

Laser-Scan Ltd.

CONVERT PACKAGE

IFFMGD Reference

Issue 1.0 - 17-June-1991

Copyright (C) 1991 Laser-Scan Ltd
Science Park, Milton Road, Cambridge, England CB4 4FY tel: (01223) 420414

Document "IFFMGD REFERENCE", Category "REFERENCE"
Document Issue 1.0 S Townrow (modified 17-Jun-1991)

CONTENTS

	IFFMGD - Change Record	i
	PREFACE	1
	Intended audience	1
	Structure of this document	1
	Conventions used in this document	2
CHAPTER 1	MGD FORMAT DESCRIPTION	
	FORMAT DESCRIPTION	1-1
	Introduction	1-1
	Magnetic tape output	1-1
CHAPTER 2	MGD DATA PREPARATION	
	DATA PREPARATION	2-1
	Comparison of MGD77 and IFF	2-1
	Format of IFF Files for Transfer To and From MGD77	2-1
	The AC Entries Used to Hold MGD77 Information in IFF	2-2
	A Typical FRT File for use with MGD77 Data Held in IFF	2-11
CHAPTER 3	I2MGD UTILITY	
	UTILITY I2MGD	3-1
	FUNCTION	3-1
	FORMAT	3-1
	PROMPT	3-1
	PARAMETERS	3-1
	COMMAND QUALIFIERS	3-1
	RESTRICTIONS	3-2
	DESCRIPTION	3-3
	EXAMPLES	3-5
	MESSAGES (SUCCESS)	3-7
	MESSAGES (INFORMATIONAL)	3-8
	MESSAGES (WARNING)	3-9
	MESSAGES (ERROR)	3-11
	MESSAGES (OTHER)	3-14
CHAPTER 4	MGD2I UTILITY	
	UTILITY MGD2I	4-1
	FUNCTION	4-1
	FORMAT	4-1
	PROMPT	4-1
	PARAMETERS	4-1
	COMMAND QUALIFIERS	4-1
	RESTRICTIONS	4-3

DESCRIPTION	4-3
EXAMPLES	4-5
MESSAGES (SUCCESS)	4-7
MESSAGES (WARNING)	4-8
MESSAGES (ERROR)	4-11
MESSAGES (OTHER)	4-13

IFFMGD - Change Record

Version 1.0 S Townrow 17-June-1991

Module IFFMGD - Reorganised package documentation.

Version 1.0 S Townrow 2-September-1991

Module IFFMGD - New line added to documentation which describes
translation of null values from IFF to MGD and
vice-versa.

PREFACE

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.

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.

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>.
\$ IFF2SIF <CR>	Command examples show all user entered commands in bold type.
\$ IFF2SIF <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 assignment statement).

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

MGD FORMAT DESCRIPTION

FORMAT DESCRIPTION

Introduction

The program I2MGD provides a translation from Laser-Scan's Internal Feature Format (IFF) to the Marine Geophysical Data Exchange Format (MGD77). MGD2I provides a translation from MGD77 to IFF. For a brief comparison of the way IFF and MGD77 regard data, see the section on 'Data Preparation' below.

The programs read and produce the MGD77 ASCII format, as described in the document **The Marine Geophysical Data Exchange Format - 'MGD77' (Bathymetry, Magnetism and Gravity)** of September 1977, revised in December 1981, (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Geophysical and Solar-Terrestrial Data Center).

Magnetic tape output

The programs read from and write to magnetic tape in MGD77 format in ASCII code, in blocks (physical records) of 1920 bytes. The output is normally at 1600 bpi, PE, on 9 track tape.

If necessary, the last block of each file is padded with appropriate null or 'unspecified' characters as described in the format specification. Each file is separated from the previous by a tapemark, and there are two tapemarks after the last file on a tape.

If an MGD77 format file spans more than one tape, then the contents of the separate tapes must be treated as separate files for the purposes of transfer to and from IFF. This is possible because each tape carries a duplicate of the file header information. Large IFF files must be demerged and merged using IMP utility IMERGE, as appropriate, before and after transfer to and from MGD77 format files which span multiple tapes.

CHAPTER 2

MGD DATA PREPARATION

DATA PREPARATION

Comparison of MGD77 and IFF

IFF is a feature oriented data format - data is separated into features, and each feature represents one 'thing' on the map. An integer feature code 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.

