converting between IFF and OSTF/CITF.

In OSTF, note that the field positions start at character position 1 and are continuous through both the -1 and -20 headers. ie. the -20 header positions do not begin from character position 1 but follow on from the -1 header. Note also that the character positions within the header are equivalent to those within the file; position 1 is the first space in the OSTF record containing the -1 entry and is the same position as that used for the byte count.

Note also that, in CITF, the character positions within the header are not equivalent to those within the file as other records precede the header. The offsets for CITF are within the Section Header (SECHREC) record of a CITF file. Refer to the IFFNTF Reference Manual for information of CITF.

The logical LSL\$OS\_MH\_TABLE must be defined to point to the translation table and any part of the file specification not defined will be taken from the default file specification LSL\$LOOKUP:OSMH\_NEW\_TABLE.DAT

The translation table will take the form:

OSTF_MH_ONE	<fileposn>	<size>		
OSTF_MH_TWENTY	<fileposn>	<size>		
!				
OSTF_MD_X_ORIG	<posn>	<size>		<format>
OSTF_MD_Y_ORIG	<posn>	<size>		<format>
OSTF_MD_SCALE	<posn>	<size>		<format>
!				
OSTF_MH_BGI	<posn>	<size>		<format>
OSTF_MH_CAP_SCALE	<posn>	<size>		<format>
OSTF_MH_JOB_NUMBER	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_A	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_B	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_C	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_D	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_E	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_F	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_G	<posn>	<size>		<format>
OSTF_MH_CHANGE_IND_H	<posn>	<size>		<format>
OSTF_MH_CHECK_VALUES	<posn>	<size>		<format>
OSTF_MH_BYTE_COUNT	<posn>	<size>		<format>
!				
CITF_MH_LENGTH	<size>			
!				
CITF_MD_X_ORIG	<line>	<offset>	<size>	<format>
CITF_MD_Y_ORIG	<line>	<offset>	<size>	<format>
CITF_MD_SCALE	<line>	<offset>	<size>	<format>
!				
CITF_MH_DIFF_HT_LEN	<divs>	<offset>	<size>	<format>
CITF_MH_CHANGE_IND_A	<divs>	<offset>	<size>	<format>
CITF_MH_CHANGE_IND_B	<divs>	<offset>	<size>	<format>
CITF_MH_CHANGE_IND_C	<divs>	<offset>	<size>	<format>
CITF_MH_CHANGE_IND_D	<divs>	<offset>	<size>	<format>
CITF_MH_CHANGE_IND_E	<divs>	<offset>	<size>	<format>
!				

where

<fileposn> is a character position of the OSTF or CITF header within the file and must be a positive integer  
 <posn> is a character position of a field within the OSTF or CITF header and must be a positive integer  
 <size> is the number of characters this value occupies and must be a positive integer

**<format>** is the datatype in OSTF or CITF (uppercase I or A) of the field

**<line>** is the line number within the Section Header Record (SECHREC) of a CITF header in which the field is to go. Since the header size is 10000 bytes, the maximum line number is 125 (ie 10000/80) and should ideally be a multiple of 80.

**<divs>** is the number of CITF DIVIDER characters (usually a backslash '\') after which the field is to be located. This only applies to the variable change indicator fields CITF\_MH\_CHANGE\_IND\_n and the CITF\_MH\_DIFF\_HT\_LEN field.

**<offset>** is the number of countable characters after the number of CITF DIVIDERS defined by **<divs>** at which the field is to be located. This also only applies to the variable change indicator fields CITF\_MH\_CHANGE\_IND\_n and the CITF\_MH\_DIFF\_HT\_LEN field.

and the commands **OSTF\_MH\_ONE** and **OSTF\_MH\_TWENTY** define where the map header block fits into an OSTF file. The order of these commands is important and must be as specified above. Hence these commands do not have a **<format>** entry.



-----  
**Example OS Map Header Translation Table**

An example of the translation table, LSL\$OS\_MH\_TABLE, is given here:

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!
!      OS Map Header Translation Table
!
!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!
!      Copyright Laser-Scan Laboratories Ltd., Cambridge, England.
!
!      Created                      ST      20-Oct-1992
!
! Field                      Offset  Size   Type
!
OSTF_MH_ONE                  1       56
OSTF_MH_TWENTY              57      440
!
OSTF_MD_X_ORIG               9        8      I
OSTF_MD_Y_ORIG              17        8      I
OSTF_MD_SCALE               33        8      I
!
OSTF_MH_BGI                  25        8      I
OSTF_MH_CAP_SCALE           49        8      I
OSTF_MH_JOB_NUMBER          41        8      I
OSTF_MH_CH_IND_A            161        1      A      ! OSTF Change indicator flags
OSTF_MH_CH_IND_B            162        1      A      ! must be of format A1 and
OSTF_MH_CH_IND_C            163        1      A      ! contiguous for compatibility
OSTF_MH_CH_IND_D            164        1      A
OSTF_MH_CH_IND_E            165        1      A
OSTF_MH_CH_IND_F            166        1      A
OSTF_MH_CH_IND_G            167        1      A
OSTF_MH_CH_IND_H            168        1      A
OSTF_MH_CHECK_VALUES        137        8      A
OSTF_MH_BYTE_COUNT          145        8      I
!
!
CITF_MH_LENGTH               4000                      ! Minimum 320, Maximum 10000
!
! Field                      Line  Offset  Size   Type
!
CITF_MD_X_ORIG               1       47      10      I
CITF_MD_Y_ORIG               1       57      10      I
CITF_MD_SCALE                3       31       9      I
!
! Field                      Number of  Offset  Size   Type
!                        Dividers
CITF_MH_DIFF_HT_LEN          8         1       5      I
CITF_MH_CH_IND_A              8        34       1      A      ! posn of NONEXT_FLAG
CITF_MH_CH_IND_B              8        35       1      A      ! posn of OSCAR_FLAG
CITF_MH_CH_IND_C              8        36       1      A      ! posn of CA_FLAG
CITF_MH_CH_IND_D              8        37       1      A      ! posn of APP_FLAG
CITF_MH_CH_IND_E              8        38       1      A      ! posn of SUPPLY_FLAG
```

!  
! The above CITF\_MH\_CH\_IND field positions are used by the LITES2 OPERATION  
! command thus:  
!  
! CITF\_MH\_CH\_IND\_A position is used for LITES2 OPERATION flag 1  
! CITF\_MH\_CH\_IND\_B position is used for LITES2 OPERATION flag 2  
! CITF\_MH\_CH\_IND\_C position is used for LITES2 OPERATION flag 3  
! CITF\_MH\_CH\_IND\_D position is used for LITES2 OPERATION flag 4  
! CITF\_MH\_CH\_IND\_E position is used for LITES2 OPERATION flag 5  
!!

It is suggested that this layout is adhered to as closely as possible to avoid spurious errors caused by accessing incorrect header fields, although some flexibility is permitted as described earlier.

-----  
**OS Map Header Translation Table Error Messages**

The following is a list of error messages which may occur in utilities that access type 3 or 4 map headers or in reading the translation table.

For each message, the message name and text are listed. The message name is the name of the message parameter, without the OSMHLIB\_\_ prefix.

---

**MESSAGES (INFORMATIONAL)**

These messages give information only, and require no immediate action by the user. They are used to provide information on the current state of the program, or to supply explanatory information in support of a warning or error message.

LINEINPAR, line 'number' of parameter file

**Explanation:** This message always appears after an error has occurred while decoding a line in the parameter file, and it informs the user of the offending line number. The previous message will have been generated by LSLLIB and the line in question will be ignored.

**User action:** The error message generated by LSLLIB most likely indicates an error in the parameter file which should be amended. Otherwise, see the relevant error message explanation.

-----  
**MESSAGES (WARNING)**

These messages are output when an error has occurred that can be corrected immediately by the user or that the program will attempt to overcome.

BLANKLINE, Blank CITF header line found

**Explanation:** A line of the CITF header was found to be totally blank which is used as the criteria which denotes the end of the header. When searching for CITF divider characters in order to located variable fields, is is possible that the header size defined in the lookup table is greater than the true header size which will result in the search running off the end of the header.

**User action:** This message should not occur as it is used to identify the end of the CITF header.

INTSIZ, Value 'integer' truncated to fit into header field of 'integer' bytes.

**Explanation:** A value was truncated to fit into a header field whose size is determined by the <size> column of the translation table, LSL\$OS\_MH\_TABLE.

**User action:** Check that the field size for the value in question is correct in the translation table pointed to by LSL\$OS\_MH\_TABLE.

STRSIZ, String 'string' truncated to fit into header field of 'integer' bytes.

**Explanation:** A string was truncated to fit into a header field whose size is determined by the <size> column of the translation table, LSL\$OS\_MH\_TABLE.

**User action:** Check that the field size for the string in question has the correct value in the translation table pointed to by LSL\$OS\_MH\_TABLE.

UNKCMD, unknown command "'command'"

**Explanation:** The given command in the parameter file was not recognised. The LINEINPAR message indicating the parameter file line number will follow, and this line will be ignored.

**User action:** This message is most likely due to an error in the translation table, LSL\$OS\_MH\_TABLE which should be amended to contain correct commands.

UNKFLG, unknown flag

**Explanation:** Unknown map header flag in translation table. Must be MH\_ONE or MH\_TWENTY.

**User action:** This message is most likely due to an error in the translation table, LSL\$OS\_MH\_TABLE which should be amended to contain correct commands.

-----  
**MESSAGES (ERROR)**

These messages indicate an error in processing which will cause the program to terminate. The most likely causes are a corrupt or otherwise invalid input file, or an error related to command line processing and file manipulation.

BADCALL, Invalid function call. Map header not type 3 or 4.

**Explanation:** A file with an MH header entry of type 3 or 4 was expected.

**User action:** Ensure that the file has the correct header type.

BADLINESIZE, Tried to write a bad line to header.

**Explanation:** An attempt was made to write a line to the header which was less than 4 characters or greater than 80. This error should not occur under normal conditions since the application program will call the routine to write the line should ensure that the line is a sensible length.

**User action:** If this error occurs, it indicates that something is wrong with the application program and the user should contact Laser-Scan.

BADOFFSET, Offset lies outside header

**Explanation:** The position of a variable field was calculated as being outside the header defined by size CITF\_MH\_LENGTH in the lookup table. It is therefore impossible to extract or insert a value into that position.

**User action:** Ensure that the number of dividers and offset of all variable fields are defined correctly into the lookup table so that all fields lie within the header.

ERRCHFLG, Change indicator flag not format A1 in lookup table

**Explanation:** A change indicator flag defined in the lookup table was not defined as alphanumeric and of field width 1. This message will be followed by another which reports the offending line number in the file.

**User action:** Ensure that all change indicator <size> and <type> values are defined as '1' and 'A' respectively in the lookup table.

ERRCIMHSIZ, CITF header size outside valid range 'integer' to 'integer'

**Explanation:** Header size read from the table defined by LSL\$OS\_MH\_TABLE is outside the range specified. The maximum size for the header is 10000 bytes and the minimum is 320 in order to accommodate the first 4 lines of the CITF [SECHREC] record.

**User action:** Correct the CITF\_MH\_LENGTH entry so that its <size> parameter inside the range reported.

ERRCISIZ, CITF field size is greater than CITF header size 'CITF header size'

**Explanation:** CITF field read from the table defined by LSL\$OS\_MH\_TABLE is larger than CITF header.

**User action:** Check that the sum of the <posn> and <size> parameters for each CITF\_ field in the table is less than or equal to the <size> parameter in the CITF\_MH\_LENGTH entry.

ERRCLOPAR, error closing parameter file 'file-spec'

**Explanation:** The parameter file could not be closed. An additional LSLLIB message will follow, giving the reason for the failure. If this is due to a system error, the system error message will also appear.

**User action:** Ascertain the cause of the failure from the messages given, and take the appropriate remedial action. If the error is due to a serious problem such as a system failure, the System Manager should be informed.

ERRFMT, error reading format from table file 'file-spec'

**Explanation:** A problem was encountered reading the table defined by LSL\$OS\_MH\_TABLE. An additional LSLLIB message will follow, giving the reason for the failure.

**User action:** Ascertain the cause of the failure from the messages given, and take the appropriate remedial action. Examine the translation table and ensure that the format field is correct.

ERRGETCITF, error getting CITF line from header.

**Explanation:** This message will be preceded by one giving a reason for the failure.

**User action:** Depends upon the details of the message preceding this one.

ERRGETFLD, error getting field from header.

**Explanation:** This message will be preceded by one giving a reason for the failure.

**User action:** Depends upon the details of the message preceding this one.

ERRINI, error initialising translation table LSL\$OS\_MH\_TABLE.

**Explanation:** This message will be preceded by one giving a reason for the failure.

**User action:** Depends upon the details of the message preceding this one.

ERRNOTCONT, OSTF change indicator flags are not contiguous

**Explanation:** One or more change indicator flags defined in the lookup table are not contiguous which is essential for OSTF as they are mapped onto an 8 character string. This message will be followed by another which reports the offending line number in the file.

**User action:** Ensure that all change indicator flags have <offset> fields which are contiguous.

ERROFFSIZ, CITF offset size is outside valid range

**Explanation:** The CITF offset value must be less than 2 because the first two characters of each CITF line are reserved for the record descriptor. The sum of the offset and field size must also be less than 79 to allow for a continuation and end-of-record character at the end of the line.

**User action:** Ensure that the <offset> and <size> values are defined so that the field inside the valid range.

ERROPNPAR, error opening parameter file 'file-spec'

**Explanation:** The parameter file could not be opened. An additional LSLLIB message will follow, giving the reason for the failure. If this is due to a system error, the system error message will also appear.

**User action:** Ascertain the cause of the failure from the messages given. There may be a simple remedy, e.g. a change in the directory specification. Alternatively, this error could be due to a more serious problem such as a system failure, and in that case the System Manager may have to be informed.

ERROSMHSIZ, OSTF header size greater than maximum size 'max header size'

**Explanation:** Header size read from the table defined by LSL\$OS\_MH\_TABLE is too large.

**User action:** Correct the OSTF\_MH\_ONE and OSTF\_MH\_TWENTY entries so that their <size> parameters add up to less than or equal to the maximum size.

ERROSSIZ, OSTF field size is greater than OSTF header size 'OSTF header size'

**Explanation:** OSTF field read from the table defined by LSL\$OS\_MH\_TABLE is larger than OSTF header.

**User action:** Check that the sum of the <posn> and <size> parameters for each OSTF\_ field in the table is less than or equal to the sum of the <size> parameters of the OSTF\_MH\_ONE and OSTF\_MH\_TWENTY entries.

ERRPUTCITF, error inserting CITF line into header.

**Explanation:** This message will be preceded by one giving a reason for the failure.

**User action:** Depends upon the details of the message preceding this one.

ERRPUTINT, error inserting integer field into header.

**Explanation:** This message will be preceded by one giving a reason for the failure.

**User action:** Depends upon the details of the message preceding this one.

ERRPUTSTR, error inserting string field into header.

**Explanation:** This message will be preceded by one giving a reason for the failure.

**User action:** Depends upon the details of the message preceding this one.

ERRRDCH, error reading character value from the header.

**Explanation:** An error occurred while trying to read a value of type string from the header. The value of MH\_STRLEN will be zero.

**User action:** Ensure that the position and size of the field in the translation table are correct.

ERRRDINT, error reading integer value from the header.

**Explanation:** An error occurred while trying to read a value of type integer from the header. The contents of MH\_I\_VALUE will be zero.

**User action:** Ensure that the position and size of the field in the translation table are correct.

ERRRDPAR, error reading from parameter file 'file-spec' at line 'number'

**Explanation:** The given line could not be read from the parameter file. An additional LSLIB message will follow, giving the reason for the failure. If this is due to a system error, the system error message will also appear. The program exits immediately.

**User action:** Ascertain the cause of the failure from the messages given, and take the appropriate remedial action. If the error is due to a serious problem such as a system failure, the System Manager should be informed.



FLDNOTINT, Field for insertion into header expected as integer.

**Explanation:** An attempt was made to insert an integer field into the header that was not declared as an integer in the translation table LSL\$OS\_MH\_TABLE.

**User action:** Check that the fields specified in the translation table are of the type expected.

FLDNOTSTR, Field for insertion into header expected as string.

**Explanation:** An attempt was made to insert a string field into the header that was not declared as a string in the translation table LSL\$OS\_MH\_TABLE.

**User action:** Check that the fields specified in the translation table are of the type expected.

NOCONTCHAR, No continuation flag ending CITF header line 'integer'

**Explanation:** The reported line of the CITF header did not have a continuation character (0 or 1) in the penultimate position before the end of record {EOR} character.

**User action:** Examine the header at the line reported and try to establish why the continuation character is missing. Use the OS Map Header Editor to correct the header if possible or convert the file to text and do so.

NOEORCHAR, No {EOR} character ending CITF header line 'integer'

**Explanation:** The reported line of the CITF header was not terminated by the end of record {EOR} character (usually the '%' character).

**User action:** Examine the header at the line reported and try to establish why the {EOR} character is missing. Use the OS Map Header Editor to correct the header if possible or convert the file to text and do so.

NOFILE, file pointed to by LSL\$OS\_MH\_TABLE does not exist

**Explanation:** The logical name LSL\$OS\_MH\_TABLE has been defined as referencing a file that cannot be found.

**User action:** Check that the logical points to a valid table filename.

NOLOG, logical LSL\$OS\_MH\_TABLE undefined

**Explanation:** The logical name LSL\$OS\_MH\_TABLE defined to reference the translation table has not been defined.

**User action:** Set up the logical using VMS command DEFINE.

NOSECHREC, no SECHREC record descriptor found in header

**Explanation:** The line numbers and offsets defined in the lookup table start from the SECHREC (the 07 record) which may not necessarily be at the start of the file. The map header was scanned and no '07' records descriptor denoting the Section Header Record was found.

**User action:** All type 4 Map Headers intended to have fields extracted from them must have a Section Header Record present.

NOSUCHFIELD, invalid header field - not defined in lookup table.

**Explanation:** An attempt was made to extract or insert a field from the header. Either the routine was called with a bad header field or one of the fields in the lookup table is not defined.

**User action:** Check that the field specified as the argument is one of those in the lookup table and that the lookup table has all of the required commands defined.

ODDSIZE, CITF line too short at header line 'integer'

**Explanation:** The reported line of the CITF header was not a sensible size. The minimum permissible size for a line is 4 character, albeit a strange one. Each line must have 2 characters at the start denoting the record descriptor, and 2 at the end for the continuation flag and end of record {EOR} character.

**User action:** Examine the header at the line reported and try to establish why the line is so short. Use the OS Map Header Editor to correct the header if possible or convert the file to text and do so.

TOOFEWDIVS, Too few dividers in SECHREC

**Explanation:** When searching the SECHREC record for the CITF DIVIDER characters (usually a backslash) to determine the offset of variable fields, the end of the header was encountered before all the dividers were found. Only as many lines as defined by the CITF header size in the lookup table will be used to search for divider characters.

**User action:** Ensure that the header has the correct number of dividers delimiting the variable length fields and that the entries in the lookup table defining the change indicator flags have a sensible number for the number of dividers. Also ensure that the CITF header length is correct to the nearest line.

---

**MESSAGES (OTHER)**

In addition to the above messages which are generated by the program itself, other messages may be produced by the command line interpreter (CLI) and by Laser-Scan libraries. In particular, messages may be generated by the IFF library and by the Laser-Scan I/O library, LSLLIB. IFF library messages are introduced by '%IFF' and are documented in the IFF library users' guide. In most cases IFF errors will be due to a corrupt input file, and this should be the first area of investigation. If the cause of the error cannot be traced by the user, and Laser-Scan are consulted, then the output file should be preserved to facilitate diagnosis. LSLLIB messages are introduced by '%LSLLIB' and are generally self-explanatory. They are used to explain the details of program generated errors.

## CHAPTER 3

### I2OSTF UTILITY

---

## UTILITY I2OSTF

---

### FUNCTION

I2OSTF reads a series of IFF files, each containing an Ordnance Survey (OS) style map, and outputs OSTF format data to file or magnetic tape. The user may select which of the OSTF/DMC forms (described in the FORMAT section) is required by use of a qualifier on the command line.

---

### FORMAT

\$ I2OSTF input-file-spec output-file-spec

#### Command qualifiers

/ASCII  
/[NO]ASK\_IF\_SIM  
/[NO]AUTO\_PLUS  
/BLOCKSIZE=integer  
/[NO]BYTE\_COUNT  
/CONTRACTOR=string  
/DEBUG  
/DENSITY=integer  
/EBCDIC  
/[NO]FRT[=file-spec]  
/[NO]IFF\_POINTSIZE  
/[NO]INDEX  
/INPUT\_LIST=file  
/[NO]MH\_CHECK  
/OSTF\_VERSION=integer  
/[NO]PLUS  
/[NO]PROCESS\_CODES  
/[NO]SERIAL\_MAGTAPE  
/[NO]SIM

#### Defaults

/ASCII  
/NOASK\_IF\_SIM  
/NOAUTO\_PLUS  
/BLOCKSIZE=1800  
/BYTE\_COUNT  
ID in map header  
No debug information  
/DENSITY=1600  
/ASCII  
/NOFRT  
/IFF\_POINTSIZE  
See text  
None  
/MH\_CHECK  
/OSTF\_VERSION=4  
/NOPLUS  
/NOPROCESS\_CODES  
/NOSERIAL\_MAGTAPE  
/NOSIM

---

### PROMPT

\_From:           input-file-spec  
\_To:             output-file-spec

---

### PARAMETERS

input-file-spec

- specifies a list of input files. These take their default device, extension and versions to be LSL\$IF:.IFF;0 and a 'rolling default' is applied to the list, as in the standard VMS manner. IFF files are read and output in the order that they are specified in.

Note that the input files may instead be given in an options file specified with the /INPUT\_LIST qualifier.

#### output-file-spec

- specifies the name of the output OSTF file. The output specification may be
  - o the name of a magnetic tape drive (with the tape mounted /FOREIGN), in which case data will be written as a single 'file' terminated by two tapemarks. For the program to detect that a tape drive is being specified, the device name must be terminated by a colon (for instance MT:).
  - o a standard filename, the default extension being .OSTF  
If a file with the specified name already exists a new file will be created with the version number incremented by one.
  - o the name of a magnetic tape drive connected via a DIL controller. In this case the controller is connected to the VAX computer by a serial interface. The /SERIAL\_MAGTAPE qualifier is required to inform the program that it is actually outputting through a DIL controller. The data format written to the tape is identical to that for a normal magnetic tape device.

---

#### COMMAND QUALIFIERS

##### /ASCII

- specifies that the output data is to be written in ASCII, and is the default.

##### /ASK\_IF\_SIM

##### /NOASK\_IF\_SIM (default)

- prompts the user for whether each IFF file is SIM or not. The default is /NOASK\_IF\_SIM. This qualifier overrides the /SIM and /NOSIM options (whether they are on the command line, or in a specification file).

##### /AUTO\_PLUS

##### /NOAUTO\_PLUS (default)

- specifies that the output is to be OSTF+ if the input file is IFF revision level 1. If the input file is IFF revision level 0 then OSTF+ data is not produced. If there is more than one input file, then OSTF+ data is produced if at least one of them is IFF revision level 1.

##### /BLOCKSIZE=integer

- used to select the size of the blocks in which the data is output. The default block size is 1800 characters.

If output is to magnetic tape, then the blocks written to the tape will be of this size. If output is to a file, then the block size is only relevant for internal buffering - records are written when each block is completed.

/BYTE\_COUNT (default)  
/NOBYTE\_COUNT

- specifies whether or not a file byte count is to be calculated and written to the normal position in a type 2 IFF OS map header. A type 3 IFF OS map header (for use by Ordnance Survey Great Britain only) will have the byte count inserted into the header at the position specified in the translation table, LSL\$OS\_MH\_TABLE. For more information on the translation table, refer to the DATA PREPARATION section in the IFFOSTF chapter.

The byte count will be the total of all countable characters (as per the OS specification) from the first space of the -1 record (typically '~~-1~~~0') to the last character of the -2 record (typically '~~-2~~~0') of the OSTF file (inclusive).

/BYTE\_COUNT is the default and involves processing the IFF file twice; the first time to calculate the byte count and the second to write the OSTF file.

**NOTE:** There may be a significant increase in processing time due to the byte count and for those users who do not require it, there is the facility to disable it with /NOBYTE\_COUNT.

/CONTRACTOR=string

- for OSTF-3 and OSTF-4 a contractors ID is required, for insertion into the OSTF auxiliary map header. Until late 1988 a single ID number was assigned to companies supplying data to Ordnance Survey. The contractors ID now assigned by OS consists of a primary code and a secondary code, each of which have two alphanumeric characters.

This qualifier takes a 4 character string, the first two characters of which are the primary code, and the second two the secondary code. /CONTRACTOR overrides the value contained in the map header, which is the default. For OSTF-3, a primary code of 00 should be used. The qualifier is ignored for earlier versions of OSTF output.

/DEBUG

- requests that extra information be output to the terminal, and is intended for program development purposes.

/DENSITY=integer

- used to select the density at which the magnetic tape will be written. It is ignored if output is not to a magnetic tape. The default density is 1600 bpi, the only other supported density being 800 bpi.

/EBCDIC

- specifies that the output data is to be translated into EBCDIC. The default is to output the data as ASCII text.

/FRT[=file-spec]  
/NOFRT (default)

- specifies an FRT file which the program will read and use to interpret non-standard AC entries and CB attributes in IFF revision 1 input files. /FRT is not necessary for IFF revision 0 input files.

The default file-specification is LSL\$FRT:OS.FRT, and if a file-specification is given, it is parsed against this default.

/IFF\_POINTSIZE (default)  
/NOIFF\_POINTSIZE

- specifies that the IFF text heights are in point sizes. /NOIFF\_POINTSIZE specifies that IFF text heights are in hundredths of a mm. The default is /IFF\_POINTSIZE.

/INDEX  
/NOINDEX

- requests that the program should output the index at the start of the output data, which is the default action for OSTF versions 1 to 4. /NOINDEX requests that the program should not output the tape index at the start of the output data. This option is normally used when outputting a single IFF file to a disk file, when the index would just take up space. Both forms of the qualifier are ignored for /OSTF\_VERSION=0, which never outputs an index.

/INPUT\_LIST=file

- names an input specification file containing the names of the input IFF files. The default extension is .OPT

If this qualifier is given, then all input IFF files must be specified within the named file - an input list on the command line is not recognised. The /SIM and /NOSIM qualifier on the command line are also not allowed.

The input specification file contains the names of the IFF files to be used for input, one per line, in the order they are to be read. The standard default of LSL\$IF:.;0 is applied to each filename, and each line may also contain a /SIM or /NOSIM (the default) qualifier, to specify that that particular file is, or is not, SIM. Note that the /ASK\_IF\_SIM qualifier on the command line still overrides these selections. Blank lines are not allowed.



/MH\_CHECK

- used to check that the Eastings, Northings and scale within a type 3 map header (MH) entry correspond to the values in the map descriptor (MD) entry. If they do not correspond, the program will abort and no OSTF file will be created. For type 3 OS map headers, Laser-Scan regard the definitive values for the Eastings, Northings and scale to be those in the map descriptor and recommend that these be updated in the MD entry using ITRANS/DESCRIPTOR.

/OSTF\_VERSION=integer

- used to select the type of OSTF to be output. The version specified is a number between 0 and 4, and corresponds to the version numbers described in the FORMAT section. The default value is 4. If /PLUS has also been specified, the only valid version numbers are 3 or 4.

/PLUS

/NOPLUS (default)

- specifies that the output is to be OSTF+. OSTF+ contains the additional entries -23, -24 and -25, and the first byte of each coordinate record is interpreted as the plan capture method. /PLUS requires either /OSTF\_VERSION=3 or /OSTF\_VERSION=4, the latter being present by default. The default is /NOPLUS.

/PROCESS\_CODES

/NOPROCESS\_CODES (default)

- specifies whether or not process codes (-16 records) are output. The default action (/NOPROCESS\_CODES) will suppress them and /PROCESS\_CODES will cause them to be output to the OSTF file.

/SERIAL\_MAGTAPE

/NOSERIAL\_MAGTAPE (default)

- indicates that the standard output for the program is a magnetic tape drive connected via a DIL serial controller interface. The qualifier is ignored if output is to a device which is mounted /FOREIGN (in which case output is to a standard magnetic tape drive). If output is requested to a terminal device, then it will be assumed that this is the DIL controller.

The /NOSERIAL\_MAGTAPE qualifier counteracts the /SERIAL\_MAGTAPE qualifier, and would normally be used to allow output to a terminal when the I2OSTF symbol is defined as (for instance)

I2OSTF == "\$ls1\$exe:i2ostf/contr=2/serial\_magtape"

/SIM

/NOSIM (default)

- may be used if the input IFF files are specified in a list on the command line. The default is /NOSIM. Neither form of the qualifier is allowed on the command line if the /INPUT\_LIST qualifier is used.

If /SIM is specified, then all of the IFF files are assumed to be SIM. Conversely, if /NOSIM is specified, then they are assumed not SIM. Note that the /ASK\_IF\_SIM qualifier overrides these assumptions.

---

## RESTRICTIONS

- o /ASCII and /EBCDIC are mutually exclusive
- o /INPUT\_LIST and /SIM are mutually exclusive
- o /ASK\_IF\_SIM takes precedence over /[NO]SIM
- o /INPUT\_LIST takes precedence over an input file specification
- o /PLUS requires either /OSTF\_VERSION=3 or /OSTF\_VERSION=4
- o IFF revision 1 input files require /FRT

---

## DESCRIPTION

### Command line

The symbol I2OSTF is normally set up as