An MGD77 file contains information about bathymetric, magnetic and gravitational observations held in data records, which are similar in concept to single point IFF features. Each data record holds information about a single set of observations made at one position and time. All these data records are thus of the same type, with fields relating to all three of the possible types of observation. Since this information is frequently collected during some sort of surveying journey, the data records are often ordered chronologically on the tape.

Format of IFF Files for Transfer To and From MGD77

An MGD77 file contains header information, held in one or more header blocks, and logical data records, each one holding information about the bathymetric, magnetic and gravitational observations made at one position and time.

In an IFF file, as created by MGD2I or to be read by I2MGD, the header information and logical data records are held in features. The contents of the header blocks are held in a single feature in layer 0 of the IFF file. The contents of the each logical data record are held in separate features in layer 1 (or greater) of the IFF file. The user may specify the feature code to be used.

Every feature, whether it corresponds to the MGD77 header or the logical data records, contains a single-point ZS (3D string) entry and a number of Ancillary Code (AC) entries. In the case of the logical data records, the ZS entry will hold the longitude (in degrees), the latitude (in degrees) and corrected depth (in metres) of the observation. For the header feature, the ZS entry contains any suitable dummy set of coordinates; for example the longitude and latitude of the first data record feature, and a corrected depth of 0. The AC entries are used to hold the remaining fields of the header and data records.

An IFF file with this structure derived from MGD77 data may be used directly for input to digital terrain model generation software (DTMCREATE package) or all the information in the AC entries examined and manipulated in the LITES2 editor.

The AC Entries Used to Hold MGD77 Information in IFF

The contents of MGD77 header and data record fields, with the exception of longitude and latitude, are held in Ancillary Code (AC) entries when they are transferred to IFF files. The corrected depth is also held in the ZS entry as well as in an AC entry.

The programs I2MGD and MGD2I always refer to the ACs by the same names, so allowing the user to determine which code is used in the AC entries in the IFF file, by supplying a suitable Feature Representation Table (FRT) file. The FRT file will be read by the programs, which then use it to determine the AC codes corresponding to each AC name. Full details of the preparation and use of FRT files can be found in the Laser-Scan 'FRT User Guide'.

The default number of AC codes allowed in an FRT file is 50. To execute I2MGD and MGD2I with more codes (eg the full range of attributes defined below and in the example FRT file) the allowable number must be increased. If this has not been implemented systemwide by the system manager, increase the allowable number of codes by entering the following command to the DCL prompt:

```
$DEFINE LSL$FRT_ACDMAX 200
```

Some fields, for example those containing sequence numbers in the header blocks, are not transferred to the IFF file because their contents are invariant or because they are made superfluous by the nature or structure of an IFF file.

The AC entries for fields the contents of which are unspecified should be omitted or, for unsigned quantities, filled with '9's.

Where a text field is held in an AC of type "C" (text) the text is held as "Additional Text".

The fields of the MGD77 header are listed below, with the names and types of the AC entries in which they are held in an equivalent IFF file:

Cruise Identifier

AC Name : M_Cruise_ID
AC Type : Text, 8 characters.

Format Acronym

AC Name : M_Format_acronym
AC Type : Text, 5 characters, always 'MGD77'.

Data Centre File Number

AC Name : M_Data_centre_no
AC Type : Integer, between 0 and 99999999.

Number of Type 1 Headers

AC Name : M_Type_one_headers
AC Type : Integer, between 1 and 4.

Number of Type 2 Headers

AC Name : M_Type_two_headers
AC Type : Integer, should be 0 on MGD77 format tape files.

Number of Data Parameters

AC Name : M_Data_Parameters
AC Type : Integer, should be 29.

Parameters Surveyed Code - bathymetry

AC Name : M_Survey_Code_bathy
AC Type : Integer, should be 0, 1, 3 or 5.

Parameters Surveyed Code - magnetics

AC Name : M_Survey_Code_mag
AC Type : Integer, should be 0, 1, 3 or 5.

Parameters Surveyed Code - gravity

AC Name : M_Survey_code_grav
AC Type : Integer, should be 0, 1, 3 or 5.

Parameter Surveyed Code - high-resolution seismics

AC Name : M_Survey_code_H_res
AC Type : Integer, should be 0, 1, 3 or 5.

Parameter Surveyed Code - deep penetration seismics

AC Name : M_Survey_code_D_pen
AC Type : Integer, should be 0, 1, 3 or 5.

File Creation Date

AC Name : M_File_Creation
AC Type : Integer, date in format YYMMDD.

Contributing Institution

AC Name : M_Contributing_inst
AC Type : Text, 41 characters.

Country

AC Name : M_Country
AC Type : Text, 18 characters.

Platform Name

AC Name : M_Platform_Name
AC Type : Text, 21 characters.

Platform Type Code

AC Name : M_Platform_type_code
AC Type : Integer, between 0 and 9.

Platform Type

AC Name : M_Platform_type
AC Type : Text, 6 characters.

Chief Scientist(s)

AC Name : M_Chief_scientist
AC Type : Text, 32 characters.

Project, Cruise and Leg

AC Name : M_Project_cruise_leg
AC Type : Text, 58 characters.

Funding

AC Name : M_Funding
AC Type : Text, 20 characters.

Survey Departure Date

AC Name : M_Survey_departure
AC Type : Integer, date in format YYMMDD.

Port of Departure

AC Name : M_Port_of_departure
AC Type : Text, 34 characters.

Survey Arrival Date

AC Name : M_Survey_arrival
AC Type : Integer, date in format YYMMDD.

Port of Arrival

AC Name : M_Port_of_arrival
AC Type : Text, 32 characters.

Navigation Instrumentation

AC Name : M_Navigation_instr
AC Type : Text, 40 characters.

Position Determination Method

AC Name : M_Pos_determ_method
AC Type : Text, 38 characters.

Bathymetry Instrumentation

AC Name : M_Bathy_instr
AC Type : Text, 40 characters.

Additional Forms of Bathymetry Data

AC Name : M_Add_bathy_data
AC Type : Text, 38 characters.

Magnetics instrumentation

AC Name : M_Magnetics_instr
AC Type : Text, 40 characters.

Additional Forms of Magnetic Data

AC Name : M_Add_mag_data
AC Type : Text, 38 characters.

Gravity Instrumentation

AC Name : M_Gravity_instr
AC Type : Text, 40 characters.

Additional Forms of Gravity Data

AC Name : M_Add_gravity_data
AC Type : Text, 38 characters.

Seismic Instrumentation

AC Name : M_Seismic_instr
AC Type : Text, 40 characters.

Formats of Seismic Data

AC Name : M_Form_seismic_data
AC Type : Text, 38 characters.

General Digitising Rate of Bathymetry

AC Name : M_Dig_rate_bathy
AC Type : Real, between 0.0 and 99.9, accurate to 1 decimal place.

General Sampling Rate of Bathymetry

AC Name : M_Samp_rate_bathy
AC Type : Text, 12 characters.

Assumed Sound Velocity

AC Name : M_Assumed_sound_vel

AC Type : Real, between 0.0 and 9999.9, accurate to 1 decimal place.

Bathymetry Datum Code

AC Name : M_Bathy_datum_code

AC Type : Integer, between 00 and 99.

Interpolation Scheme

AC Name : M_Interpolation

AC Type : Text, 56 characters.

General Rate of Digitising Magnetics

AC Name : M_Dig_rate_mag

AC Type : Real, between 0.0 and 99.9, accurate to 1 decimal place.

General Sampling Rate of Magnetics

AC Name : M_Samp_rate_mag

AC Type : Integer, between 0 and 99.

Magnetic Sensor Tow Distance

AC Name : M_Mag_sensor_towdist

AC Type : Integer, between 0 and 9999.

Sensor Depth

AC Name : M_Mag_sensor_depth

AC Type : Real, between 0.0 and 9999.9, accurate to 1 decimal place.

Horizontal Sensor Separation

AC Name : M_Mag_hor_sensor_sep

AC Type : Integer, between 0 and 999.

Reference Field Code

AC Name : M_Mag_ref_field_code

AC Type : Integer, between 0 and 99.

Reference Field

AC Name : M_Reference_Field

AC Type : Text, 12 characters.

Method of Applying Residual Field

AC Name : M_M_O_A_residual

AC Type : Text, 47 characters.

General Digitising Rate of Gravity

AC Name : M_Dig_rate_gravity

AC Type : Real, between 0.0 and 99.9, accurate to 1 decimal place.

General Sampling Rate of Gravity

AC Name : M_Samp_rate_gravity

AC Type : Integer, between 0 and 99.

Theoretical Gravity Formula Code

AC Name : M_Gravity_form_code

AC Type : Integer, between 1 and 9.

Theoretical Gravity Formula

AC Name : M_Gravity_formula

AC Type : Text, 17 characters.

Reference System Code

AC Name : M_Ref_system_code

AC Type : Integer, between 1 and 9.

Reference System

AC Name : M_Reference_system

AC Type : Text, 16 characters.