```
I2OSTF == "$ls1$exe:i2ostf/contr=xxxx"
```

where 'xxxx' is the appropriate contractors ID, so that the program may then be used as if it were a normal VMS utility.

Sites which normally output data via a DIL serial port magnetic tape driver will generally define the symbol as

```
I2OSTF == "$ls1$exe:i2ostf/serial/contr=xxxx"
```

### Input IFF files

The IFF files are assumed to contain valid OS style maps and IFF revision 0 files should conform to the standards set in the DATA PREPARATION section under the heading 'Preparation for digitising data to be output to OSTF'.

The revision level of the IFF files can be 0 or 1, and I2OSTF will accept a mixture on input. Note, however that an FRT file is also required if any of the input files are revision 1.

I2OSTF can only translate MH entries which are type 2 or 3. If an IFF file with a type 3 MH entry is given, the header entry will be copied across to the OSTF file as an ASCII block. The translation table, LSL\$OS\_MH\_TABLE, will be read in order to obtain the length of the header in the OSTF file. Refer to the DATA PREPARATION section for information on how to set up the translation table.

### **Program action**

The program first opens each IFF file and reads the map header to obtain the information required for the index. At this stage it prompts the user to reply whether or not the file is SIM, if the /ASK\_IF\_SIM qualifier was specified. The output medium is then opened, and a report displayed detailing what is to be done.

Each IFF file is then processed in turn. Only those IFF entries whose data can be stored in OSTF are processed, the others such as the HI (HISTORY) and MD (Map Descriptor) being ignored.

If any obsolete or superceded (i.e. pre-OSTF-4) fields in the MH (Map Header) entry have been set, these are either ignored or used for the appropriate OSTF-4 header entries. Such fields are only output to earlier OSTF forms if there is an equivalent OSTF-4 entry

Only layer 1 of the IFF file will be output. Layers 0, 11 and 32 will be ignored, and the presence of any other layers will generate an error message.

If the IFF coordinates of points in line features are very close together, they may have the same OSTF coordinates after conversion. The duplicated points are ignored and a warning message is output.

Only AC (Ancillary Code) types CONTOUR, LH\_boundary and RH\_boundary are processed, unless /PLUS or /AUTO\_PLUS is specified, when SURVEY\_DATE, CHANGE\_DATE, CHANGE\_TYPE and SECURITY\_MARKER are also processed. Any other AC types are ignored. Z-coordinates in ZS and CB entries, and other attributes in CB entries are all ignored unless /PLUS or /AUTO\_PLUS is specified. With /PLUS or /AUTO\_PLUS, Z, DHeight, CAPTURE\_XY and CAPTURE\_Z are processed.

Composite texts (i.e. features containing TS (Text Status) entries) will be broken up into separate text features.

After all the IFF files have been processed, the number of OSTF blocks output is displayed and the output medium is closed.

---

## EXAMPLES

In the following examples, the symbol I2OSTF was set up to include the /CONTRACTOR qualifier, as described in the section above.

```
$ I2OSTF/INPUT_LIST=FILES/SIM ALL_FILES<CR>
```

```
%CLI-W-CONFLICT, illegal combination of command elements - check documentation  
\INPUT_LIST\  
ELAPSED:      0 00:00:00.44  CPU: 0:00:00.14  BUFIO: 2  DIRIO: 0  FAULTS: 72
```

```
$
```

In this example the user has specified the /SIM qualifier with the /INPUT\_LIST qualifier, the latter specifying that a list of input files is to be read from the text file FILES.OPT. These two qualifiers cannot be used together; however, with /INPUT\_LIST, /SIM or /NOSIM can be specified after each of the filenames in the text file. Alternatively, /ASK\_IF\_SIM could be used on the command line to prompt the user to reply whether or not each of the files is SIM.

```
$ I2OSTF/INPUT_LIST=FILES/ASK_IF_SIM ALL_FILES<CR>
```

```
Is LSL$IF:NZ2741NW.IFF;0 SIM? Y<CR>
```

```
Is LSL$IF:SO7643.IFF;0 SIM? <CR>
```

- OSTF output to file ALL\_FILES.OSTF
- writing in ASCII, 1800 characters per block
- output is OSTF version 4 (current OSTF)

```
Processing file: LSL$IF:NZ2741NW.IFF;0
```

```
Processing file: LSL$IF:SO7643.IFF;0
```

```
381 OSTF blocks output to file ALL_FILES.OSTF
```

```
ELAPSED:      0 00:06:55.84  CPU: 0:04:21.54  BUFIO: 78  DIRIO: 1143  FAULTS: 191  
$
```

This example illustrates the use of /INPUT\_LIST together with /ASK\_IF\_SIM. The input filenames NZ2741NW and SO7643 are read from the text file FILES.OPT, and output is directed to the disk file ALL\_FILES.OSTF in the current directory. Before processing starts, the user is asked to answer whether or not each file is SIM. In this case the first one is, while the second one is not. A message informs the user when each input file is being processed, and when all are complete, the number of blocks written to the output file is displayed.

**\$ I2OSTF/NOINDEX/OSTF\_VERSION=0 CODETEST CODETEST<CR>**

- OSTF output to file CODETEST.OSTF
- writing in ASCII, 1800 characters per block
- output is OSTF version 0 (old DMC)
- suppressing output of OSTF index

Processing file: LSL\$IF:CODETEST.IFF;0

60 OSTF blocks output to file CODETEST.OSTF

ELAPSED: 0 00:00:42.52 CPU: 0:00:39.14 BUFIO: 25 DIRIO: 192 FAULTS: 139  
\$

In this example a DMC file (OSTF version 0) has been produced from a single IFF file. Since an index would be redundant, the /NOINDEX qualifier has been used. Again, a message appears to indicate that the file is being processed, and this is followed by another indicating the number of blocks output.

**\$ I2OSTF/PLUS/FRT=OSTF\_PLUS SP7841SW MS:<CR>**

- OSTF output to magtape MS:
- writing in ASCII, 1800 characters per block, at 1600 bpi
- output is OSTF version 4 (current OSTF+)

Processing file: LSL\$IF:SP7841SW.IFF;0

69 OSTF blocks output to magnetic tape MS:

ELAPSED: 0 00:01:06.00 CPU: 0:00:50.61 BUFIO: 20 DIRIO: 275 FAULTS: 404  
\$

In this example output is to magnetic tape. The /FRT qualifier has been specified because the IFF file is revision 1, and OSTF+ has also been requested by means of the /PLUS qualifier. Note that /OSTF\_VERSION=4 is present by default and was therefore not given explicitly.

-----  
**MESSAGES (INFORMATIONAL)**

These messages give information only, and require no immediate action by the user. They are used to provide information on the current state of the program, or to supply explanatory information in support of a warning or error message.

BADFEATURE, error occurred in feature 'integer'

**Explanation:** This message may be output after a NOTFOUND fatal error message, giving the feature code of the feature in which the error occurred.

**User action:** As for the NOTFOUND fatal error message.

IGNANG, ignoring the RO entry

**Explanation:** This message is output after the DISTANG warning message, to confirm the action being taken by the program.

**User action:** As for the DISTANG warning message.

LISTRD, reading input specification file "'file-spec'", line 'integer'

**Explanation:** This message is output after an LSLLIB or other message, reflecting an error in reading the /INPUT\_LIST file.

**User action:** Dependant upon the associated messages.

MHVAL, BGI = 'integer', source scale = 'integer', origin = 'X', 'Y' - should all be positive

**Explanation:** This message is output after the MHERR error message, to clarify what is wrong with the map header. See the MHERR error message for further explanation.

**User action:** As for the MHERR error message.

USEBLANK, using a blank 'name'

**Explanation:** This message may be output after the BADDATE or INVALIDDATE warning messages, and may refer to either a survey date or change date.

**User action:** As for the BADDATE and INVALIDDATE warning messages.

USEFSN, using FSN 'fsn'

**Explanation:** If the feature serial number of a feature is illegal, and a replacement is being used, then this message will be given.

**User action:** As for the message preceding this one, which should explain why the substitute FSN is being used.

USEZERO, using date 00-00-00

**Explanation:** This message is output after the AMENDATE warning message.

**User action:** As for the AMENDATE warning message.

USEZEROCH, using a value of "0" for attribute 'name'

**Explanation:** This message may be output after the BADCHATT or ILLEGCHATT warning messages, and may refer either to a feature change type or to a point capture method.

**User action:** As for the BADCHATT and ILLEGCHATT warning messages.

-----  
**MESSAGES (WARNING)**

These messages are output when an error has occurred that can be corrected immediately by the user or that the program will attempt to overcome.

BADAC, unrecognised AC type 'name' in feature 'fsn'

**Explanation:** OSTF can be used to transmit AC data from IFF revision 0 files corresponding to standard AC types CONTOUR, LH\_boundary, and RH\_boundary - that is, integer contour heights, and left/right boundary coding. If any other type of AC is found, then this message will be output and the AC will be ignored. Note that OSTF+ AC types SURVEY\_DATE, CHANGE\_DATE, CHANGE\_TYPE and SECURITY\_MARKER should only appear in IFF revision 1 files.

**User action:** Determine whether the ACs are being correctly ignored. If they are OSTF+ AC types, create a revision 1 version of the IFF file and consider producing OSTF+ data. A revision 1 version of the IFF file can be created simply by reading it into LITES2 and exiting, ensuring that the output revision level for your process is set to 1. Alternatively, if the AC's represent data that should be transmitted in OSTF, consider other representations for that data within the IFF file.

BADACPAIR, multiple ACs of same type on same side in feature 'fsn'

**Explanation:** A feature with boundary ACs may have several ACs of different types on each side of the boundary. However, it is not possible to have more than one AC of a particular type on the same side. For instance, the left side of a boundary cannot be in two counties at the same time. If the program finds a feature which does have several ACs of the same type on one side of the feature, then it will output this message and ignore all but the first of the offending ACs.

**User action:** Edit the IFF file using LITES2 or IPATCH to remove the offending ACs, or to correct their AC type.

BADCHATT, invalid value 'integer' for attribute 'name', in feature 'fsn'

**Explanation:** In OSTF+ data, the range of values that the capture method or change type may take are defined in the associated FRT file. This message indicates that the specified feature contained a change type or point capture method with a value outside the specified range. A capture method of "0" will be transmitted, instead

**User action:** Edit the IFF file using either IPATCH or LITES2 to correct the offending feature.

BADDATE, invalid value 'integer' for 'name', in feature 'fsn'

**Explanation:** In OSTF+ data, the range of values that a survey date or change date may take are defined in the associated FRT file. This message indicates that the specified feature contained a survey date or change date (held as an AC) with a value outside the specified range. The AC is ignored and a blank field will be transmitted instead



**User action:** Use IPATCH or LITES2 to edit the offending AC, and run I2OSTF again.

BADMMSIZ, invalid IFF text size 'integer' (mm/100), in feature 'fsn'

**Explanation:** In OS data, text point sizes must be within the range 1 to 24, although not all values in that range are actually meaningful. This message indicates that the specified feature contained a text with a IFF size in mm/100 that is not a meaningful OS point size. A point size of 24 will be transmitted

**User action:** Edit the IFF file using either IPATCH or LITES2 to correct the offending feature - text sizes (mm/100) are held in the TH entry of a text feature.

BADPTSIZ, unknown point size 'integer', in feature 'fsn'

**Explanation:** In OS data, text point sizes must be within the range 1 to 24, although not all values in that range are actually meaningful. This message indicates that the specified feature contained a text with a point size that is not defined. A point size of 24 will be transmitted, instead

**User action:** Edit the IFF file using either IPATCH or LITES2 to correct the offending feature - point sizes are held in the TH entry of a text feature.

BIGFSN, FSN 'fsn' is too large (maximum is 'integer')

**Explanation:** OSTF imposes a limit on the largest feature serial number that may be transmitted. This limit is 19999 for OSTF-3, and 9999 for OSTF-0 to OSTF-2. The program will output the feature with a lower feature serial number, determined by taking the erroneous FSN modulus the maximum permitted.

**User action:** Since feature serial numbers in OSTF should be sorted into ascending order, the corrective action taken will generate an incorrect OSTF file. If there are more than 9999 or 19999 features in your IFF file, consider outputting the data as several OSTF files - for instance, using LITES2 to split the file up, and then using the IMP utility IRENUMBER to renumber the features into ascending order. If there are actually fewer features in the file, then use the IMP utility IRENUMBER to renumber them.

CHUCKED, point attributes lost

**Explanation:** The input IFF file contains either ZS entries or CB entries with attributes (Z, DHeight, CAPTURE\_XY, CAPTURE\_Z). These can only be transmitted to OSTF+, and since ordinary OSTF is being produced, the attributes are lost.

**User action:** If OSTF+ output is actually what is required, run the program again, specifying /PLUS on the command line.

DISTANG, symbol or text feature 'fsn' has 2 points and RO

**Explanation:** A text or oriented symbol uses either two points or one point and a rotation to define the angle at which it is to be plotted. A scaled symbol always uses two points. This message is output if the feature concerned has both two points in its ST entry, and a rotation in an RO entry. The RO entry will be ignored, and the IGNANG message output to confirm what is happening.

**User action:** Inspect your flowline to find out why the feature has a redundant point or rotation entry, and correct it.

DUPPTS, duplicated points in feature 'fsn' (point 'number')

**Explanation:** The duplicated points are the point numbered in the message and the previously accepted point (normally the previous point, unless it was also duplicated). IFF coordinates have a smaller resolution than OSTF coordinates, so points which are very close in terms of their IFF coordinates may be equal on translation to OSTF. This can happen with lines, and since there is no need for spurious data, the duplicated points are ignored. If this message refers to the first two points of a line feature, or to a symbol or text, it will be followed by the FIRST2 warning message.

**User action:** In the case of lines, determine why successive points are so close. Generated curves, arcs and circles may exhibit this problem if their construction tolerances were very small. The problem can also occur where lines have been clipped to sheet edges, and existing points were already positioned very close to the edge. The situation can generally be resolved by making small changes in operational procedures. For symbols and texts, see the FIRST2 warning message.

FIRST2, first 2 pts the same - cannot calculate angle in feature 'fsn'

**Explanation:** This message will always be preceded by the DUPPTS warning message. OSTF requires that an alignment be output for each feature (to aid the OS in positioning feature serial number annotation on plots). This angle is calculated from the first two points of a feature (and is zero for features with only one point). If the first two points of a feature are the same, then the program will output this message, and try the first and third points (and so on). Note that for line features it is the OSTF coordinates which are checked, whereas for scaled symbols and texts with an orientation point the IFF coordinates are used. In the latter case the second point is used simply to derive the orientation (and distance for scaled symbols). In such cases the feature will be output with an orientation of zero and no scaled distance.

**User action:** For line features, see the DUPPTS warning message. For symbols and texts, determine why the IFF file contains duplicate points at the start of the feature. Laser-Scan digitising utilities should not produce such data. If the cause of the problem is not apparent, and Laser-Scan are consulted, then provide full details of the flowline used, as well as all intermediate files.

FSNZERO, feature with FSN 0 contains data - outputting it

**Explanation:** Features with FSN 0 have historically been used as 'marker' features, and consisted of an NF entry immediately followed by an EF. In normal processing they could be ignored, and FSN 0 is no longer used in modern IFF files. This message is output if a feature with FSN 0 is found, and it actually contains data. The program will output the data anyway.

**User action:** Edit the IFF file using IPATCH or LITES2 to correct the offending FSN, as it should not be zero. Determine why such a feature was created, and correct the relevant part of the flowline.

ICLDATE, 'code' - illegal date 'integer' (should be from 'min' to 'max')

**Explanation:** Some dates are stored in the OS map header as ICL binary days, and this message indicates that a value outside the legal range has been found. The code indicates which date is in error; MHDIDB is the date of initial databanking, MHSDUP is the digital update date, and MHSTRD is the structure date. A system error message will also be output, and this will be followed by the USEZERO message, indicating that the program is using a binary date of zero.

**User action:** If the IFF file has been created or edited using standard Laser-Scan software, then the date should be correctly defined. If it is not obvious why the date is incorrect (for instance, the file might have been produced by translation from an OSTF tape using OSTF2I, and not have had a date defined in the OSTF data), then it may be necessary to report a problem to Laser-Scan. In this case, please supply details of the flowline used to produce the IFF file, as well as the file itself, and any intermediate files.

IGNORE, feature 'integer' will be ignored

**Explanation:** This message is given when an empty feature is encountered or a line feature is found to degenerate into a point at OS resolution. The program will ignore such features.

**User action:** Use IPATCH to delete empty features. The treatment for degenerate line features is more problematical as they may not be degenerate at IFF resolution.

ILLBOUND, boundary ACs (types 4,5) not allowed in OSTF-0

**Explanation:** OSTF-0 does not support boundary data, and will thus ignore any ACs of type 4 or 5 (LH\_boundary or RH\_boundary), with this message.

**User action:** If boundary ACs are to be transmitted, then a higher level of OSTF must be used.

ILLEGCHATT, invalid value 'integer' for attribute 'name', in feature 'fsn'

**Explanation:** In OSTF+ data, the values that the capture method or change type may take must be able to be stored in eight bits. This means that the value must be in the range -128 -> +127. A capture method for one of the points in this feature or the change type for this feature falls outside the aforementioned range. A capture method of "0" will be transmitted, instead

**User action:** Edit the IFF file using either IPATCH or LITES2 to correct the offending feature. The FRT should specify capture methods and change types within the range -128 -> +127

INVALIDDATE, invalid value 'integer' for 'name', in feature 'fsn'

**Explanation:** A survey date or change date (held as an AC) in the specified feature could not be converted into day,month,year format. The AC is ignored and a blank field will be transmitted instead

**User action:** Use IPATCH or LITES2 to edit the offending AC, and run I2OSTF again.

MHUPGRADE, cannot fully upgrade IFF map header

**Explanation:** Once the IFF map header has been read in, it is upgraded internally to the OSTF-4 standard ready for output. (The IFF file is not altered.) This message appears when a problem has occurred with the upgrade procedure. It is most likely due to one of the old digital update dates or the old selected revision date having been corrupted. The latest of these dates is used for the new digital update date which is stored in the OS map header as ICL binary days. A system error message will also be output, and this will be followed by the USEZERO message, indicating that the program is using a binary date of zero.

**User action:** If the IFF file has been created or edited using standard Laser-Scan software, then the dates should be correctly defined. If it is not obvious why any of the dates are incorrect (for instance, the file might have been produced by translation from an OSTF tape using OSTF2I, and not have had a date defined in the OSTF data), then it may be necessary to report a problem to Laser-Scan. In this case, please supply details of the flowline used to produce the IFF file, as well as the file itself, and any intermediate files.

NOPTS, empty CB/ZS/ST entry (no points) ignored in FSN 'fsn'

**Explanation:** The current feature contains a coordinate entry (a CB, ZS or ST entry) with no data in it. The program simply ignores this entry.

**User action:** Use IPATCH to delete the offending entry, or tidy the file up by passing it through LITES (which will remove the entry). Utility programs should never output a zero point coordinate entry, so please report this problem to Laser-Scan with complete details of the flowline through which the file has been passed.

NOTSORTED, FSNs not in order (...'fsn1','fsn2'...)

**Explanation:** OSTF requires that features have ascending feature serial numbers. The serial numbers in the OSTF data are taken from the IFF file - i.e. the FSNs. If the FSNs are not sorted into ascending order, then this message will be given whenever 'fsn2' is less than (or equal to) 'fsn1'. The data will still be output, but it is not correct OSTF.

**User action:** If the problem is simply that the FSNs are not sorted, then use the IMP utility ISORT to sort the offending IFF file into FSN order, and output the data again. If duplicate FSNs are being produced by the output of the component parts of a composite text, then use LITES2 to split the composite text into several simple text features.

ONEPTLINE, line feature 'fsn' only has one point

**Explanation:** A line feature containing only one point has been output. This could either be due to duplicated points having previously been ignored (in which case there will have been warning messages), or, more seriously, to one point lines being present in the IFF file.

**User action:** If warnings about duplicated points appeared for this feature, take action according to those messages. Otherwise, determine why the IFF file contains one point lines. If the cause of the problem is not apparent, and Laser-Scan are consulted, then provide full details of the flowline used, as well as all intermediate files.

PLUSAC, OSTF+ AC type 'name' in feature 'fsn' in revision 0 IFF file

**Explanation:** OSTF+ AC types SURVEY\_DATE, CHANGE\_DATE, CHANGE\_TYPE and SECURITYMARKER should not occur in revision 0 IFF files. Current software will however process them as if the IFF files are revision 1.

**User action:** OSTF+ AC types should only occur in revision 1 files and can only be output to OSTF+ files. If such output is required one should create a revision 1 version of the IFF file by reading it into LITES and exiting, ensuring that the output revision level is set to 1. Alternatively, if OSTF output is required, other representations for the AC data should be considered.

PTOUTSIDE, point outside sheet - in grid square 'integer','integer', feature 'fsn'

**Explanation:** This message is given if a point in a linear feature is outside the boundary of the map sheet. Only text features may be placed outside the map sheet in OSTF. The point will be output regardless.

**User action:** Unless the destination for this data is prepared to accept OSTF data with linear data outside the map sheet boundary, the IFF file must be clipped so that all linear data is within the boundary. Use the IMP utility IWINDOW with the /OS qualifier to clip the IFF file.

SKIPAC, skipping AC type 'name' in feature 'fsn'

**Explanation:** OSTF can be used to transmit IFF AC data corresponding to standard AC types CONTOUR, LH\_boundary, and RH\_boundary, that is, integer contour heights, and left/right boundary coding. IFF revision 1 files may also contain OSTF+ AC types SURVEY\_DATE, CHANGE\_DATE, CHANGE\_TYPE and SECURITY\_MARKER, which can only be transmitted to OSTF+. If any of these AC types are found in a revision 1 file and OSTF+ is not being produced, then this message will be output and the AC will be ignored.

**User action:** Determine whether or not OSTF+ data should be produced. If so, run the program again, specifying /PLUS on the command line.

SYMOUTSIDE, symbol outside sheet - in grid square 'integer','integer', feature 'fsn'

**Explanation:** This message is given if a symbol feature is outside the boundary of the map sheet. Only text features may be placed outside the map sheet in OSTF. The symbol will be output regardless.

**User action:** Unless the destination for this data is prepared to accept OSTF data with symbols outside the map sheet boundary, the IFF file must be clipped so that all symbol data is within the boundary. Use the IMP utility IWINDOW with the /OS qualifier to clip the IFF file.

TRANEBC, error translating OSTF block 'integer' to EBCDIC (block ptr 'integer')

**Explanation:** If /EBCDIC is specified, then each OSTF record is translated from ASCII to EBCDIC as it is entered into the output buffer. This error is given if something went wrong with that process. The program will attempt to continue.

**User action:** Dependant upon the associated error messages.

TXNOANG, no angle specified for text in feature 'fsn'

**Explanation:** All texts in OSTF must have an orientation associated with them, and this is normally defined in the IFF file - the text feature either has two defining points, or a single point and a rotation entry. If the text feature does not have an orientation defined, then this message is given, and an orientation of zero is output.

**User action:** Check that the text concerned should be at an orientation of zero. If it should not, then edit the IFF file using LITES2 to correct the feature.

TXOUTSIDE, text outside sheet - in grid square 'integer','integer', feature 'fsn'

**Explanation:** If OSTF-0 is being output, then marginal texts are not supported, and this message will be given for all text features outside the map sheet. If other levels of OSTF are being output, then this message will only be given if the text feature is outside the grid squares lying immediately around the sheet - that is, more than one basic grid interval beyond the sheet edge. In either case, the text will still be output.

**User action:** Unless the destination for this data is prepared to accept OSTF data with text data outside the normally allowed bounds, the IFF file must be clipped so that all linear data is within the boundary. Use the IMP utility IWINDOW to clip the IFF file.

TXTOOLNG, text has 'integer' characters in feature 'fsn' - truncated to 80

**Explanation:** Although IFF will allow longer texts in text features, OSTF only supports up to 80 characters in each text. The program will output the first 80 characters of the offending text.

**User action:** Use LITES2 to split the text into two or more text features, or into text components, each with a text field of less than 80 characters.

UNEXPENTRY, unexpected entry 'name' found between layers, at IFF address  
'hex-value' hex

**Explanation:** Normal IFF files should not contain any entries between an EO entry (marking the end of a layer) and an NO entry (marking the start of a new layer). Any IFF entries found will be complained about and ignored.

**User action:** Inspect the IFF file using IPATCH to determine what entries are actually present at the specified addresses in the file, and consult the IFF documentation to determine what sort of entries they are. If it is necessary to consult Laser-Scan, then details of the flowline used to produce the file, and any intermediate files, should also be provided.

UNEXPEOF, unexpected end of input IFF file - no EJ entry

**Explanation:** Normal IFF files should finish with an EJ entry (end of job). This message is output if the end of the IFF file is found before the EJ entry.

**User action:** Either the IFF file has been created by a utility which did not output the correct sequence of entries at the end of the file, or it is 'broken' - that is, it has been corrupted by some error or by the premature termination of a program that was creating or editing it. The IMP utility IPATCH can be used to inspect the entries at the end of the IFF file, and if it is broken then the IMP utility IMEND can be used to mend it, although data may still have been lost.

UNEXPLYR, unexpected layer 'integer' found - ignored

**Explanation:** Standard OS style IFF files contain all of the map data in layer 1, with a grid in layer 0 (or historically, in either layer 11 or 32). If any layers other than 0,1,11 or 32 are found, then they will be ignored, with this message.

**User action:** If the data in the offending layers is to be transmitted, then use the IMP utility IMERGE to merge them into layer 1. Note that it may also be necessary to use the IRENUMBER and ISORT utilities to provide unique and ascending FSNs in the resulting file.

-----  
**MESSAGES (ERROR)**

These messages indicate an error in processing which will cause the program to terminate. The most likely causes are a corrupt or otherwise invalid input file, or an error related to command line processing and file manipulation.

ACDOSTF, cannot find OSTF+ ACD definition 'name'

**Explanation:** The attribute code definition for an attribute required in the translation to OSTF+ data cannot be found. An additional message from LSLLIB will give further informatoin. The most likely cause of this error is that the attribute code has not been defined in the ACD table in the FRT file. The program will abort.

**User action:** Ensure that the ACD table in the FRT file contains the required definition, and run the program again.

BADCONTRACTOR, invalid contractor ID "%S" specified with /CONTRACTOR

**Explanation:** The contractor ID specified with /CONTRACTOR is invalid. It must consist of not more than 4 characters which should not all be blank. The first two characters are the primary code, the second two the secondary code. Blanks are allowed within the string, which will be right justified.

**User action:** Specify the contractor ID correctly using the /CONTRACTOR qualifier.

BLKEIGHT, blocksize 'integer' is not a multiple of recordsize (8 characters)

**Explanation:** The normal blocksize output to magnetic tape for OSTF is 1800 characters. Other blocksizes may be selected (with the /BLOCKSIZE qualifier), but must be a multiple of the record size, which is 8 characters. If the blocksize chosen is not a multiple of 8, then this message is output, and the program will exit.

**User action:** Specify a blocksize which is a multiple of 8.

BLKSIZE, blocksize 'integer' is greater than the maximum, 'integer'

**Explanation:** There is an internal limit (currently 2048 characters) on the size of the output buffer used within the program. If a blocksize of greater than that is specified with the /BLOCKSIZE qualifier, the program will output this message and exit.

**User action:** Specify a blocksize that is less than the specified limit.

ENDFILE, error closing output file

**Explanation:** This message is given at the end of output, after processing all of the input IFF files, if a file cannot be closed successfully. It will be followed by an LSLLIB message giving more details of the problem. The program will exit.



**User action:** Dependant upon the associated error messages.

ENDTAPE, error ending file on tape

**Explanation:** This message is given at the end of output, after processing all of the input IFF files, if the two closing tapemarks cannot be written successfully to end the OSTF data on the tape, or if the tape cannot be rewound. It will be followed by an LSLLIB message giving more details of the problem. The program will exit.

**User action:** Dependant upon the associated error messages.

INVMH, invalid map header type 'integer' - should be in the range 'min' to 'max'

**Explanation:** The program only recognises certain map header types (it assumes that only these exist). The only types recognised are currently 0,2 or 3. If the IFF file contains any other header type, the program will give this message and exit.

**User action:** An IFF file should never contain a header type other than 0,2 or 3. Please report this problem to Laser-Scan.

LISTOPN, error opening input specification file "'file-spec'"

**Explanation:** The program cannot open the specification file selected with the /INPUT\_LIST qualifier. This message will be followed by an LSLLIB message explaining the problem. The program will exit.

**User action:** Dependant upon the associated error messages.

MAXINFILE, more than 'integer' input IFF files

**Explanation:** The index at the beginning of the OSTF output can only hold a certain number of entries - currently 150. This message is given if an attempt is made to output more than that number of IFF files. The program will exit.

**User action:** Specify fewer IFF files for output to one OSTF tape.

MHERR, IFF map header has not been correctly set up

**Explanation:** This error message is given when the program attempts to output the OSTF map header entry (flag -1), but finds that one of the values that it requires from the IFF map header is less than zero. The program requires that each IFF file has the basic grid interval (BGI), the source scale and the sheet origin defined in an OS style map header. This message is followed by the informational message MHVAL, and the program will then exit.

**User action:** Use the OSMHED utility to correct the map header.

MHMDDIFF, conflicting Map Header and Map Descriptor entries

**Explanation:** One or more of the map header (MH) entries do not match the map descriptor (MD) entries. Specifically the origin Eastings, Northings and scale are tested against the values held in the MD entry of a type 3 IFF OS Map Header. This check is performed on type 3 IFF OS Map Headers by default or if the /MHCHECK qualifier is given.

**User action:** Laser-Scan recommend that the origin and scale fields are updated in the MD entry using ITRANS/DESCRIPTOR.

NEEDFRT, FRT file required for IFF revision 1 input

**Explanation:** This message appears when the input IFF file is revision level 1, and the /FRT qualifier has not been specified on the command line. The ACD table in the FRT is used to identify non-standard AC entry types and CB attribute codes. The program will abort.

**User action:** Specify an FRT file on the command line and run the program again.

NEEDOSTF3, /PLUS requires /OSTF\_VERSION=3 or /OSTF\_VERSION=4

**Explanation:** If OSTF+ output is required, the OSTF version specified should be at least 3, preferably 4. The default version number is 4, so a version number less than 3 has been given either explicitly on the command line or through any symbols which may have been set up.

**User action:** Respecify the command, either without /PLUS, or ensuring that the version number is 4.

NOCONTRACTOR, OSTF-3 and OSTF-4 need a contractor ID

**Explanation:** The auxiliary map header contains a contractor ID. For OSTF-3 there is a single field containing an integer number, and for OSTF-4 there are two fields, each containing two alphabetic or numeric characters. If OSTF-3 or OSTF-4 is being output, that ID must either be present in the IFF map header, or be specified with the /CONTRACTOR qualifier. If not, then this message is given and the program will exit.

**User action:** Either edit the IFF map header using the OSMHED utility, or specify the contractor ID using the /CONTRACTOR qualifier.

NOINFILE, specification file is empty - no IFF filenames

**Explanation:** If the file specified with the /INPUT\_LIST qualifier does not contain any IFF filespecs, then this message is given. The program will exit.

**User action:** Specify a file which does contain IFF filespecs.

NOMH, no map header in input IFF file "'file-spec'"

**Explanation:** When all of the input IFF files have been specified, the program opens each one and inspects the map header to find the data needed for the index at the start of the OSTF dataset. If any of the IFF files do not contain a map header, then this message is given and the program exits.

**User action:** All Laser-Scan utilities that create IFF files will also insert a map header (with the exception of Laseraid patch files, which do not contain map data). If a file is found with no map header, then check your flowline to find out how the file was created. If it is necessary to consult Laser-Scan, provide details of the flowline used to produce the file, and also all intermediate files.

NORIENT, A 'name' feature, FSN 'integer', has no orientation

**Explanation:** The sequence of IFF records associated with the feature have been examined and the feature has been found to have no orientation. A feature orientation is mandatory, the program will abort.

**User action:** Check the IFF records for the feature, text and symbols require two distinct IFF points in an ST/ZS/CB record to provide an orientation, or one IFF point in a ST/ZS/CB record followed by an RO record. Line features must not be purely vertical (OSTF+ only) to within OS resolution (note not IFF resolution).

OSTFVER, unknown OSTF version 'integer' - should be 'min' to 'max'

**Explanation:** The program only recognises certain versions of OSTF (it assumes that only these versions exist). The versions recognised are currently 0 to 4, inclusive. If you request any other version, the program will give this message and exit.

**User action:** Specify a supported version of OSTF.

OUTDEL, error deleting output "'file-spec'"

**Explanation:** This message will be followed by an LSLLIB message explaining what is wrong. The program will exit.

**User action:** Dependant upon the associated error messages.

OUTFILE, error in output specification "'file-spec'"

**Explanation:** The output filespec or magnetic tape name is unacceptable for some reason. This message will be followed by an LSLLIB message to explain what is wrong. The program will then exit.

**User action:** Dependant upon the associated error messages.

OUTOPEN, error opening output "'file-spec'"

**Explanation:** This message will be followed by an LSLLIB message explaining what is wrong. The most common cause is an attempt to 'open' a magnetic tape that has not been mounted. The program will exit.

**User action:** Dependant upon the associated error messages.

READFRT, error reading FRT file 'file-spec'

**Explanation:** An error occurred while reading in the FRT file. A message output by the Feature Representation Library (FRTLIB) will appear before this message, giving further information as to what has gone wrong. For example, the specified FRT file may not exist, or it may be in another directory.

**User action:** Dependant upon the associated error messages.

WRTBLK, error writing OSTF block 'integer' to magnetic tape

**Explanation:** This message will be followed by an LSLLIB message explaining what the error was. The program will attempt to continue.

**User action:** Dependant upon the associated error messages.

---

**MESSAGES (FATAL)**

These messages indicate a severe error in processing, or some form of system failure, which has caused the program to terminate.

ACDSTAND, cannot find standard ACD definition 'name'

**Explanation:** The attribute code definition for the standard attribute with the given name cannot be found. This means that there is either an error in the program or a problem with the feature representation library, FRTLIB. The program will abort.

**User action:** Please report this problem to Laser-Scan.

NOTFOUND, cannot find 'name' entry, found 'name' entry in IFF file

**Explanation:** The indicated IFF entry could not be found in the IFF file. This means either that the file has somehow become corrupted during processing, or there is a serious error in the program. The program will abort.

**User action:** Please report this problem to Laser-Scan.

---

**MESSAGES (OTHER)**

In addition to the above messages which are generated by the program itself, other messages may be produced by the command line interpreter (CLI) and by Laser-Scan libraries. In particular, messages may be generated by the IFF library and by the Laser-Scan I/O library, LSLLIB. IFF library messages are introduced by '%IFF' and are documented in the IFF library users' guide. In most cases IFF errors will be due to a corrupt input file, and this should be the first area of investigation. If the cause of the error cannot be traced by the user, and Laser-Scan are consulted, then the output file should be preserved to facilitate diagnosis. LSLLIB messages are introduced by '%LSLLIB' and are generally self-explanatory. They are used to explain the details of program generated errors.

CHAPTER 4

OSTF2I UTILITY

---

## UTILITY OSTF2I

---

### FUNCTION

OSTF2I reads input data on magnetic tape or from disk, in OS DMC or OSTF formats, and produces an IFF file for each map sheet in the input data. The user should specify whether OS text heights are stored as tenths of a millimetre (the default) or as point sizes.

---

### FORMAT

\$ OSTF2I input-file-spec output-file-spec

#### Command qualifiers

/ASCII  
/[NO]AUTO\_PLUS  
/BLOCKSIZE[=integer]  
/EBCDIC  
/[NO]FRT[=file-spec]  
/[NO]GRID[=integer]  
/[NO]HISTORY  
/[NO]IFF\_POINTSIZE  
/[NO]INDEX  
/[NO]LOWER\_LEFT  
/MH\_TYPE=integer  
/[NO]OSTEXT\_COMBINE[=keyword=integer[,...]]  
/[NO]PLUS  
/[NO]POINT\_SIZE  
/SELECT=(integer[,...])  
/[NO]SERIAL\_MAGTAPE  
/[NO]TRUNCATE

#### Defaults

/ASCII  
/NOAUTO\_PLUS  
/BLOCKSIZE=1800  
/ASCII  
/NOFRT  
/NOGRID  
/HISTORY  
/IFF\_POINTSIZE  
/NOINDEX  
/NOLOWER\_LEFT  
/MH\_TYPE=2  
/NOOSTEXT\_COMBINE  
/NOPLUS  
/NOPOINT\_SIZE  
Select all sheets  
/NOSERIAL\_MAGTAPE  
/NOTRUNCATE

---

### PROMPT

\_From: input-file-spec  
\_To: output-file-spec

---

### PARAMETERS

input-file-spec

- specifies either a magnetic tape, or a disk file. The default extension .OSTF is applied.

In either case, the file is expected to contain valid OSTF data, possibly composed of several sheets, terminated by end of file (ie two tapemarks on a magnetic tape device).



#### output-file-spec

- specifies the name of an IFF file, and is optional. If specified, then only one sheet is being output from the input file, and this defaults to the first sheet in the input. Use the /SELECT qualifier to select a different sheet.

If no output file is given, then if an output file is required, the filename for each sheet is deduced by working out the appropriate OS National Grid name - eg NZ2345NW

In both cases, the default device and extension LSL\$IF:.IFF is applied.

---

#### COMMAND QUALIFIERS

##### /ASCII

- states that the OSTF data is in ASCII, and is the default.

##### /AUTO\_PLUS

##### /NOAUTO\_PLUS (default)

- specifies that the input file be scanned for OSTF+ data, and if OSTF+ data is found then the IFF output revision level is set to 1. If OSTF+ data is not found then IFF the output revision level is set to 0.

##### /BLOCKSIZE=integer

- used to select the blocksize of the magnetic tape being read - it is ignored for disk files. The default blocksize is 1800 characters.

##### /EBCDIC

- states that the OSTF data is in EBCDIC.

##### /FRT[=file-spec]

##### /NOFRT (default)

- specifies an FRT file which the program will read
  - a) to determine which features are texts and which are oriented symbols, so that IFF RO (ROtation) entries are only output for such features, and
  - b) to enable the use of OS ACD definitions and IFF revision 1 output.

The default is /NOFRT, which results in the output of RO entries for all non-linear features regardless of whether or not the orientation is zero, and allows only IFF revision 0 output.

The default file-specification is LSL\$FRT:OS.FRT, and if a file-specification is given, it is parsed against this default.

/GRID[=integer]  
/NOGRID (default)

- results in the output of a grid in layer 0 of the output IFF file. If a grid interval is given, it is assumed that only one sheet is being output from the input file, and this defaults to the first sheet in the input. Use the /SELECT qualifier to select a different sheet.

If no grid interval is specified, the defaults used are

100 m for scales larger than 1:10000  
1000 m for scales equal to or smaller than 1:10000  
and larger than 1:250000  
10000 m for scales equal to or smaller than 1:250000

and there is no limit to the number of sheets output.

The default is /NOGRID

/HISTORY (default)  
/NOHISTORY

- results in output of a HI (HISTORY) entry in the IFF file. In addition there will also be a type 2 MD (Map Descriptor) entry with the origin and scale set. /HISTORY is the default.

/NOHISTORY outputs an old type IFF file with unset type 1 MD, and is invalid if output is to be IFF revision level 1.

/IFF\_POINTSIZE (default)  
/NOIFF\_POINTSIZE

- specifies that IFF text heights are to be output as point sizes. /IFF\_POINTSIZE is the default.

/NOIFF\_POINTSIZE specifies that IFF text heights are to be output in hundredths of a mm.

/INDEX  
/NOINDEX (default)

- specifies that only a display of the map reference limits in the index of each of the maps present in the OSTF file are required. No IFF output file is produced. The default is /NOINDEX.

/LOWER\_LEFT  
/NOLOWER\_LEFT (default)

- specifies that the lower left coordinates for texts are transferred rather than those of the digitised position.

/MH\_TYPE=integer

- used to select the type of the MH entry in the output IFF file and may only be type 2 or 3 with type 2 being the default. Refer to the description of the output files for details on the effect of this qualifier.

/OSTEXT\_COMBINE=( [FC=(integer,integer,integer)],  
                  [CATEGORY=integer,]  
                  [SIZE=integer,]  
                  [STYLE=integer])

/NOOSTEXT\_COMBINE (default)

- Pairs of symbol and text features with OSTF feature codes specified by the first two arguments in the FC keyword are combined into a single IFF text feature with a feature code specified by the third argument to the FC keyword. The coordinates of the new IFF feature are taken from the first feature (the symbol) and the text from the second feature (the text). The category, size and style of the combined feature are taken from the arguments of the CATEGORY, SIZE and STYLE keywords respectively. If /OSTEXT\_COMBINE is specified without some or all of the keywords the following default values are used:

/OSTEXT\_COMBINE = (FC=(900,555,28),  
                  CATEGORY=11,  
                  SIZE=12,  
                  STYLE=3)

Thus if all keywords are omitted a combined feature is created with FC 28 which has the coordinates from feature 900 and text from feature 555, and has category 11, size 12 and style 3. OSTF2I expects the text feature to follow immediately after the coordinate feature. If the text feature is missing a blank text field with a character count of 1 is written to the combined feature in the IFF file. If the symbol feature is not present, the text will be transferred as normal. /FRT is mandatory with /OSTEXTCOMBINE and the specified feature codes must appear in the FRT.

/PLUS

/NOPLUS (default)

- specifies that the input data is OSTF+. This means that the first byte of coordinate records will be interpreted as the plan capture method, and entries -23, -24 and -25 are expected. If output is IFF revision level 1, /PLUS requires an FRT file containing ACD definitions to be specified (see the DESCRIPTION section below). The default is /NOPLUS.

/POINT\_SIZE

/NOPOINT\_SIZE (default)

- specifies that text heights in the input are read as being point sizes - this fits the OSTF-0 specification. Values from 1 to 24 are accepted. The program will report an error if a value outside this range is encountered, and a point size of 24 will be used instead.

The default state is /NOPOINT\_SIZE, which means that the height of text strings is stored as tenths of a millimetre. This corresponds to the requirements of OSTF-1 to OSTF-4. The text heights are then converted to point sizes for storage as TH entries in the output IFF files. Values are looked up in a conversion table, with a .05 millimetre tolerance. If a height is encountered which does not translate to a point size in the table, the program will report an error and the next highest point size will be used, defaulting to 24 point if the height is outside the table range altogether.

Note that successive errors of the types described may indicate that the whole input file requires reprocessing with the correct POINT\_SIZE qualifier.

/SELECT=(integer[,...])

- used to select a list of sheets to be read from the input file. The default is to read all sheets.

The list may be a single number, or a list of sheets surrounded by parentheses. The list of sheets is made up of numbers and ranges, separated by commas, where a range is two numbers separated by a colon.

For instance,