Corrections Applied

AC Name : M_Correction_applied

AC Type : Text, 38 characters.

Departure Base Station Gravity

AC Name : M_Dep_base_stn_grav

AC Type : Real, between 0.0 and 999999.9, accurate to 1 decimal place.

Departure Base Station Description

AC Name : M_Dep_base_stn_descr

AC Type : Text, 33 characters.

Arrival Base Station Gravity

AC Name : M_Arr_base_stn_grav

AC Type : Real, between 0.0 and 999999.9, accurate to 1 decimal place.

Arrival Base Station Description

AC Name : M_Dep_base_stn_descr

AC Type : Text, 31 characters.

10-Degree Identifiers

AC Name : M_Ten_degree_ident
AC Type : Integer, between 0 and 9999.

Additional Documentation

AC Name : M_Additional_doc
AC Type : Text, 78 characters.

The fields of the MGD77 logical data records are listed below, with the names and types of the AC entries in which they are held in an equivalent IFF file:

Cruise Identifier

AC Name : M_Data_cruise_ident
AC Type : Text, 8 characters.

Time Zone Correction (including sign)

AC Name : M_Data_time_zone_cor
AC Type : Real, between -13 and +12, accurate to 2 decimal places.

Year, Month and Day

AC Name : M_Data_date
AC Type : Integer, date in format YYMMDD.

Time - Hours

AC Name : M_Data_time_hours
AC Type : Integer, between 0 and 23.

Time - Minutes

AC Name : M_Data_time_mins
AC Type : Real, between 0.0 and 59.999, accurate to 3 decimal places.

Bathymetry, Traveltime

AC Name : M_Data_bathy_travel
AC Type : Real, between 0.0 and 99.9999, accurate to 4 decimal places.

Bathymetry, Corrected Depth

AC Name : M_Data_bathy_correct
AC Type : Real, between 0.0 and 99999.9, accurate to 1 decimal place.

Bathymetry Correction Code

AC Name : M_Data_bathy_co_code
AC Type : Integer, between 1 and 99.

Bathymetry Type Code

AC Name : M_Data_bathy_ty_code
AC Type : Integer, between 1 and 9.

Magnetics Total Field, 1st Sensor

AC Name : M_Data_mag_total_one
AC Type : Real, between 0.0 and 99999.9, accurate to 1 decimal place.

Magnetics Total Field, 2nd Sensor

AC Name : M_Data_mag_total_two
AC Type : Real, between 0.0 and 99999.9, accurate to 1 decimal place.

Magnetics Residual Field (including sign)

AC Name : M_Data_mag_residual
AC Type : Real, between +/- 9999.9, accurate to 1 decimal place.

Sensor Used for Residual Field

AC Name : M_Data_sens_residual
AC Type : Integer, between 1 and 9.

Magnetics Diurnal Correction (including sign)

AC Name : M_Data_mag_diurn_cor
AC Type : Real, between +/- 999.9, accurate to 1 decimal place.

Depth or Altitude of Lead Magnetic Sensor (including sign)

AC Name : M_Data_alt_mag_sens
AC Type : Integer, between +/- 99999.

Observed Gravity

AC Name : M_Data_obs_gravity
AC Type : Real, between 0.0 and 999999.9, accurate to 1 decimal place.

EOTVOS Correction (including sign)

AC Name : M_Data_EOTVOS_corr
AC Type : Real, between +/- 9999.9, accurate to 1 decimal place.

Free-Air Anomaly (including sign)

AC Name : M_Data_free_air_anom
AC Type : Real, between +/- 999.9, accurate to 1 decimal place.

Seismic Shot-Point Identification

AC Name : M_Data_seismic_ident
AC Type : Text, 8 characters.

Quality Code for Gravity

AC Name : M_Data_Qcode_gravity
AC Type : Integer, between 0 and 9.

Quality Code for Magnetics

AC Name : M_Data_Qcode_magnet
AC Type : Integer, between 0 and 9.

Quality Code for Bathymetry

AC Name : M_Data_Qcode_bathy
AC Type : Integer, between 0 and 9.

Quality Code for Navigation

AC Name : M_Data_Qcode_navigat
AC Type : Integer, between 5 and 9.

A Typical FRT File for use with MGD77 Data Held in IFF

The following is a listing of a typical FRT file which might be used with MGD2I, I2MGD and other utilities to prepare and process an IFF file from an MGD77 format magnetic tape file. This FRT file is normally supplied with MGD2I and I2MGD for acceptance testing as the file:

LSL\$PUBLIC_ROOT:[CONVERT.ACCEPT]MGD77_ACD_TABLE.FRT

```
!
! FRT Table for the conversion to and from IFF, and the display in IFF,
! of data in 'The Marine Geophysical Data Exchange Format' (MGD77).
!
! Created: F J Brown                      26-July-1988
!
! Copyright: Laser-Scan Ltd.,Cambridge, CB4 4FY, ENGLAND
!
!
! Attribute codes:
! =====
!
!
ACD TABLE          3
!
! Header record codes
! =====
!
!      Type Code      Name                      Minimum Maximum Minimum  Additional
!                  value      value      step      text length
!
ACD C    1      M_Cruise_ID                      ! 8 chars
ACD C    2      M_Format_acronym                  ! 5 chars(MGD77)
ACD I    3      M_Data_Centre_no          0      99999999 1
ACD I    4      M_Type_one_headers        1      4      1
ACD I    5      M_Type_two_headers        0      0
ACD I    6      M_Data_Parameters         29      29
ACD I    7      M_Survey_code_bathy       0      5      1
ACD I    8      M_Survey_code_mag         0      5      1
ACD I    9      M_Survey_code_grav        0      5      1
ACD I   10      M_Survey_code_H_res       0      5      1
ACD I   11      M_Survey_code_D_pen       0      5      1
ACD I   12      M_File_creation          10101    999999
ACD C   13      M_Contributing_inst.      ! 41 chars
ACD C   14      M_Country                  ! 18 chars
ACD C   15      M_Platform_name            ! 21 chars
ACD I   16      M_Platform_type_code      0      9      1
ACD C   17      M_Platform_type           ! 6 chars
ACD C   18      M_Chief_scientist         ! 32 chars
ACD C   19      M_Project_cruise_leg      ! 58 chars
ACD C   20      M_Funding                  ! 20 chars
ACD I   21      M_Survey_departure        10101    999999
ACD C   22      M_Port_of_departure      ! 34 chars
ACD I   23      M_Survey_arrival          10101    999999
ACD C   24      M_Port_of_arrival         ! 32 chars
ACD C   25      M_Navigation_instr        ! 40 chars
ACD C   26      M_Pos_determ_method       ! 38 chars
```

ACD C	27	M_Bathy_instr				! 40 chars
ACD C	28	M_Add_bathy_data				! 38 chars
ACD C	29	M_Magnetics_instr				! 40 chars
ACD C	30	M_Add_mag_data				! 38 chars
ACD C	31	M_Gravity_instr				! 40 chars
ACD C	32	M_Add_gravity_data				! 38 chars
ACD C	33	M_Seismic_instr				! 40 chars
ACD C	34	M_Form_seismic_data				! 38 chars
ACD R	35	M_Dig_rate_bathy	0.0	99.9	0.1	
ACD C	36	M_Samp_rate_bathy				! 12 chars
ACD R	37	M_Assumed_sound_vel	0.0	9999.9	0.1	
ACD I	38	M_Bathy_datum_code	0	99	1	
ACD C	39	M_Interpolation				! 56 chars
ACD R	40	M_Dig_rate_mag	0.0	99.9	0.1	
ACD I	41	M_Samp_rate_mag	0	99	1	
ACD I	42	M_Mag_sensor_towdist	0	9999	1	
ACD R	43	M_Mag_sensor_depth	0.0	9999.9	0.1	
ACD I	44	M_Mag_hor_sensor_sep	0	999	1	
ACD I	45	M_Mag_ref_field_code	0	99	1	
ACD C	46	M_Reference_field				! 12 chars
ACD C	47	M_M_O_A_residual				! 47 chars
ACD R	48	M_Dig_rate_gravity	0.0	99.9	0.1	
ACD I	49	M_Samp_rate_gravity	0	99	1	
ACD I	50	M_Gravity_form_code	1	9	1	
ACD C	51	M_Gravity_formula				! 17 chars
ACD I	52	M_Ref_system_code	1	9	1	
ACD C	53	M_Reference_system				! 16 chars
ACD C	54	M_Correction_applied				! 38 chars
ACD R	55	M_Dep_base_stn_grav	0.0	999999.9	0.1	
ACD C	56	M_Dep_base_stn_descr				! 33 chars
ACD R	57	M_Arr_base_stn_grav	0.0	999999.9	0.1	
ACD C	58	M_Arr_base_stn_descr				! 31 chars
ACD I	59	M_Ten_degree_ident	0	9999	1	
ACD C	60	M_Additional_doc				! 78 chars