```
/SELECT=3           will output sheet 3 only
/SELECT=(1,4,5)     will output sheets 1, 4 and 5
/SELECT=(1,3,5:7)    will output sheets 1, 3, 5, 6 and 7
/SELECT=(2:4,1)      will output sheets 1, 2, 3 and 4 (in that order)
```

If an output file-spec is given, then only one sheet may be selected.

/SERIAL\_MAGTAPE  
/NOSERIAL\_MAGTAPE

- indicates that the standard input for the program is a magnetic tape drive connected via a DIL serial controller interface.

The qualifier is ignored if input is from a device which is mounted /FOREIGN (in which case input is from a standard magnetic tape drive). If input is requested from a terminal device, then it will be assumed that this is the DIL controller.

The /NOSERIAL\_MAGTAPE qualifier counteracts the /SERIAL\_MAGTAPE qualifier, and would normally be used to allow input from a terminal when the OSTF2I symbol is defined as (for instance)

```
OSTF2I == "$ls1$exe:ostf2i/serial_magtape"
```

/TRUNCATE  
/NOTRUNCATE (default)

- specifies that input texts containing trailing spaces are to be truncated. The default is /NOTRUNCATE.

---

## RESTRICTIONS

- o /ASCII and /EBCDIC are mutually exclusive
- o /FRT required with /PLUS or /AUTO\_PLUS for IFF output revision level 1
- o /FRT required with /OSTEXTCOMBINE
- o /HISTORY required for IFF output revision level 1
- o /INDEX can be used only alone or with /ASCII, /BLOCKSIZE, /EBCDIC, /PLUS, /AUTO\_PLUS or /SERIAL\_MAGTAPE

---

## DESCRIPTION

### Command line

The symbol OSTF2I is normally set up as

```
OSTF2I == "$ls1$exe:ostf2i"
```

so that the program may then be used as if it were a normal VMS utility.

Sites which normally read data via a DIL serial port magnetic tape driver will generally define the symbol as

```
OSTF2I == "$ls1$exe:ostf2i/serial_magtape"
```

### Input files

If the input is magnetic tape on a standard tape drive, then it should be mounted /FOREIGN, with the block size declared via /BLOCKSIZE and the record size declared as /RECORDSIZE=8. Note that /BLOCKSIZE=1800 should be used if the OSTF2I block size default is to be in operation. For example,