!
! Data record codes

! =====

!	Type	Code	Name	Minimum	Maximum	Minimum	Additional
!				value	value	step	text length
!							
ACD C	101		M_Data_cruise_ident				! 8 chars
ACD R	102		M_Data_time_zone_cor	-13.0	99.9	0.01	
ACD I	103		M_Data_date	10101	999999		
ACD I	104		M_Data_time_hours	0	99		
ACD R	105		M_Data_time_mins	0.0	99.999		
ACD I	106		M_Data_pos_type_code	1	9	1	
ACD R	107		M_Data_bathy_travel	0.0	99.9999	0.0001	
ACD R	108		M_Data_bathy_correct	0.0	99999.9	0.1	
ACD I	109		M_Data_bathy_co_code	1	99	1	
ACD I	110		M_Data_bathy_ty_code	1	9	1	
ACD R	111		M_Data_mag_total_one	0.0	99999.9	0.1	
ACD R	112		M_Data_mag_total_two	0.0	99999.9	0.1	
ACD R	113		M_Data_mag_residual	-9999.9	9999.9	0.1	
ACD I	114		M_Data_sens_residual	1	9	1	
ACD R	115		M_Data_mag_diurn_cor	-999.9	999.9	0.1	

ACD I	116	M_Data_alt_mag_sens	-99999	99999	1	
ACD R	117	M_Data_obs_gravity	0.0	999999.9	0.1	
ACD R	118	M_Data_EOTVOS_corr	-9999.9	9999.9	0.1	
ACD R	119	M_Data_free_air_anom	-999.9	999.9	0.1	
ACD C	120	M_Data_seismic_ident				! 8 chars
ACD I	121	M_Data_Qcode_gravity	0	9	1	
ACD I	122	M_Data_Qcode_magnet	0	9	1	
ACD I	123	M_Data_Qcode_bathy	0	9	1	
ACD I	124	M_Data_Qcode_navigat	5	9	1	

!

CHAPTER 3

I2MGD UTILITY

UTILITY I2MGD

FUNCTION

I2MGD reads an Internal Feature Format (IFF) file, and produces a file on magnetic tape in Marine Geophysical Data (MGD77) exchange format.

FORMAT

\$ I2MGD output-file-spec

Command qualifiers

/DEVICE=magtape-drive
/[NO]DIAGNOSTICS
/FC=feature-code
/FRT=file-spec
/[NO]REWIND

Defaults

/DEVICE=MSA0:
/NODIAGNOSTICS
/FC=10
/FRT=LSL\$FRT:MGD77_ACD_TABLE.FRT
/NOREWIND

PROMPT

_Input-IFF-file: input-file-spec

PARAMETERS

input-file-spec

- This parameter specifies the name of an IFF file, and is compulsory. The data written to the output tape is read from this file. Only one filename may be specified for each run of the program. The default device and extension LSL\$IF:.IFF are applied to the output file specification when it is parsed.
-

COMMAND QUALIFIERS

/DEVICE=magtape-drive

- The /DEVICE command qualifier specifies the magnetic tape device on which the output tape is to be written. The default device name is MSA0:.

/DIAGNOSTICS
/NODIAGNOSTICS (default)

- When /DIAGNOSTICS is present, the I2MGD utility will output diagnostic messages as it processes the input tape. These messages include information about each block of data written to the tape. This qualifier should be used only when strictly necessary as large amounts of terminal output can be generated.

/FC=feature-code

- This qualifier is used to specify the Feature Code (FC) of all the features from which the program is to extract the details to create the output magtape file. That is, the dummy feature used to hold the header information Ancillary Code (AC) entries, and the features used to hold the coordinates and attribute data for each logical data record on the tape.
The default feature code is 10.

/FRT=file-spec

- The /FRT command qualifier specifies a Feature Representation Table (FRT) file which the program will read to determine the AC codes given to the AC entries, in the IFF file, created to hold header and feature attribute information. The program I2MGD always refers to these ACs using the same names, but the user may alter the codes, onto which these names map, by changing the FRT file.
The default file specification is LSL\$FRT:MGD77_ACD_TABLE.FRT. If a file specification is given with /FRT, it is parsed against this default.

/REWIND
/NOREWIND (default)

- The /REWIND qualifier, when present on the command line, specifies that the magnetic tape should be rewound, by I2MGD, to the 'BOT' position before writing of any sheet is started.