```
$ MOUNT/FOREIGN/BLOCKSIZE=1800/RECORDSIZE=8 MT:
```

If the input is magnetic tape on a drive connected via a DIL controller then the OSTF2I qualifier /SERIAL\_MAGTAPE is required to inform the program that it is actually communicating with a DIL controller on a serial line.

The input is expected to be valid OSTF, possibly composed of several sheets, terminated by end of file (ie two tapemarks on a magnetic tape device).

### **Output files**

The default action is to output all sheets, the output filenames being deduced from the OS National Grid coordinates of the SW corners. The /SELECT qualifier can be used to specify either a single sheet or a list of sheets to be output.

There are two instances where it is only possible to output a single sheet. These are

- o when an output file-spec is specified, and
- o when the /GRID qualifier is given with an explicit grid interval.

In both cases the default is the first sheet in the input, but the /SELECT qualifier can be used to select a different sheet.

If the logical name LSL\$IFF\_OUTPUT\_REVISION has been set, IFF output revision level 1 will be produced; otherwise, it will be IFF output revision level 0. However if the /AUTO\_PLUS qualifier is specified, then the logical name LSL\$IFF\_OUTPUT\_REVISION is ignored. Further details of IFF revision levels are given in the "LAMPS Environment Guide" and the "IFF User Guide".

If the /MH\_TYPE qualifier is specified with type 2, then only selected parts of the OSTF header are written to the IFF MH entry. This is the default action and is recommended by Laser-Scan. /MH\_TYPE=3 is designed for use by Ordnance Survey (Great Britain) only.

If type 3 is specified, then the whole OSTF map header is copied across as an ASCII block using the -1 and -20 header sizes specified in the translation table, LSL\$OS\_MH\_TABLE. The values of the Eastings, Northings and scale are taken from positions within the header and inserted into the map descriptor (MD) entry. For details of how to set up the translation table, refer to the IFFOSTF DATA PREPARATION section.

Note that no output file is required if /INDEX has been given.

### **Program action**

After decoding the command line, the program reports on what was asked for, and if an index is present, the map reference limits for each of the maps is reflected. If /INDEX is in effect, the program then terminates. Otherwise, each successive 8-character record in the input data is then read, all data being output to the IFF file in layer 1. If a grid was requested, that is output in layer 0.

Immediately prior to starting the first feature, the IFF RANGE (RA), Map Header (MH), Map Descriptor (MD), New Section (NS), Cubic Coefficients (CC), and Control Point (CP) entries are output. By this time all map header data will have been read. If a new type (with HI and MD type 2 entries) or a revision level 1 IFF file is being

produced, a HHistory (HI) entry is also output.

For the Map Header, OSTF-4 or older formats are accepted, but obsolete or superceded fields are either ignored or used in the appropriate OSTF-4 field.

Whether or not a feature code is a symbol or name is determined by the flag (-7 or -8) in the input data, regardless of the information in any FRT file which might have been specified. If the flag indicates that the feature is either a symbol or a name, the FRT is then used to determine whether or not an orientation is to be output.

Coordinates are buffered up as they are read, and output either when the buffer is full or at the end of the feature. The first byte in each coordinate record is treated as the OSTF+ plan capture method, if /PLUS or /AUTO\_PLUS has been specified, and is output as the CAPTURE\_XY attribute. When the first byte is left blank, the value of the last capture method specified is assumed, unset by default.

-17 (contour height) records are output as CONTOUR AC entries.

-19 (left/right coding) records are output as LH\_boundary and RH\_boudary AC entries.

-23 (feature history) records are output as SURVEY\_DATE, CHANGE\_DATE and CHANGE\_TYPE AC entries. If a date is not present it will be set to the initial value (17-NOV-1858), and if change type is missing it will be left unset.

-24 (height) records are output as point attributes Z, DHeight, and CAPTURE\_Z. Empty fields are left as unset point attributes on output.

-25 records are output as SECURITY\_MARKER AC entries with the code set to 1.

Within texts, a text location is output if present, otherwise the calculated position of the SW corner of the text box is output. Text cross references are ignored.

---

**EXAMPLES**

**\$ OSTF2I/GRID/FRT MS: SU3621<CR>**

Input file: MS:  
Output file: LSL\$IF:SU3621.IFF  
FRT file: LSL\$FRT:OS.FRT  
ROtation only output for texts and oriented symbols  
Grid output in layer 0  
Output IFF file to contain HHistory and type 2 Map Descriptor  
Text heights read as tenths of a millimetre  
Input is in ASCII  
Assuming blocksize of 1800  
Selected sheets: 1

Index of maps - there is 1 map listed  
Map 1 from 436000, 121000 to 437000, 122000

Writing sheet 1 to IFF file LSL\$IF:SU3621.IFF  
ELAPSED: 0 00:11:05.12 CPU: 0:09:27.17 BUFIO: 45 DIRIO: 1911 FAULTS: 280  
\$

This example illustrates a successful run of OSTF2I with input of one OSTF file on magnetic tape. Output was to the IFF file LSL\$IF:SU3621.IFF, which will by default contain a HHistory (HI) and Map Descriptor (MD) type 2 entry, and which will contain a grid with the default grid interval. The default FRT file LSL\$FRT:OS.FRT was read to ascertain texts and oriented symbols for output of ROtation (RO) entries, and the IFF file produced is by default a new type one. Text heights are assumed to be in millimetres rather than point sizes, and a block size of 1800 has been assumed. Since the output IFF file was given explicitly on the command line, only one sheet has been selected.

**\$ OSTF2I/FRT=FRED MS: HERE:TEMP<CR>**

Input file: MS:  
Output file: HERE:TEMP.IFF  
FRT file: LSL\$FRT:FRED.FRT  
ROtation only output for texts and oriented symbols  
Output IFF file to contain HHistory and type 2 Map Descriptor  
Text heights read as tenths of a millimetre  
Input is in ASCII  
Assuming blocksize of 1800  
Selected sheets: 1

%FRTLIB-W-FRTERR, Error opening FRT file LSL\$FRT:FRED.FRT  
%LSLLIB-E-NOSUCHFILE, file cannot be found  
%OSTF2I-E-READFRT, Error reading FRT file LSL\$FRT:FRED.FRT  
ELAPSED: 0 00:00:00.78 CPU: 0:00:00.35 BUFIO: 15 DIRIO: 1 FAULTS: 119  
\$



This example illustrates an error detected by Laser-Scan's input/output library, LSLLIB. The Feature Representation Library, FRTLIB, has made an unsuccessful attempt at opening the specified FRT file, and the LSLLIB error returned indicates that the file does not exist. The program outputs a further message as confirmation, and exits immediately.

```
$ OSTF2I/PLUS/FRT=OSTF_PLUS [OS.OSTF]TL1659NE.PLUS TL1659NE.IFF<CR>
```

```
Input file:      [OS.OSTF]TL1659NE.PLUS;0
Output file:     LSL$IF:TL1659NE.IFF
FRT file:        LSL$FRT:OSTF_PLUS.FRT
Rotation only output for texts and oriented symbols
Output IFF file to contain HHistory and type 2 Map Descriptor
Expecting OSTF+ data
Text heights read as tenths of a millimetre
Input is in ASCII
Assuming blocksize of 1800
Selected sheets: 1
```

```
%OSTF2I-I-NOINDX, OSTF-0 - tape does not contain sheet index
```

```
Writing sheet 1 to IFF file LSL$IF:TL1659NE.IFF
ELAPSED: 0 00:01:37.39 CPU: 0:00:53.12 BUFIO: 21 DIRIO: 159 FAULTS: 365
$
```

This example illustrates the conversion of OSTF+ data into IFF revision level 0. Input is from a disk file so there is no tape index - hence the message appears. Since input is OSTF+, heights will be carried through and output as ZS entries, but all other additional OSTF+ attribute information will be lost. If /PLUS had not been specified, the heights would also have been lost and ST entries output. Note that had /AUTO\_PLUS been specified, it would not be necessary to define the logical name LSL\$IFF\_OUTPUT\_REVISION.

```
$ DEFINE LSL$IFF_OUTPUT_REVISION 1<CR>
$ MOUNT/FOR/BLOCK=1800/REC=8 MS:<CR>
%MOUNT-I-MOUNTED, mounted on _LSL750$MSA0:
$ OSTF2I/PLUS/FRT=OSTF_PLUS MS:<CR>
```

```
Input file:      MS:
FRT file:        LSL$FRT:OSTF_PLUS.FRT
Rotation only output for texts and oriented symbols
Output IFF file to contain HHistory and type 2 Map Descriptor
Expecting OSTF+ data
Text heights read as tenths of a millimetre
Input is in ASCII
Assuming blocksize of 1800
```

```
Index of maps - there is 1 map listed
Map 1 from 478000, 241000 to 478500, 241500
```

```
Writing sheet 1 to IFF file LSL$IF:SP7841SW.IFF
%FRTLIB-W-FRTERR, Feature Code 374 not found in FRT
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 376 not found in FRT
```

[illegible]

```
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 374 not found in FRT
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 374 not found in FRT
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 374 not found in FRT
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 374 not found in FRT
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 376 not found in FRT
%OSTF2I-W-FINDFC, feature code 376 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 382 not found in FRT
%OSTF2I-W-FINDFC, feature code 382 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 374 not found in FRT
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 374 not found in FRT
%OSTF2I-W-FINDFC, feature code 374 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 376 not found in FRT
%OSTF2I-W-FINDFC, feature code 376 not defined in FRT
%FRTLIB-W-FRTERR, Feature Code 376 not found in FRT
%OSTF2I-W-FINDFC, feature code 376 not defined in FRT
ELAPSED:      0 00:01:25.89  CPU: 0:01:19.62  BUFIO: 101  DIRIO: 299  FAULTS: 458
$ DISMOUNT MS:<CR>
$
```

This example illustrates IFF revision level 1 output and the DCL command defining the logical name has been included. Input is from magnetic tape, and the DCL command mounting the tape has also been included. The output filename was not given as it was deduced from the information in the tape index. Since output is to IFF revision level 1, CB entries will be output and all of the OSTF+ data converted. Note that some of the feature codes have not been defined in the FRT file. This means that the graphical type in the relevant CB entries may be incorrect.

**\$ OSTF2I MODEL1.BATOSTFP MODEL1.IFF<CR>**

```
Input file:      MODEL1.BATOSTFP;0
Output file:     LSL$IF:MODEL1.IFF
Rotation output for all features except lines
Output IFF file to contain HHistory and type 2 Map Descriptor
Text heights read as tenths of a millimetre
Input is in ASCII
Assuming blocksize of 1800
Selected sheets: 1
```

%OSTF2I-I-NOINDX, OSTF-0 - tape does not contain sheet index