Note that existing data on the tape will be overwritten

When /NOREWIND, the default, is used, the data is appended to any existing datasets on the tape. The tape is rewound to BOT and then searched for the EOv mark. When found the tape is positioned between the two tapemarks and the new data written from there. The tape is terminated with a new EOv after the data.

RESTRICTIONS

None

DESCRIPTION

I2MGD is a utility to transfer an Internal Feature Format (IFF) disk file to a 'map sheet' on an MGD77 format magnetic tape. A 'map sheet' is a single file or dataset on the output tape. The program allows the creation of multiple datasets on one tape but does not currently support datasets spanning more than one tape. Very large files should be divided into smaller files with identical 'header' features in layer 0, and then transferred to separate tapes.

Note that only a single map sheet may be transferred during a single run of the program.

If the /DIAGNOSTICS qualifier is used on the command line, the program produces messages giving information about the blocks being written to the tape, and any errors or difficulties which may be encountered.

I2MGD transfers information from a dummy feature in layer 0 of the input IFF file to the header block or blocks of an MGD77 format tape. The dummy feature is taken to be the first feature with the required feature code (FC)(default is 10) read from layer 0. Header information is held in the IFF file in a number of AC entries with codes as defined by the FRT file read by the program. The dummy header feature has the coordinates of the local origin of the IFF file and these are ignored by I2MGD.

I2MGD translates each IFF feature record, with the specified FC, in the input file into a MGD77 logical data record. The data features can be contained in any layers from layer 1 onwards of the IFF file and are ordered as in the IFF file. The X, Y and Z coordinates of a ZS entry are transferred to the longitude, latitude and corrected depth, respectively, of a data record. If the Z coordinate is an IFF undefined value, it is translated into a null depth value of 99999. All the AC entries contained in the feature are transferred to the relevant attribute fields in the data record. The codes of these AC entries are determined from the FRT file read by the program.

Some quantities, for example longitudes, may be subject to rounding errors in their final digit when the program transfers them from the input IFF file to the MGD77 format tape file. This will generally only occur for quantities such as longitude when all 8 of their potential significant figures (digits) are used (ie. greater than 99.99999 degrees). This rounding error is inherent to VAX/VMS data storage methods. It may cause a positional inaccuracy of less than 1 metre on the earth's surface.

The I2MGD program always refers to the types of the AC entries which it constructs using the same AC names. The user may alter the codes of the AC entries written to the output IFF file by changing the FRT file read by the program. The use of the FRT file is described in the 'Data Preparation' section of the documentation for this module.

Details of the structure, content and characteristics of an MGD77 format tape are to be found in the 'Data Format' section of this module's documentation.

It is essential that the tape is mounted as a foreign volume with a write-permit-ring prior to running I2MGD. This is achieved using the DCL command MOUNT with the /FOREIGN qualifier e.g.
\$ MOUNT MSA0:/FOREIGN.

Rewind tape and transfer IFF file to the beginning of the tape

[illegible]

\$

§

MESSAGES (SUCCESS)

These messages are used to indicate that the program has succeeded in performing some action, and do not require any user action.

NORMAL, Normal, successful completion

Explanation: I2MGD has finished its operations successfully and without problems.

User action: None.

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.

LAYER, layer 'integer'

Explanation: The start of the specified layer has been found in the IFF file

User action: None.

MGDOPNOUT, MGD77 file 'filename' opened for output

Explanation: The magnetic tape device specified has been opened for writing the MGD77 file to

User action: None.

NOTEOF, rewinding and looking for end of volume

Explanation: I2MGD is rewinding the tape back to the BOT marker and will then search through the tape looking for the pair of tapemarks indicating the End-of-File . It will then position the tapehead between the tapemarks preparatory to writing the requested dataset. This may take some time with large datasets.

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.

BADSNUM, too many Additional Documentation entries for header blocks

Explanation: More ACs of 'Additional Documentation' type than the 79 that can be written to the 4 header blocks have been found in the header feature in layer 0. The excess ACs have been ignored.

User action: If the documentation is required then edit the IFF file using IPATCH or LITES2 to reduce the number of AC entries of this type, and rerun I2MGD on this data.

CORDEP, Z value 'real' different from Bathymetric Depth in AC entry - Z value used.

Explanation: The value read from the Z field of the ZS entry is different to that previous read from the AC type M_Data_bathy_correct. The former is assumed correct for output.

User action: If the Z value of the ZS entry is not required on output, amend the IFF file using IPATCH or LITES2 and rerun I2MGD on this data.