```
Writing sheet    1 to IFF file LSL$IF:MODEL1.IFF
%OSTF2I-I-OLDHDR3, OSTF-3 - secondary sheet header is late OSTF format
%OSTF2I-W-GOTPLUS, OSTF+ entries ignored - /PLUS not specified
ELAPSED:      0 00:01:19.93  CPU: 0:01:18.28  BUFIO: 31  DIRIO: 768  FAULTS: 247
$
```

In this example OSTF+ data has been used but the /PLUS qualifier was not specified. The OSTF+ entries are therefore ignored. Note the conflicting messages regarding the OSTF version. First, because there is no sheet index, the program assumes that the data is OSTF-0. Once the header has been read, it establishes that it is actually OSTF-3. These messages are purely informational and the assumptions behind them are made only in order to display the messages. The assumptions about the OSTF version do not in any way affect the way the conversion proceeds.

-----  
**MESSAGES (INFORMATIONAL)**

These messages give information only, and require no immediate action by the user. They are used to provide information on the current state of the program, or to supply explanatory information in support of a warning or error message.

NOINDEX, OSTF-0 - tape does not contain sheet index

**Explanation:** OSTF version 1 and above require that a tape start with an index of all sheets present. This message indicates that the index is absent, and therefore this tape must be OSTF-0 (old DMC) data.

**User action:** None.

OLDHDR1, OSTF-1 - secondary sheet header is middle DMC format

**Explanation:** The OSTF data being read contains the earliest form of secondary sheet header (after flag -20), containing minimal information. Some data will not be supplied to the map header in the IFF file.

**User action:** None.

OLDHDR2, OSTF-2 - secondary sheet header is middle OSTF format

**Explanation:** The OSTF data contains a sheet header which is longer than the original OSTF-1 form of sheet header, but is still not as long as the full OSTF-3 header - it is thus presumed to be an OSTF-2 header. Some data will not be supplied to the map header in the IFF file.

**User action:** None.

OLDHDR3, OSTF-3 - secondary sheet header is late OSTF format

**Explanation:** The OSTF data contains the full OSTF-3 header, rather than the current OSTF-4 header. Some data will not be supplied to the map header in the IFF file.

**User action:** None.

OLDSHDR, start of sheet header is early OSTF format - before OSTF-3

**Explanation:** The start-of-sheet header (after flag -1) is the original, short form. It does not include either job number or digitising scale.

**User action:** None.

RECORD, in record 'integer', containing "'string'"

**Explanation:** This message is output after a previous error message, to show the number of the record in the OSTF data at which an error occurred.

**User action:** Dependant upon the associated error messages.

-----  
**MESSAGES (WARNING)**

These messages are output when an error has occurred that can be corrected immediately by the user or that the program will attempt to overcome.

BADFEATURE, illegal input record 'integer'

**Explanation:** An error occurred reading input record indicated.

**User action:** Correct input data. If no error is found, please report this problem to Laser-Scan.

BADFLAG, unrecognised input flag 'integer' in record 'integer'

**Explanation:** OSTF data entries are identified by a negative number, the flag number. This program recognises flags -1 to -22 and flag -44. Any other flag value will provoke this error message. The program will attempt to ignore the offending record, and to carry on.

**User action:** Check that the provider of the data has supplied a valid OSTF dataset. It may be necessary to dump the OSTF data to a text file, and to inspect the offending record, and those around it, to work out whether it is actually an unknown flag, or whether it is just incorrect data. It may be possible to edit the offending records out using a text editor, and then process the remaining data meaningfully.

BADINDX, unexpected sheet index flag in record 'integer' - continuing

**Explanation:** The OSTF sheet index at the beginning of the tape starts and finishes with flag -21. The program reads any sheet index before processing the sheets in the input. This error message is given if flag -21 is detected whilst looking for map data. The program will ignore the record and attempt to carry on.

**User action:** As for the BADFLAG warning message.

BADOSSZ, unsupported OS point size 'integer' - using point size 'integer'

**Explanation:** In OSTF-0, text heights are encoded as point sizes, and in other versions of OSTF as heights in millimetres. If user specifies the /POINT\_SIZE and /NOIFFPOINTSIZES qualifiers, then the program will assume that heights are held as point sizes in the OSTF data, but are to be converted into mm/100 in the IFF data. Some point sizes however are not supported in the conversion procedure. If such a point size occurs, then this message is output, and the indicated point size is substituted.

**User action:** Check that the /POINT\_SIZE and /NOIFFPOINTSIZES qualifiers were the right choice.

BADPTSZ, there is no point size 'integer' (should be 1-24) - using point size 'integer'

**Explanation:** In OSTF-0, text heights are encoded as point sizes, and in other versions of OSTF as heights in millimetres. If user specifies the /POINT\_SIZE qualifier, then the program will assume that heights are held as point sizes in the OSTF data, and will check that they lie in the valid range. If the point size found is not valid, then this message is output, and the indicated point size is substituted.

**User action:** Check that the /POINT\_SIZE qualifier was the right choice.

BADTXHT, there is no point size corresponding to 'integer' mm/10 - using point size 'integer'

**Explanation:** In OSTF-0, text heights are encoded as point sizes, and in other versions of OSTF as heights in millimetres. By default, the program assumes that heights are held as tenths of a millimetre, and will try to find the appropriate OS point size for each height (since OS IFF text heights are to be held as point sizes). If the height does not translate to a known point size, then this message is output, and the indicated point size is substituted.

**User action:** Check that the /POINT\_SIZE qualfier was not needed.

BINDAY, error in date field in secondary sheet header - 'day'/'month'/'year'

**Explanation:** A date field in the secondary sheet header has fields that are unacceptable. A system message follows to explain the reason. The program will not attempt to translate the date into the map header in the IFF file.

**User action:** Complain to the supplier of the data that the secondary header is incorrectly set.

FINDFC, feature code 'integer' not defined in FRT

**Explanation:** The program has tried to look up the specified feature code in the FRT file specified, and has not found a definition. This means that an RO entry will appear in the output file regardless of the graphical type, and if output is IFF revision level 1, the graphical type in the CB entry could be incorrect.

**User action:** If the feature code in the OSTF data is correct, then either correct the FRT or use a different FRT file.

GOTPLUS, OSTF+ entries ignored - /PLUS not specified

**Explanation:** One or more OSTF+ entries (-23, -24, and -25) have been found in the input data, but /PLUS was not specified on the command line. Regardless of the IFF revision level, all OSTF+ data will be ignored on output.

**User action:** If the OSTF+ data is required, and especially if output is IFF revision level 1, /PLUS should be specified on the command line. Note that specifying /PLUS with IFF output revision level 0 will result in ZS entries being produced for those features which contain -24 (height) entries.

GRIDBIG, grid step 'integer' too big - doing 'integer'

**Explanation:** The grid step specified with the /GRID qualifier is greater than the map extent. The basic grid interval taken from the map header is used instead.

**User action:** Specify a correct grid size.

GRIDSMALL, grid step 'integer' too small - doing 'integer'

**Explanation:** The grid step specified with /GRID is less than 1. The basic grid interval taken from the map header is used instead.

**User action:** Specify a correct grid size.

INVALCAP, invalid capture method, "'string'"

**Explanation:** An invalid capture method has been encountered either in a coordinate record, or in a height entry (after flag -24). It will be reset to the unknown value, "0".

**User action:** Check that the data has not been corrupted and that the range specified in the relevant ACD entry in the FRT file is correct. Otherwise complain to the supplier of the data.

INVALCHA, invalid change type, "'string'"

**Explanation:** An invalid change type has been encountered in the feature history entry (after flag -23). It will be reset to the unknown value, "0".

**User action:** Check that the data has not been corrupted and that the range specified in the relevant ACD entry in the FRT file is correct. Otherwise complain to the supplier of the data.

INVALIDATE, invalid date, "'date-string'"

**Explanation:** An invalid date has been encountered in the feature history entry (after flag -23). It will be reset to the initial value, 17-NOV-1858

**User action:** Check that the data has not been corrupted and that the range specified in the relevant ACD entry in the FRT file is correct. Otherwise complain to the supplier of the data.

LONGHDR, the -20 header was longer than expected in type 3 header

**Explanation:** The secondary sheet header (after the -20 flag) of a type 3 map header was longer than the size given in the translation table LSL\$OS\_MH\_TABLE. The longer header will be written as an ASCII block to the IFF file.

**User action:** Check for consistency between the header length of the OSTF file and the size given for this in the translation table LSL\$OS\_MH\_TABLE.



MHUPGRADE, cannot fully upgrade IFF map header

**Explanation:** If the data being processed is OSTF-3 or earlier, the IFF map header is upgraded to OSTF-4 standard after the OSTF header has been read in. This message appears when a problem has occurred with that upgrade procedure. It is most likely due to one of the old digital update dates or the old selected revision date having been corrupted. The latest of these dates is used for the new digital update date which is stored in the OS map header as ICL binary days. A system message follows for further explanation. The program will not attempt to set the new digital update date.

**User action:** The source of the problem may be a bad digital update date or selected revision date in the OSTF header. If this is the case, complain to the supplier of the data that the secondary header is incorrectly set. Otherwise, it may be necessary to report the problem to Laser-Scan. In this case, please supply details of the command line used to invoke the program, as well as the OSTF file.

NOENDFL, unexpected end of data - no end of data flag (-3)

**Explanation:** The data in the OSTF input file should be terminated by flag -3, followed by dummy (-6) entries to pad the file out to a block boundary. If the end of file is found before the end of data flag, then this error message is output. The final sheet in the input data may have been truncated.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data that the OSTF data was incorrectly terminated.

NOTINFTR, coordinate record 'X' 'Y' outside feature in record 'integer'

**Explanation:** An OSTF record which does not start with a flag (ie a negative number) and which is not part of the data associated with a flag, has been found. It cannot be a coordinate because it is outside a feature. The program ignores the record and attempts to continue.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data.

SHORTHDR, the -20 header was shorter than expected in type 3 header

**Explanation:** The secondary sheet header (after the -20 flag) of a type 3 map header was shorter than the size given in the translation table LSL\$OS\_MH\_TABLE. The shorter header will be written as an ASCII block to the IFF file.

**User action:** Check for consistency between the header length of the OSTF file and the size given for this in the translation table LSL\$OSMHTABLE.

TOOMNYLR, more than 'integer' left/right boundaries - ignoring some

**Explanation:** The program stores left/right boundary texts and feature codes, and outputs them when it encounters a coordinate. This message is given if it encounters more left/right codes than it can store. It will ignore some of them, and output the rest.

**User action:** If this is a problem, request Laser-Scan to increase the limit.

UNEXPEND, end of data flag (-3) found before end of sheet flag (-2)

**Explanation:** The end of data flag marks the end of the data in this file, and should be preceded by a flag to stop the current sheet. This message is given if the end of sheet flag is not seen.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data that the relevant sheet was incorrectly terminated.

-----  
**MESSAGES (ERROR)**

These messages indicate an error in processing which will cause the program to terminate. The most likely causes are a corrupt or otherwise invalid input file, or an error related to command line processing and file manipulation.

ACDOSTF, cannot find OSTF+ ACD definition 'name'

**Explanation:** The attribute code definition for an attribute required in the translation of OSTF+ data cannot be found. An additional message from LSLLIB will give further informatoin. The most likely cause of this error is that the attribute code has not been defined in the ACD table in the FRT file. The program will abort.

**User action:** Ensure that the ACD table in the FRT file contains the required definition, and run the program again.

BADHDR2, error reading input record, in secondary sheet header

**Explanation:** An error occurred reading a record in the secondary sheet header (after the -20 flag). The program will abort.

**User action:** Unless the associated error messages make the cause of this problem obvious, please report this problem to Laser-Scan.

BCKSPCERR, failed to backspace the tape one record

**Explanation:** This is an error generated if the program has attempted to read the sheet index, found it absent, and failed to return to the start of the tape.

**User action:** Unless the associated error messages make the cause of this problem obvious, please report this problem to Laser-Scan.

DIGSCAL, error reading data capture scale

**Explanation:** An error occurred reading the data capture scale entry (part of the OSTF sheet header, after flag -1). This was known as the digitising scale in versions prior to OSTF-4. The program will abort.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data.

ENDINDX, unexpected end of data during sheet index

**Explanation:** The end of file was found whilst reading the sheet index. The program will abort.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data.

ENDPROC, processing aborted at input record 'integer'

**Explanation:** This message will follow a previous error message, which should explain the problem.

**User action:** Dependant upon the associated error message.

ERRINDX, error reading input record, in sheet index

**Explanation:** An error occurred whilst reading the sheet index, at the beginning of the input file. The program will abort.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data.

FLAGJOB, error reading record in second part of sheet header

**Explanation:** An error occurred reading the job number entry (part of the OSTF sheet header, after flag -1). The program will abort.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data.

GRIDSEL, if you give a grid interval, you can only select one sheet

**Explanation:** If a grid interval is given explicitly with /GRID, and the /SELECT qualifier used, then only one sheet can be selected from the input file. This message is output when several sheets have been selected and an explicit grid interval was given. The program will abort.

**User action:** If the grid intervals for the sheets must be specified, then each sheet must be read from the OSTF data individually.

HEADERONE, Error reading essential fields from -1 header record

**Explanation:** A problem was encountered in reading one of the fields in the -1 header. The program cannot open an IFF file without these values and so was aborted.

**User action:** Examine the position and size of the fields in the translation table LSL\$OS\_MH\_TABLE and ensure that they correspond to those fields in the -1 header record.

HISTDATE, error reading feature history dates

**Explanation:** An error occurred reading the record containing the survey date and change date in the feature history entry (after flag -23). The program will abort.

**User action:** Dependant upon the associated error messages.

ILEGCAT, Illegal category 'integer' in /OSTEXT\_COMBINE qualifier

**Explanation:** An illegal Category was encountered in the /OSTEXTCOMBINE qualifier.

**User action:** Retype the command line with a valid category entry in the range 1-32767.

ILEGFC, Illegal feature code 'integer' in /OSTEXT\_COMBINE qualifier

**Explanation:** An illegal Feature Code was encountered in the /OSTEXTCOMBINE qualifier.

**User action:** Retype the command line with a valid FC entry in the range 1-32767.

ILEGMH, Illegal type 'integer' map header in /MH\_TYPE qualifier

**Explanation:** An illegal map header type was encountered in the /MHTYPE qualifier.

**User action:** Retype the command line with a valid map header type (2 or 3).

ILEGSIZ, Illegal size 'integer' in /OSTEXT\_COMBINE qualifier

**Explanation:** An illegal Size was encountered in the /OSTEXTCOMBINE qualifier.

**User action:** Retype the command line with a valid size entry in the range 1-32767.

ILEGSTY, Illegal style 'integer' in /OSTEXT\_COMBINE qualifier

**Explanation:** An illegal Style was encountered in the /OSTEXTCOMBINE qualifier.

**User action:** Retype the command line with a valid Style entry in the range 1-32767.

INCNUMCAT, Incorrect number of Categories in /OSTEXT\_COMBINE qualifier

**Explanation:** The wrong number of category entries was encountered in the /OSTEXTCOMBINE qualifier on the command line. Only one is required.

**User action:** Retype command line with one category entry only.

INCNUMFC, Incorrect number of FC entries in /OSTEXT\_COMBINE qualifier

**Explanation:** The wrong number of Feature Code entries was specified in the /OSTEXTCOMBINE qualifier on the command line. Precisely three are required corresponding to coordinate, text and destination codes.

**User action:** Retype the command line with the correct number of FC entries.

INCNUMSIZ, Incorrect number of Size entries in /OSTEXT\_COMBINE qualifier

**Explanation:** The wrong number of size entries was encountered in the /OSTEXTCOMBINE qualifier. Only one is required.

**User action:** Retype command line with one size entry.

INCNUMSTY, Incorrect number of Style entries in /OSTEXT\_COMBINE qualifier

**Explanation:** The wrong number of style entries was encountered in the /OSTEXTCOMBINE switch. Only one is required.

**User action:** Retype command line with one style entry.

INITINP, error initialising input device 'device-name'

**Explanation:** An error occurred in trying to attach to the input magnetic tape device. The program will abort.

**User action:** Dependant upon the associated error messages.

INPTYPE, error checking input device type 'device-name'

**Explanation:** Before trying to read from the input file or device, the program looks to see what it is - a magnetic tape drive or a disk file. This error is given if something went wrong with that process.

**User action:** Dependant upon the associated error messages.

MULTSEL, if you name the output file, you can only select one sheet

**Explanation:** If the output IFF file is specified, and the /SELECT qualifier used, then only one sheet may be selected. The program will abort after this message.

**User action:** Either request only one sheet when specifying the IFF file, or request several sheets, allow the program to produce names for them, and then RENAME them if those names are unacceptable.

NEEDFRT, FRT file required for IFF revision 1 output

**Explanation:** This message appears when IFF revision level 1 data is to be produced, and the /FRT qualifier has not been specified on the command line. An FRT file containing an ACD table is required for IFF revision level 1 output. The program will abort.

**User action:** Either specify an FRT file on the command line, or ask your system manager to set the appropriate logical name to produce IFF revision 0 output, and run the program again.

NEEDHIST, HI and MD type 2 required for IFF revision 1 output

**Explanation:** This message appears when IFF revision level 1 data is to be produced, and the /NOHISTORY qualifier has been specified on the command line. IFF revision level 1 data should always contain History and Map Descriptor type 2 entries. This is achieved by specifying /HISTORY (which is present by default) on the command line. The program will abort.

**User action:** Ensure that /HISTORY is specified on the command line, either explicitly or by default, and run the program again.

NEWGRID, error reading grid square entry

**Explanation:** The coordinates in OSTF are specified using the grid square and the offset within that grid square (the "grid" in this context being that defined by the basic grid interval). This message indicates that an error occurred reading an entry that specifies a new grid square for the following coordinates (ie one of flags -9 or -14). The program will abort.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data.

OSNAME, error parsing OS sheet name "'name'" as IFF file name

**Explanation:** The program has calculated a file name for the relevant OS sheet, but this does not form part of a legal filespec.

**User action:** Please report this problem to Laser-Scan.

RDBERR, failed to read a block from magtape

**Explanation:** The associated error messages should help to clarify what happened.

**User action:** Dependant upon the associated error messages.

RDSTART, error reading record in start of sheet header

**Explanation:** An error occurred reading the start of sheet entry (after flag -1). The program will abort.

**User action:** Dependant upon the associated error messages.

READFRT, error reading FRT file 'file-spec'

**Explanation:** An error occurred while reading in the FRT file. A message output by the Feature Representation Library (FRTLIB) will appear before this message, giving further information as to what has gone wrong. For example, the specified FRT file may not exist, or it may be in another directory.

**User action:** Dependant upon the associated error messages.

READREC, error reading record

**Explanation:** An error occurred whilst reading a record of the input file. The program will abort.

**User action:** Dependant upon the associated error messages.

TXTCOORD, error reading text location coordinate entry

**Explanation:** An error occurred reading the coordinates for a text location (after flag -18). The program will abort.

**User action:** Dependant upon the associated error messages.

TXTDESC, error reading text description

**Explanation:** An error occurred reading the text description data (after flag -10). The program will abort.

**User action:** Dependant upon the associated error messages.

TXTERR, error reading text

**Explanation:** An error occurred whilst reading the data for a text (after flag -11). The program will abort.

**User action:** Dependant upon the associated error messages.

TXTRGLID, error reading text location grid square entry

**Explanation:** An error occurred reading the grid square entry for a text location (after flag -18). The program will abort.

**User action:** Dependant upon the associated error messages.

UNEXPEOF, unexpected end of input data

**Explanation:** The end of file was found, whilst more sheet data was still expected. The program will abort.

**User action:** Check that the data has not been corrupted, and otherwise complain to the supplier of the data.

VERSION, version number not allowed on output IFF file

**Explanation:** The IFF filespec supplied may not specify which version of the file is to be created. The program will abort.

**User action:** Do not specify a version number for the IFF file.



ZCOORD, error reading z-coordinate in height record

**Explanation:** An error occurred reading the record containing the height capture method and z-coordinate in the feature height entry (after flag -24). The program will abort.

**User action:** Dependant upon the associated error messages.

---

**MESSAGES (FATAL)**

These messages indicate a severe error in processing, or some form of system failure, which has caused the program to terminate.

ACDSTAND, cannot find standard ACD definition 'name'

**Explanation:** The attribute code definition for the standard attribute with the given name cannot be found. This means that there is either an error in the program or a problem with the feature representation library, FRTLIB. The program will abort.

**User action:** Please report this problem to Laser-Scan.

NORA, unable to patch RAnge - internal pointer corrupted

**Explanation:** After all of the data for a sheet has been output, the program attempts to patch the RAnge entry in the IFF file, to reflect the true range of the data. This error indicates that it was unable to find the RA entry again. This means that either the program or the IFF file has become corrupted. The program will abort.

**User action:** Please report this problem to Laser-Scan.

---

**MESSAGES (OTHER)**

In addition to the above messages which are generated by the program itself, other messages may be produced by the command line interpreter (CLI) and by Laser-Scan libraries. In particular, messages may be generated by the IFF library and by the Laser-Scan I/O library, LSLLIB. IFF library messages are introduced by '%IFF' and are documented in the IFF library users' guide. In most cases IFF errors will be due to a corrupt input file, and this should be the first area of investigation. If the cause of the error cannot be traced by the user, and Laser-Scan are consulted, then the output file should be preserved to facilitate diagnosis. LSLLIB messages are introduced by '%LSLLIB' and are generally self-explanatory. They are used to explain the details of program generated errors.

## CHAPTER 5

### OSMHED MAP HEADER EDITOR

---

## UTILITY OSMHED

---

### FUNCTION

OSMHED edits an Ordnance Survey type 2 map header. Individual fields in the header can be edited either sequentially by stepping through them, or explicitly through the use of simple commands. The program also has its own built in help facility.

---

### FORMAT

\$ OSMHED IFF-file-spec

#### Command qualifiers

/[NO]FULL  
/[NO]LIST  
/[NO]READ\_ONLY

#### Defaults

/NOFULL  
/NOLIST  
/NOREAD\_ONLY

---

### PROMPT

\_IFF-file:           input-file-spec

---

### PARAMETERS

input-file-spec

- specifies the IFF file which is to be edited. Any part of the file specification which is not supplied will be taken from the default specification 'LSL\$IF:IFF.IFF'.

---

### COMMAND QUALIFIERS

/FULL  
/NOFULL (default)

- allows display and editing of currently unused fields within the map header. This only applies to fields which have always been spare; fields made obsolete with the advent of OSTF-4 will be displayed but cannot be edited. Note that this qualifier has the same effect as the **FULL** command (see below).

/LIST  
/NOLIST (default)

- causes the program to list all fields in the map header and then exit without allowing editing. Note that /LIST implies /READ\_ONLY regardless of what has been specified on the command line for the latter.

/READ\_ONLY  
/NOREAD\_ONLY (default)

- specifies that the IFF file is opened only for reading. Any changes made during the editing session will not be included in the IFF file. Note that the default is /READ\_ONLY if /LIST has been specified.

---

## DESCRIPTION

### Ordnance Survey Map Header

The Ordnance Survey type 2 map header is divided into two sections. These are

- o the process control part, and
- o the map header part

The first contains information relating to how the data has been processed, and the second contains information about the data itself. Note that the source scale and origin offset appear in both sections.

### Editing the Map Header

The program edits the map header in situ, and operates by prompting for data in a particular field. Once this has been entered, a prompt appears for the next field. Carriage return can be pressed to move to the next field without altering the existing data. Commands and character data are case-independent, i.e. they can be entered in either upper or lower case and will be converted internally into upper case. Alternatively, a command can be entered to select a particular field to be edited. Note also that an asterisk (\*) will unset a date field, and a TAB character will unset a character field. When the last field of the current section (either the process control part or the map header part) has been dealt with, the program will automatically return to the first field.

Note that when /FULL is specified, obsolete fields will be displayed but cannot be edited. When stepping through the header, these fields will be skipped.

Initially it is assumed that the process control part is to be edited, and the data in each field is listed. This is followed by a prompt for the job number, which is the first field in the process control section.

The program can be directed to edit either the process control part or the map header part. When editing the process control section, the command **MH** will move the editor into the map header section and list the data in each field. When editing this part, the command **PCF** will move the editor back to the process control section.

The command **HELP** or **?** will list the commands available for editing the current section.

The command **EXIT** or **<CTRL/Z>** will list all fields in both the process control and map header sections, write the data back into the map header in the IFF file, and finish the editing session. Alternatively, the command **QUIT** will abandon the session without making any changes to the IFF file. In the former case, if the input file is a new style IFF file containing a type 2 MD (Map Descriptor) entry, the origin offset will be set to the same value as that in the MH (Map Header) entry. The HI (HISTORY) entry will also be updated.

---

## COMMANDS

This section summarises the commands available.

Many of the fields are only of relevance within the Ordnance Survey production environment and so detailed explanations of the actual codes used in each field have not been given. However, the format of the data has been indicated, and where the fields are coded bitwise the various parts are summarised. If a number is entered in a base other than the one indicated, it should be prefixed with one of the following radix escape sequences :-

<b>^B</b>	-	binary
<b>^O</b>	-	octal
<b>^D</b>	-	decimal
<b>^X</b>	-	hexadecimal

Dates are entered in one of the following forms :-

[dd]/[mm]/[yy]yy	e.g. 12/06/1987 or 12/6/87
[mm]/[yy]yy	e.g.    06/1987 or    6/87
[yy]yy	e.g.        1987 or    87
[yy]yy/[yy]yy	e.g. 1984/1987 or 84/87

In addition to the above, a single year can be input as the first year in a multi-year field. It is also possible to input 0 explicitly for the year in both multi-year and single year date fields. This means that one part of a multi-year field can be updated and the other cleared in the same operation.

Note that commands cannot be given in response to prompts that expect character data.

### General Commands

The following commands are available when editing either part of the map header :-

<b>FULL</b>	- include currently unused fields for display and editing
<b>MH</b>	- jump to editing the map header part
<b>PCF</b>	- jump to editing the process control file part
<b>HELP</b> or <b>?</b>	- get help
<b>EXIT</b>	- exit and update file
<b>QUIT</b>	- abandon editing

### Process Control Commands

The following commands are available when editing the process control file section :-

JOBN     - JOB Number (decimal)

MRCE     - Map Reference Corner Easting (decimal)

MRCN     - Map Reference Corner Northing (decimal)

SCSC     - SourCe SScale (decimal)

GENR     - GENeration and Run (octal)  
          bits 0-11 - generation  
          bits 12-23 - run

SECT     - SECTion/subsection (4 characters)

INPC     - INPut Control (octal)  
          bit 0       - offline indicator  
          bit 1       - M/T input indicator  
          bits 2-3    - M/T input status  
          bit 4       - DM input file indicator  
          bit 5       - processing stop  
          bits 6-23   - end of digitised input  
                      on input file, word addr

FLAG     - FLAG (octal)  
          bits 0-5    - correction pen colour  
          bit 6       - plot suppress flag  
          bits 7-10   - Corner control (NW,NE,SE,SW)  
          bit 11       - data exchange transfer flag  
          bits 12-17   - spare  
          bits 18-23   - processing table number

EDGC     - EDGe match Control (octal)  
          bits 0-2    - N  
          bits 3-5    - E  
          bits 6-8    - S  
          bits 9-11   - W  
          bits 12-15   - Date of databanking - month  
          bits 16-22   -   "   "   "           - year  
          bit 23       - map extracted from databank

MDFN     - Map Data File Number (octal)  
          bits 0-5    - map data file number  
          bits 6-23   - Subfile datum (bucket)  
                      on map data file

DMPC     - DuMP Control (octal)  
          bit 0       - dump required indicator  
          bits 1-11   - gen of last dump for this job  
          bits 12-22   - spare ?  
          bit 23       - listing indicator



SUBF     - SUBFile size (octal)  
          bit    0     - subfile open indicator  
          bits  1-11 - spare ?  
          bits 12-23 - subfile size (buckets)

SUBC     - SUBfile Creation date (octal)  
          bit    0     - edge match plot status  
          bit    1     - job awaiting back transfer  
          bits  2-7    - spare  
          bits  8-23 - date of initial subfile  
                          formation (days since 1900)

REST     - REStart counts (octal)  
          bits  0-5    - -1  
          bits  6-11 - -2  
          bits 12-17 - -3  
          bits 18-23 - -4

EDGS     - EDGe match Status (octal)  
          bit    0     - N  
          bit    1     - E  
          bit    2     - S  
          bit    3     - W  
          bit    4     - D23 marker  
          bit    5     - databank marker  
          bit    6     - edge data amended marker  
          bit    7     - master plan marker  
          bit    8-23 - spare ?

EDGJ     - EDGe Job counts (octal)  
          bits  0-5    - N  
          bits  6-11 - E  
          bits 12-17 - S  
          bits 18-23 - W

### Map Header Commands

The following commands are available when editing the map header section :-

SP03     - 3 spare (decimal)  
SP04     - 4 spare (decimal)  
MRCE     - Map Reference Corner Easting (decimal)  
MRCN     - Map Reference Corner Northing (decimal)  
MLE      - Map Limit Easting (decimal)  
MLN      - Map Limit Northing (decimal)  
BGI      - Basic Grid Interval (decimal)  
STSC     - STorage SScale (decimal)  
DCSC     - Data Capture SScale (decimal)  
SP13     - 13 spare (decimal)  
SP14     - 14 spare (decimal)  
SP15     - 15 spare (decimal)  
SP18     - 18 spare (decimal)  
SP19     - 19 spare (decimal)  
EMSN     - Edge Match Status (North) (decimal)  
EMSE     - Edge Match Status (East) (decimal)

EMSS	- Edge Match Status (South) (decimal)
EMSW	- Edge Match Status (West) (decimal)
DIDB	- Date of Initial DataBanking (decimal dd/mm/[yy]yy)
SP25	- 25 spare (decimal)
SP26	- 26 spare (decimal)
SP27	- 27 spare (decimal)
SP28	- 28 spare (decimal)
SP29	- 29 spare (decimal)
SP30	- 30 spare (decimal)
EDTN	- EDiTioN (12 characters)
SURT	- SURvey Type (4 characters)
LFRD	- Latest Full Revision Date (decimal mm/[yy]yy)
BOUD	- BOUndary Date (decimal mm/[yy]yy)
LEVD	- LEVelling Date 1 (decimal [yy]yy)
LEV2	- LEVelling date 2 (decimal [yy]yy)
CPYD	- CoPYright Date (decimal [yy]yy)
DUPC	- Digital UPdate Count (decimal)
COND	- CONTour Date (decimal [yy]yy)
CVI	- Contour Vertical Interval (decimal)
MSPC	- Map SPeCification number (decimal)
ABI1	- Additional Boundary Information (80 characters)
ABI2	- Additional Boundary Information (80 characters)
ABI3	- Additional Boundary Information (80 characters)
MHWM	- High Water Mark Dates (decimal [yy]yy/[yy]yy)
MLWM	- Low Water Mark Dates (decimal [yy]yy/[yy]yy)
CIND	- Content INDicator (8 characters)
OSRD	- Original Survey Date 1 (decimal mm/[yy]yy)
OSR2	- Original Survey Date 2 (decimal mm/[yy]yy)
DUPD	- Digital UPdate Date (decimal dd/mm/[yy]yy)
QCD	- Quality Control Date (decimal mm/[yy]yy)
HUC	- House Unit Count (decimal)
OSTF	- OSTF+ indicator (decimal)
STRD	- STRucture Date (decimal dd/mm/[yy]yy)
CVAL	- Check VALues (8 characters)
UNSL	- UNSpecified Long (decimal)
UNSS	- UNSpecified Short 1 (decimal)
UNS2	- UNSpecified Short 2 (decimal)
FLG1	- update FLaG 1 (character)
FLG2	- update FLaG 2 (character)
FLG3	- update FLaG 3 (character)
FLG4	- update FLaG 4 (character)
FLG5	- update FLaG 5 (character)
FLG6	- update FLaG 6 (character)
FLG7	- update FLaG 7 (character)
FLG8	- update FLaG 8 (character)
STRC	- STRucture Category (decimal)
BNUM	- Batch NUMber (decimal)
CID	- Contractors IDentity (4 characters)

Note that SPn (where n is an integer) takes the editor on to the next used field when not editing the full map header.

-----  
**EXAMPLES**

\$ OSMHED EXAMPLE<CR>

Map Reference TA9999 at 21-JAN-1989 21:27:19.15

JOB	3510	STorage	SCale	1:2500
MRCE	599000	MRCN		499000
GENeration	0170	last	run	no 0000
SECTION	C1DE	INPut	Control	1001
FLAG	2	EDGE	match	Control 0
Map	Data File No	3005452	DuMP	Control 2370001
SUBFile	size	230	SUBfile	Creation 71654
REStart	counts	00,00,00,00		
EDGE	match	Status 0	EDGE	Job counts 00,00,00,00

Type ? or HELP for help

JOB number (3510) [D] ? 3500<CR>

Map Ref Corner (E) (599000) [D] ? MH<CR>

Map Ref Corner (E)	599000	(N)	499000
Map Limit (E)	0	(N)	0
Basic Grid Interval	50	STorage	SCale 2500
Data Capture	SCale 1500	Edge	Match Status (N) 1
Edge Match Status (E)	1	Edge	Match Status (S) 0
Edge Match Status (W)	0	Date	of Initial DataBanking 1/8/1987
EDiTion	B	SURvey	Type A
		Latest	Full Revision Date 1/1981
BOUndary	Date 9/1980	LEVelling	Date (1) 1961
LEVelling	Date (2) 1962	CoPYright	Date 1981
Digital	UPDate Count 1	CONtour	Date 0
Contour	Vert Interval 0	Map	SPeCification number 00000000
Additional Boundary Information - BOUNDARY INFORMATION MAY BE INCOMPLETE AND IS UNVERIFIED			
Additional Boundary Information -			
Additional Boundary Information -			
High	Water Mark Dates 3869/0	Low	Water Mark Dates 3869/0
Content	INDicator	Orig	SuRvey Date (1) 7/1976
Orig	SuRvey Date (2) 3/1981	Digital	UPDate Date 1/7/1979
Quality	Control Date 0/0	House	Unit Count 0
OSTF+	indicator 0	STRucture	Date 0/0/0
Check	VALues		
UNSpecified	Long 0	UNSpecified	Short (1) 0
UNSpecified	Short (2) 0		
FLaG1		FLaG2	
FLaG2		FLaG4	
FLaG5		FLaG6	
FLaG7		FLaG8	
STRucture	Category 0		
Batch	NUMBER 0	Contractors	IDentity 9141

Map Ref Corner (E) (599000) [D] ? HELP<CR>

The following commands are available :-

FULL	MH	PCF	HELP	?	EXIT
QUIT	SP03	SP04	MRCE	MRCN	MLE
MLN	BGI	STSC	DCSC	SP13	SP14
SP15	SP18	SP19	EMSN	EMSE	EMSS
EMSW	DIDB	SP25	SP26	SP27	SP28
SP29	SP30	EDTN	SURT	LFRD	BOUD
LEVD	LEV2	CPYD	DUPC	COND	CVI
MSPC	ABI1	ABI2	ABI3	HWMD	LWMD
CIND	OSRD	OSR2	DUPD	QCD	HUC
OSTF	STRD	CVAL	UNSL	UNSS	UNS2
UNS3	UNS4	STRC	BNUM	CID	

Type a number to replace contents of current field.  
Hit RETURN to go on to next field.  
Type PC to jump back to editing the Process Control File.  
Type FULL to include currently unused fields.  
Type EXIT to exit normally, or QUIT to exit immediately.  
Type the four letter mnemonic to edit a particular field.  
Type an asterisk ('\*') to unset a date field.

```
Map Ref Corner (E) (599000) [D] ? BGI<CR>
Basic Grid Interval (50) [D] ? 100<CR>
STorage SCale (2500) [D] ? OSRD<CR>
Original SuRvey Date 1 (7/1976) [M/Y] ? <CR>
Original SuRvey Date 2 (3/1981) [M/Y] ? <CR>
Digital UPdate Date (1/7/1979) [D/M/Y] ? <CR>
Quality Control Date (0/0) [M/Y] ? DUPC<CR>
Digital UPdate Count (1) [D] ? *<CR>
%OSMHED-E-NOTDATE, asterisk only valid for unsetting date field
Digital UPdate Count (1) [D] ? DUPD<CR>
Digital UPdate Date (1/7/1979) [D/M/Y] ? *<CR>
%OSMHED-I-DATUNSET, date field now unset
Quality Control Date (0/0) [M/Y] ? EDTN<CR>
EDiTion (B          ) [S] ? <CR>
SURvey Type (    A) [S] ? <CR>
Latest Full Revision Date (1/1981) [M/Y] ? EXIT<CR>
```

Map Reference TA9999 at 21-JAN-1989 21:30:08.67

JOBN 3500	STorage SCale 1:2500
MRCE 599000	MRCN 499000
GENeRation 0170	last run no 0000
SECTIon ClDE	INPUt Control 1001
FLAG 2	EDGe match Control 0
Map Data File No 3005452	DuMP Control 2370001
SUBFile size 230	SUBfile Creation 71654
REStArt counts 00,00,00,00	
EDGe match Status 0	EDGe Job counts 00,00,00,00
Map Ref Corner (E) 599000	(N) 499000
Map Limit (E) 0	(N) 0
Basic Grid Interval 100	STorage SCale 2500
Data Capture SCale 1500	Edge Match Status (N) 1
Edge Match Status (E) 1	Edge Match Status (S) 0

```
Edge Match Status (W) 0      Date of Initial DataBanking 1/8/1987
EDiTion B                  SURvey Type      A
                             Latest Full Revision Date 1/1981
BOUndary Date 9/1980        LEVelling Date (1) 1961
LEVelling Date (2) 1962      CoPYright Date 1981
Digital Update Count 1      CONTour Date 0
Contour Vert Interval 0     Map SPeCification number 00000000
Additional Boundary Information - BOUNDARY INFORMATION MAY BE INCOMPLETE AND IS
UNVERIFIED
Additional Boundary Information -
Additional Boundary Information -
High Water Mark Dates 3869/0  Low Water Mark Dates 3869/0
Content INDicator           Orig SuRvey Date (1) 7/1976
Orig SuRvey Date (2) 3/1981  Digital UPdate Date 0/0/0
Quality Control Date 0/0     House Unit Count 0
OSTF+ indicator 0           STRucture Date 0/0/0
Check VALues
UNSpecified Long 0          UNSpecified Short (1) 0
UNSpecified Short (2) 0
FLaG1                       FLaG2
FLaG2                       FLaG4
FLaG5                       FLaG6
FLaG7                       FLaG8
STRucture Category 0
Batch NUMBER 0              Contractors IDentity 9141
ELAPSED:    0 00:02:50.04  CPU: 0:00:00.40  BUFIO: 125  DIRIO: 8  FAULTS: 231
$
```

This example illustrates a few simple edits of the map header. When invoked, the program took the user straight into editing the process control file part, listing the data and prompting for the job number which was amended. The MH command was then given to move into the map header section. The data was listed and a prompt for the first field in this section, the map reference corner Eastings, appeared. HELP was then issued to obtain a list of the commands available, and this was followed by a second prompt for the first field.

The BGI command was then issued, in order to edit the basic grid interval. A prompt for this data appeared and the new value of 100 was entered. This was followed by a prompt for the storage scale, the field following the basic grid interval.

The command OSRD was given to move the editor to the first original survey date field. Carriage return was used to move to the second and again to move on to the digital update date field. Carraige return was then used a third time by mistake, taking the editor beyond the desired field, so the command DUPC was given (DUPD was intended). An attempt was then made to unset the digital update count using '\*'. Since this field simply requires an integer and not a date, an error message was output, and the prompt repeated. Note that error messages output as a result of operator errors do not affect the exit status of the program. DUPD was then given to get back to the digital update date, which was then unset by typing '\*'. Note that a message confirming this action is displayed.

The command EDTN was then given for the edition and a prompt for that field appeared. It and the next are character fields, and therefore commands are not recognised. Thus carriage return was used to move to the next field which would allow recognition of a command.

The session was then terminated by typing EXIT, and a listing of the updated data in both sections of the header was output. Alternatively, <CTRL/Z> could have been used to exit when the prompt for EDiTioN appeared.

---

**MESSAGES (INFORMATIONAL)**

These messages give information only, and require no immediate action by the user. They are used to provide information on the current state of the program, or to supply explanatory information in support of a warning or error message.

DATUNSET, date field now unset

**Explanation:** This message confirms that the date field just edited is now unset. This would have been done by typing '\*'

**User action:** None.

RDONLY, IFF file was opened read-only, not being updated

**Explanation:** This message confirms that the program was run with the /READ\_ONLY qualifier, and that the IFF file will not be updated. If /LIST is also in force, the message will not be output.

**User action:** None.

-----  
**MESSAGES (WARNING)**

These messages are output when an error has occurred that can be corrected immediately by the user or that the program will attempt to overcome.

FROMBIN, illegal date 'integer' (should be from 'min' to 'max')

**Explanation:** Some dates are stored in the OS map header as ICL binary days, and this message indicates that a value outside the legal range has been found. The dates concerned are the date of initial databanking, the digital update date, and the structure date. A system error message will also be output. The program will appear to use a binary date of zero, although the date in the map header will not be altered unless a new value is typed in. The date the message applies to will be on the output line or in the prompt string following the messages.

**User action:** If the IFF file has been created or edited using standard Laser-Scan software, then the date should be correctly defined. If it is not obvious why the date is incorrect (for instance, the file might have been produced by translation from an OSTF tape using OSTF2I, and not have had a date defined in the OSTF data), then it may be necessary to report a problem to Laser-Scan. In this case, please supply details of the flowline used to produce the IFF file, as well as the file itself, and any intermediate files.

MHUPGRADE, cannot fully upgrade IFF map header

**Explanation:** Once the IFF map header has been read in, it is upgraded internally to the OSTF-4 standard ready for output. (The IFF file is not altered if the /READ\_ONLY qualifier was specified.) This message appears when a problem has occurred with the upgrade procedure. It is most likely due to one of the old digital update dates or the old selected revision date having been corrupted. The latest of these dates is used for the new digital update date which is stored in the OS map header as ICL binary days. A system message follows for further explanation. The program will use a binary date of zero for the new digital update date.

**User action:** If the IFF file has been created or edited using standard Laser-Scan software, then the dates should be correctly defined. If it is not obvious why any of the dates are incorrect (for instance, the file might have been produced by translation from an OSTF tape using OSTF2I, and not have had a date defined in the OSTF data), then it may be necessary to report a problem to Laser-Scan. In this case, please supply details of the flowline used to produce the IFF file, as well as the file itself, and any intermediate files.

WRONGLLEN, strange MH length 'integer' (should be 'integer')

**Explanation:** A fixed Map Header length is expected for OS IFF files. If this is different to the length expected, this message will be displayed when execution begins. Editing can be performed as normal if desired.

**User action:** If the reason for the unusual Map Header length is known, editing can proceed. If not, use the command QUIT to terminate the session without changing the IFF file. The normal length for an OS Map Header is



174, and the value set should be checked using the IMP utility IPATCH. A normal length will indicate a bug in OSMHED and this should be reported on an SPR form. If the map header length is as indicated by OSMHED, look at the IFF HHistory entry to determine how it was created and possibly amended. If this indicates a possible problem with any Laser-Scan utility, an SPR should be submitted.

-----  
**MESSAGES (ERROR)**

These messages indicate an error in processing which will cause the program to terminate. The most likely causes are a corrupt or otherwise invalid input file, or an error related to command line processing and file manipulation.

BADDAY, day ('number') out of range in date

**Explanation:** The day part of a date field should be an integer in the range 1 to 31. A number outside this range will cause the generation of this message. The date input is ignored, and the prompt repeated.

**User action:** Try again with a valid value for the day within the date.

BADMONTH, month ('number') out of range in date

**Explanation:** The month part of a date field should be an integer in the range 1 to 12. A number outside this range will cause the generation of this message. The date input is ignored, and the prompt repeated.

**User action:** Try again with a valid value for the month within the date.

BADNUM, bad numeric value - ignored

**Explanation:** This message indicates an error in reading a number. The number is ignored, and the prompt is repeated.

**User action:** Try again with a legal number.

NOMD, cannot find MD entry in IFF file

**Explanation:** After editing the map header, OSMHED looks for the Map Descriptor entry. If the descriptor is type 2, (i.e. a new type IFF file is being edited), the origin offset and scale are updated. If a map descriptor is not found immediately after the map header, the program exits and this message appears, indicating that the IFF file is invalid and therefore cannot be used.

**User action:** Look at the IFF file using the IMP utility IPATCH, in order to ascertain the level of corruption. The HHistory entry may indicate how the IFF file came to have no MD entry.

NOMH, cannot find MH entry in IFF file

**Explanation:** If a map header is not found, the program exits and this message appears, indicating that the IFF file is invalid and therefore cannot be used.

**User action:** Look at the IFF file using the IMP utility IPATCH, in order to ascertain the level of corruption. The HHistory entry may indicate how the IFF file came to have no MH entry.

NOTDATE, asterisk only valid for unsetting date field

**Explanation:** An asterisk '\*' has been input for a field which is not a date, causing the output of this message, and followed by a repeat of the prompt.

**User action:** Try again using a command, integer number or string as appropriate.

RDERR, error reading from terminal

**Explanation:** This message indicates failure to read in a line from the terminal, and is followed by a system error message. the program exits immediately.

**User action:** Depends on the severity of the system error, but it may simply be a case of trying again.

STRTOOLONG, string too long (max length 'integer')

**Explanation:** Some fields in the map header require a string of characters. This message appears when the string input for such a field is too long. The string is ignored, and the prompt repeated.

**User action:** Try again with a string of an acceptable length.

TOBIN, illegal input date - 'day'/'month'/'year'

**Explanation:** A date input has fields that are unacceptable. A system message follows to explain the reason. The program will not attempt to translate the date into the map header in the IFF file.

**User action:** Try again with a legal date.

UNEXPCH, unexpected character ''character''

**Explanation:** Input to the program should consist of four-letter mnemonics for the commands, integer numbers for numeric data, text for character data, or integer numbers separated by '/' for dates. The only exceptions are '?' for HELP, and '\*' to unset a date field. Any other characters will result in the generation of this message, followed by a repetition of the last prompt for input.

**User action:** Try again with legal input.

UNKNNAME, unknown name 'string'

**Explanation:** This message is produced when an invalid command is input. The command is ignored and the prompt repeated.

**User action:** Try again with a valid command. HELP will give you a list of commands to use.

WRONGMH, wrong map header type 'number'

**Explanation:** The program encountered a map header that is did not expect. OSMHED is only intended to work on type 0 and 2 map headers.

**User action:** Ensure that the input IFF file has a type 0 or 2 map header (MH) entry.

---

**MESSAGES (OTHER)**

In addition to the above messages which are generated by the program itself, other messages may be produced by the command line interpreter (CLI) and by Laser-Scan libraries. In particular, messages may be generated by the IFF library and by the Laser-Scan I/O library, LSLLIB. IFF library messages are introduced by '%IFF' and are documented in the IFF library users' guide. In most cases IFF errors will be due to a corrupt input file, and this should be the first area of investigation. If the cause of the error cannot be traced by the user, and Laser-Scan are consulted, then the output file should be preserved to facilitate diagnosis. LSLLIB messages are introduced by '%LSLLIB' and are generally self-explanatory. They are used to explain the details of program generated errors.

## CHAPTER 6

### OSPIF IFF FILE PRINT UTILITY

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## UTILITY OSPIF

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### FUNCTION

OSPIF is a program for printing out the contents of an IFF file in summary format, and is useful for checking that a map has been successfully coded and formatted. The information produced includes the identity of the map sheet, feature codes, descriptions of texts, and start and end points of each feature.

---

### FORMAT

\$ OSPIF IFF-file-spec

#### Command qualifiers

/[NO]FC[=integer]  
/FRT=file-spec  
/[NO]FSN[=integer]  
/[NO]KEEP[=file-spec]  
/[NO]PRINT  
/[NO]TYPE

#### Defaults

All feature codes  
No FRT file read  
All feature serial numbers  
/NOKEEP  
/NOPRINT  
/TYPE

---

### PROMPT

\_IFF-file:           input-file-spec

---

### PARAMETERS

input-file-spec

- specifies the IFF file which is to be printed. Any part of the file specification which is not supplied will be taken from the default specification 'LSL\$IF:IFF.IFF'.

---

### COMMAND QUALIFIERS

/FC[=integer]  
/NOFC

- enables selection of a range of feature codes to be output. Either a single feature code or a range may be specified - multiple ranges are not allowed. /FC by itself selects all feature codes (the default). Feature codes must lie in the range 0 to 32767, and up to 1024 are allowed. Note, however, that the feature code table can only cope with feature codes in the range 0 to 1000. Any features in the IFF file with codes outwith this range will be ignored, and warning messages will appear.

/FRT=file-spec

- causes an FRT file, containing commands to set up an ACD common block, to be read in and obeyed. These definitions will then be used to identify any AC codes encountered and reported. If no FRT file is specified, then only the default AC values will be identified, any others will be described by a '?' in the appropriate position in the output.

/FSN[=integer]  
/NOFSN

- enables selection of a range of feature serial numbers to be output. Either a single feature serial number or a range may be specified - multiple ranges are not allowed. /FSN by itself selects all features (the default). Feature serial numbers must lie in the range 1 to 65535, and up to 1024 are allowed.

/KEEP[=file-spec]  
/NOKEEP

- causes the output to be written to the given file-spec. The default file-spec is PIFFILE.TMP

/PRINT  
/NOPRINT

- causes the output to be spooled. That is, it is written to the file PIFFILE.TMP, and printed. When the printing has completed, the file is deleted.

/TYPE  
/NOTYPE

- causes the output to be written to the terminal, and is the default action.

---

## RESTRICTIONS

- o /KEEP, /PRINT and /TYPE are mutually exclusive

---

## DESCRIPTION

After the command line has been decoded, the relevant information is read from the feature code file (see below). The program then reads through the IFF file sequentially, printing the relevant information for each feature. Whenever a new feature code is encountered, a new header with the feature code and description is printed. Information from the map header is summarised at the start of the output, and some totals given at the end.



OSPIF will only accept IFF files containing type 2, 3 or 4 MH entries. If the map header is type 3, the positions of the BGI, job number and capture scale are obtained from the translation table LSL\$OS\_MH\_TABLE, and the values will be read from the header for inclusion in the display. The Eastings, Northings and storage scale will be taken from the map descriptor. Refer to the IFFOSTF DATA PREPARATION section for details on how to set up the translation table.

IFF ZS (3-d string) entries are treated like ST (2-d string) entries, the heights being ignored. Similarly, CB (co-ordinate blocks with variable numbers of co-ordinates and per point attributes) entries will be treated like ST entries, with any heights and attributes being ignored. Composite texts (i.e. features which contain Text Status (TS) entries) are treated like individual text features, except that the feature serial number is the same for each component, and the number of components is given at the end of the feature.

### Feature Code Names

OSPIF outputs the name of each feature code as it encounters it (eg 'Name' or 'Antiquity symbol'). It obtains this information from a text file pointed to by the logical name LSL\$OS\_CODES. Care must be taken to change this file when amendments are made to FRT files.

Each line in the file is of fixed format, and consists of four 4-character fields followed by a 28-character field, thus :-

<fc>	<type>	<layer>	<code>	<description>
------	--------	---------	--------	---------------

where <fc> is the feature code  
    <type> is the feature type  
        1 and 2 for lines  
        3 for names  
        5 for 1-point symbols  
        6 for 2-point symbols  
        7 for scaled symbols  
    <layer> is the layer number and is ignored  
    <code> is an OS specific code which is ignored  
    <description> is the feature code description

An example follows :-

1	1	1	1	Building (public)
18	2	1	12	Railway (disused)
28	3	1	0	Name
40	5	1	10	Telephone post/pillar (GPO)
48	6	1	23	Elect pylon (standard)
49	7	1	0	Elect pylon (surveyed)

---

**EXAMPLES**

\$ OSPIF/FRT=RON\_ACD\_INFO\_TEST<CR>

IFF file LSL\$IF:INFO\_TEST.IFF;0

FRT file LSL\$FRT:RON\_ACD.FRT

Job 0 Map Ref SV0000SW on 27-NOV-1987 11:48:50.32

Reference corner 0, 0

BGI 0m.; storage scl 1: 0 data cap scl 1: 0

Section identification: created by IFROMTEXT at 15:01:42 on 26-NOV-87

Layer 1

Code 0 type 1 - Unknown feature type

FSN	Size	Start - Coords	Final - Coords	PC
1	1	0.00 0.00	0.00 0.00	0
AC found : Contour = 100				
2	1	0.00 0.00	0.00 0.00	0
AC found : Height = 101.123				
3	1	0.00 0.00	0.00 0.00	0
AC found : Contour = 200				
4	1	0.00 0.00	0.00 0.00	0
AC found : Height = -12.1				

Layer 2

Code 0 type 1 - Unknown feature type

FSN	Size	Start - Coords	Final - Coords	PC
5	1	0.00 0.00	0.00 0.00	0
AC found : Contour = -10				
6	1	234.57 948.40	234.57 948.40	0
7	1	0.00 0.00	0.00 0.00	0
AC found : Secondary_FC = 0				
8	1	0.00 0.00	0.00 0.00	0
AC found : Contour = 1000				
9	1	0.00 0.00	0.00 0.00	0
AC found : Height = -100.582				
10	1	0.00 0.00	0.00 0.00	0
11	1	0.00 0.00	0.00 0.00	0
12	1	0.00 0.00	0.00 0.00	0
AC found : Contour = 0				
13	1	0.00 0.00	0.00 0.00	0
14	0	0.00 0.00	0.00 0.00	0
AC found : Text = 13 "This is text"				
15	0	0.00 0.00	0.00 0.00	0
AC found : INT_EXAMPLE = -11				
16	0	0.00 0.00	0.00 0.00	0
AC found : INTEGER_EXAMPLE = 1000				

Layer 3

Code 0 type 1 - Unknown feature type

FSN	Size	Start - Coords	Final - Coords	PC
17	0	0.00 0.00	0.00 0.00	0

AC found : SECURITY\_MARKER = 1

Total FSNs      17 (different      17); total points      13  
ELAPSED:      0 00:00:24.93   CPU: 0:00:09.85   BUFIO: 63   DIRIO: 17   FAULTS: 405  
\$

This illustrates the use of an FRT file, containing AC definitions, when reporting on an IFF file containing AC entries. Some of the AC definitions above, such as CONTOUR, are default codes, while others, such as SECURITY\_MARKER are defined in the specified FRT file.

**\$ OSPIF/KEEP=CCB1.LIS CCB1<CR>**

%LSLLIB-I-IFFOPENED, DUA0:[OS.IFF]CCB1.IFF;1 opened for read

%OSPIF-I-CREOUT, output file CCB1.LIS created

ELAPSED:      0 00:00:04.52   CPU: 0:00:03.40   BUFIO: 9   DIRIO: 21   FAULTS: 203  
\$

When output is directed to a text file, a message confirming that the IFF file has been opened is output, followed by a message indicating that the output file has been created.

**\$ OSPIF/PRINT CCB1<CR>**

%LSLLIB-I-IFFOPENED, DUA0:[OS.IFF]CCB1.IFF;1 opened for read

ELAPSED:      0 00:00:05.23   CPU: 0:00:03.51   BUFIO: 9   DIRIO: 23   FAULTS: 199  
\$

When the output is spooled and printed, only the message confirming that the IFF file has been opened is output.

\$ OSPIF TEST/FC=28<CR>

IFF file LSL\$IF:TEST.IFF;0

Job 3500 Map Ref TA9999 on 11-AUG-1987 13:07:31.32

Reference corner 599000, 499000

BGI 100m.; storage scl 1: 2500 data cap scl 1: 1500

Section identification: Created by RJH as a text file

Layer 1

Code 28 type 5 - Name

FSN	Size	Start	Coords	Ang	P	S	C	Text
45	5	611.62	860.16	0	6	1	1	IMPORTANT BUILDING BELOW ULC
62	10	263.73	846.38	32	0	0	0	T
62	10	270.42	850.32	28	0	0	0	h
62	10	276.06	853.17	25	0	0	0	i
62	10	280.18	855.01	22	0	0	0	s
62	10	286.75	857.53	19	0	0	0	
62	10	294.17	859.83	15	0	0	0	i
62	10	298.55	860.93	12	0	0	0	s
62	10	305.46	862.28	9	0	0	0	
62	10	313.17	863.26	5	0	0	0	a
62	10	320.56	863.69	1	0	0	0	
62	10	328.32	863.61	357	0	0	0	b
62	10	335.35	863.06	353	0	0	0	e
62	10	342.32	862.08	350	0	0	0	n
62	10	348.51	860.82	346	0	0	0	t
62	10	354.62	859.20	343	0	0	0	
62	10	361.99	856.75	339	0	0	0	t
62	10	367.85	854.38	336	0	0	0	e
62	10	374.21	851.35	332	0	0	0	x
62	10	380.36	847.92	329	0	0	0	t

Composite text with 19 components

63	24	198.41	663.98	0	0	0	0	This is a paragraph of text
63	24	198.41	642.22	0	0	0	0	being used for testing
63	24	198.41	620.46	0	0	0	0	transformations. Note that
63	12	198.41	605.83	0	0	0	0	the point size of the text
63	12	198.41	592.19	0	0	0	0	can change.

Composite text with 5 components

Layer 11

Total FSNs 3 (different 3); total points 25

ELAPSED: 0 00:00:05.25 CPU: 0:00:03.61 BUFIO: 46 DIRIO: 29 FAULTS: 209

\$

In this example, only feature code 28 (text) has been selected for output. There are three features, two of which are composite texts. Note that the FSN is the same for each component, and a summary of the number of components is given at the end of the feature. Note the different angles for each component of FSN 62, and the change in point size for FSN 63. This file contains a grid in layer 11, but since the feature code for grid lines is not being output, only the heading appears.

\$ OSPIF TESTERR2<CR>

IFF file LSL\$IF:TESTERR2.IFF;0  
Job 3500 Map Ref TA9999 on 11-AUG-1987 13:08:01.87  
Reference corner 599000, 499000  
BGI 100m.; storage scl 1: 2500 data cap scl 1: 1500

Section identification: Created by RJH as a text file

Layer 1

Code 30 type 1 - Fence,wall (non road)

FSN	Size	Start - Coords	Final - Coords	PC
1	7	899.71 -0.00	999.90 74.12	0

Code 14 type 1 - Railway (narrow gauge)

FSN	Size	Start - Coords	Final - Coords	PC
2	15	999.61 62.30	904.69 -0.00	0

Code 993 type 0 -

%OSPIF-W-NOTINTAB, FSN 3 has feature code 993 not in code table

%OSPIF-W-UNKFC, FSN 4 has unknown feature code 2000

Code 0 type 1 - Unknown feature type

FSN	Size	Start - Coords	Final - Coords	PC
5	178	177.44 404.49	177.44 404.49	0

Code 87 type 1 - CL Motorway roundabout

FSN	Size	Start - Coords	Final - Coords	PC
6	145	192.19 375.68	192.19 375.68	20

Code 29 type 1 - Fence,wall etc (road)

FSN	Size	Start - Coords	Final - Coords	PC
7	22	238.18 405.66	213.96 365.82	21

Code 21 type 1 - Road edge of carriageway

FSN	Size	Start - Coords	Final - Coords	PC
8	18	233.11 405.76	220.61 377.05	21
9	33	185.94 448.63	232.23 414.75	21

Code 49 type 4 - Elect pylon (surveyed)

FSN	Size	Start - Coords	Ang
-----	------	----------------	-----

%OSPIF-W-NULLVEC, FSN 10 has null alignment vector

%OSPIF-W-ZEROSIZE, FSN 10 is zero size scaled symbol

10	0.00	254.69 427.15	0
----	------	---------------	---

Code 35 type 1 - Unsvyd pecks plotted

FSN	Size	Start - Coords	Final - Coords	PC
11	58	598.73 329.69	759.57 388.96	0

Code 28 type 5 - Name

FSN	Size	Start - Coords	Ang	P	S	C	Text
-----	------	----------------	-----	---	---	---	------

%OSPIF-W-NULLVEC, FSN 12 has null alignment vector

12	5	611.62 860.16	0	6	1	1	IMPORTANT BUILDING
----	---	---------------	---	---	---	---	--------------------

Total FSNs 10 (different 10); total points 480

ELAPSED: 0 00:00:05.02 CPU: 0:00:02.71 BUFIO: 59 DIRIO: 16 FAULTS: 188

\$

This example illustrates an IFF file which contains several errors. FSN 3 has a feature code of 993 which does not appear in the feature code table on LSL\$OS\_CODES. The heading is output, but the feature is ignored. FSN 4 has a feature code of 2000 which is outside the allowed range 0-1000, and so is ignored. Statistics for the feature are output, but a warning message also appears. FSN 10 is a scaled symbol with equal centre and aligning points. This results in the two warning messages, although the statistics do appear. Finally, FSN 12 has the same problem as FSN 10, its orientation point being equal to its locating point.

---

**MESSAGES (INFORMATIONAL)**

These messages give information only, and require no immediate action by the user. They are used to provide information on the current state of the program, or to supply explanatory information in support of a warning or error message.

CREOUT, output file 'file-spec' created

**Explanation:** When /KEEP is specified, this message appears once processing is complete, and confirms the name of the output file which has been created.

**User action:** None.

RANGE, should be in the range 0 to 'integer'

**Explanation:** This message follows either of the ILEGFC or ILEGFSN messages, and gives the correct range for the arguments of the respective qualifiers.

**User action:** Give the command line again, this time ensuring that the qualifier arguments lie in the appropriate range.

-----  
**MESSAGES (WARNING)**

These messages are output when an error has occurred that can be corrected immediately by the user or that the program will attempt to overcome.

ERRPOSAC, AC positioning error - found 'entry' length 'integer' at 'location'

**Explanation:** Before any details of a feature are output, all IFF entries relating to that feature are read and the relevant information stored. For AC entries, this simply consists of the positions of the entries within the IFF file. When the end of a particular feature is reached, the details are output. If the feature contains any AC's, the details of these are read directly from the file. This error occurs when, after repositioning to the saved IFF file address, the program does not find an AC entry, or the AC found contains no data. The current AC and any remaining ones are ignored and processing continues.

**User action:** This error may indicate an error either in the IFF file or in the program. The IFF file can be examined using the IMP utility IPATCH. If the AC entry length indicated in the message is less than zero, check the contents of all of the AC's in the feature of interest. Alternatively, if the length appears to be valid, you can position the editor to the IFF address given in the error message. Note that this will be a hexadecimal value. Examination of the IFF file may reveal no errors, indicating a possible programming error. If this is the case, please submit an SPR to Laser-Scan.

NOTINTAB, FSN 'fsn' has feature code 'fc' not in code table

**Explanation:** A feature code which has been read from the IFF file does not appear in the feature code table. Thus its statistics cannot be output. The feature is ignored and processing continues.

**User action:** The most likely reason for this message is that there is no entry for the feature code in question in the feature code table on LSL\$OSCODES. This should therefore be edited. On the other hand, the message may indicate an error in feature coding within the IFF file. In such a case, use the IMP utility IRECODE to assign new feature codes to the offending features. A third alternative would be simply to use /FC to exclude the offending feature codes.

NULLVEC, FSN 'fsn' has null alignment vector

**Explanation:** This message refers to either an oriented symbol, a scaled symbol, or a text, each of whose orientation is defined by a two-point ST rather than an RO entry. The message occurs when the two points which should define the alignment are in fact the same. The orientation is assumed to be zero, and execution continues.

**User action:** Edit the IFF file using either the IMP utility IPATCH, or LITES2, and ensure that the offending feature has a sensible orientation.



TOOMANYAC, FSN 'fsn' has too many AC entries

**Explanation:** The maximum number of AC's which can be handled is 100. This message appears when a feature is found which contains more than the allowed number. The first 100 AC's will appear on the output listing, and any more will be ignored, each occurrence beyond the maximum producing this message.

**User action:** Edit the IFF file using either the IMP utility IPATCH, or LITES2, and delete the superfluous AC entries. If a large number of AC's is a continuing requirement, please submit an SPR to Laser-Scan.

UNEXPAC, FSN 'fsn' has unexpected AC 'type'

**Explanation:** Ancillary Codes of types 2, 4 and 5 only are allowed in OS IFF files and these must be within line features. This message occurs when an AC of a type other than the permitted ones is encountered. The AC is ignored and processing continues.

**User action:** Edit the IFF file using either the IMP utility IPATCH, or LITES2, to remove the invalid AC's.

UNEXPENT, Unexpected IFF code 'entry'

**Explanation:** OSPIF has encountered an IFF entry it cannot deal with. The entry is ignored and processing continues.

**User action:** Use the IMP utility IPATCH to examine the IFF file and ascertain if the offending entry is a valid IFF entry. The HHistory entry may indicate how the entry in question came to be there. If it is an entry which should be dealt with by OSPIF, please submit an SPR to Laser-Scan.

UNKFC, FSN 'fsn' has unknown feature code 'fc'

**Explanation:** Feature codes in the feature code table must fall in the range 0-1000. Any outwith that range are ignored when the table is read in. If a feature code outwith the range is read from the IFF file, this message appears. The feature is ignored and processing continues.

**User action:** Use the IMP utility IRECODE to assign new feature codes to the offending features. The feature code table on LSL\$OS\_CODES may also require editing. Alternatively, use /FC to exclude the offending feature codes. If large feature codes are a continuing requirement, please submit an SPR to Laser-Scan.

ZEROSIZE, FSN 'fsn' is zero size scaled symbol

**Explanation:** This message is output when the two points which define the alignment and size of a scaled symbol are equal, resulting in a size of zero. The message NULLVEC will have appeared immediately prior to this one. Details of the feature are nevertheless output, and execution continues normally.

**User action:** Edit the IFF file using either the IMP utility IPATCH, or LITES2, and ensure that the offending symbol has a sensible size and alignment.

---

**MESSAGES (ERROR)**

These messages indicate an error in processing which will cause the program to terminate. The most likely causes are a corrupt or otherwise invalid input file, or an error related to command line processing and file manipulation.

ERRCLOOUT, Error closing output to 'file-spec'

**Explanation:** The output file could not be closed. An additional LSLLIB message will follow, giving the reason for the failure. If this is due to a system error, the system error message will also appear.

**User action:** Ascertain the cause of the failure from the messages given, and take the appropriate remedial action. If the error is due to a serious problem such as a system failure, the System Manager should be informed.

ERROPNCODE, Error opening feature code file LSL\$OS\_CODES

**Explanation:** The feature code file could not be opened. An additional Fortran or system message will follow, giving the reason for the failure.

**User action:** Ascertain the cause of the failure from the messages given. There may be a simple remedy, e.g. change the assignment of logical name LSL\$OS\_CODES. Alternatively, this error could be due to a more serious problem such as a system failure, and in that case the System Manager may have to be informed.

ERROPNOUT, Error opening 'file-spec' for output

**Explanation:** The output file could not be opened. An additional LSLLIB message will follow, giving the reason for the failure. If this is due to a system error, the system error message will also appear.

**User action:** Ascertain the cause of the failure from the messages given. There may be a simple remedy, e.g. a change in the directory specification. Alternatively, this error could be due to a more serious problem such as a system failure, and in that case the System Manager may have to be informed.

ERRSPLOUT, Error spooling output file 'file-spec'

**Explanation:** The output file could not be spooled. An additional LSLLIB message will follow, giving the reason for the failure. If this is due to a system error, the system error message will also appear.

**User action:** Ascertain the cause of the failure from the messages given, and take the appropriate remedial action. If the error is due to a serious problem such as a system failure, the System Manager should be informed.

ILEGFC, Illegal feature code range, 'integer' to 'integer'

**Explanation:** The feature code range given with /FC must be within the range 0 to 32767. This message is output when the feature codes specified are partly or wholly outwith the allowed range, or when the range itself is invalid. The informational message RANGE will follow, indicating the correct range.

**User action:** Give the command line again, this time ensuring that the range specified with /FC is valid.

ILEGFSN, Illegal feature serial number range, 'integer' to 'integer'

**Explanation:** The feature serial number range given with /FSN must be within the range 0 to 65535. This message is output when the feature serial numbers specified are partly or wholly outwith the allowed range, or when the range itself is invalid. The informational message RANGE will follow, indicating the correct range.

**User action:** Give the command line again, this time ensuring that the range specified with /FSN is valid.

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**MESSAGES (OTHER)**

In addition to the above messages which are generated by the program itself, other messages may be produced by the command line interpreter (CLI) and by Laser-Scan libraries. In particular, messages may be generated by the IFF library and by the Laser-Scan I/O library, LSLLIB. IFF library messages are introduced by '%IFF' and are documented in the IFF library users' guide. In most cases IFF errors will be due to a corrupt input file, and this should be the first area of investigation. If the cause of the error cannot be traced by the user, and Laser-Scan are consulted, then the output file should be preserved to facilitate diagnosis. LSLLIB messages are introduced by '%LSLLIB' and are generally self-explanatory. They are used to explain the details of program generated errors.