DOC77LONG, an Additional Documentation record has been truncated to 77 characters

Explanation: The start of each additional header block is labeled with a Record Type field of '1'. Only 77 characters can therefore be output in the first sequence of 80 characters. Truncation of the end of an AC type Additional Documentation entry of 78 characters has occurred.

User action: If the full documentation is required edit the IFF file

MISSAC, no AC entries in feature 'fsn' ('isn') in layer 'integer'

Explanation: No AC entries were found in the specified feature. A data record comprising only the latitude, longitude and Corrected Depth has been output.

User action: Examine feature in IFF file with IPATCH or LITES2 and correct as necessary.

UNKACOD, unknown AC code 'integer' - entry ignored

Explanation: The specified AC code was not found in the FRT table supplied to the program. The AC entry has been ignored.

User action: Check that the correct FRT table with the complete range of ACD entries was supplied.

UNKDTYP, unknown AC data type in an AC type 'integer' entry

Explanation: Entry will be ignored

User action: None.

UNSETMD, IFF type 2 map descriptor is unset

Explanation: The IFF file must have a type 2 map descriptor entry with valid origin offset, units in degrees and geographical coords

User action: Amend the IFF file using IPATCH or ITRANS and rerun I2MGD on this data.

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.

BADDEV, error enquiring about device 'name'

Explanation: The specified device is not available. The associated system error messages should give further information.

User action: Rerun I2MGD with amended qualifiers.

BADFEAT, error processing feature 'fsn' ('isn')

Explanation: An error - usually with the AC entries - has been encountered while processing the feature. The associated error messages will give further information.

User action: Investigate the cause of the error using IPATCH or LITES2 and rerun I2MGD on the data.

BADFRT, error initialising FRT file 'file-spec'

Explanation: I2MGD has not been able to open the specified FRT file. The associated system error messages will give further information.

User action: Check the spelling of the FRT filename and that the required FRT is available in the directory LSL\$FRT:

BADPRJ, Map Descriptor has wrong projection code - must be 100 (Geographical)

Explanation: The data must be in geographicals in order to be translated into MGD77 format.

User action: Amend Map Descriptor and/or data using ITRANS and rerun I2MGD.

BADUNT, Map Descriptor has wrong units - must be Degrees

Explanation: The data must be in degrees units in order to be translated into MGD77 format.

User action: Amend Map Descriptor and/or data using ITRANS and rerun I2MGD.

EXPNUM, number of digits ('integer') is too large for output field

Explanation: The value of an AC entry exceeds its MGD77 defined size.

User action: Check ACD table is correct.

FORDEV, device 'name' not mounted foreign

Explanation: The magtape has not been mounted with the /FOREIGN qualifier.

User action: Issue the correct mount command and rerun I2MGD.

INTMAX, value 'integer' exceeds defined limits for AC 'integer'.

Explanation: The integer value in the AC entry lies outside the limits defined in the FRT table.

User action: Check that the FRT table has the correct limits defined or amend the IFF file using LITES2 or IPATCH.

INVALFC, 'integer' is an invalid feature code argument - value must lie in range 0 - 32767

Explanation: The value given in the /FC qualifier is incorrect.

User action: Reenter the command line with a correct value.

LASTBLK, error completing last data block

Explanation: I2MGD is unable to complete the last block of data on the magtape.

User action: Report possible program problem to Laser-Scan.

MAXREC, too many data records for one block

Explanation: The data record counter exceeds 16.

User action: Report possible program problem to Laser-Scan.

MTBLK, error writing magnetic tape block

Explanation: The program has been unable to write a block to the magtape. The associated system error messages will give further information.

User action: Check correct mechanical operation of the tapedeck and rerun I2MGD.

MTOPEM, error initialising tape unit 'name'

Explanation: The program has been unable to initialise the magtape. The associated system error messages will give further information.

User action: Check tape has been physically loaded correctly and mounted /FOREIGN.

RELMAX, value 'real' exceeds defined limits for AC 'integer' - output may be incorrect

Explanation: The real value in the AC entry lies outside the limits defined in the FRT table.

User action: Check that the FRT table has the correct limits defined or amend the IFF file using LITES2 or IPATCH.

UNEXPEOF, unexpected end of IFF file

Explanation: The IFF file has an incorrect structure or missing entries.

User action: Amend the IFF file using IPATCH and rerun I2MGD.

UNKATYP, invalid AC type 'integer'

Explanation: An unknown AC entry has been found in the IFF file.

User action: Check that the correct FRT file is being used or amend IFF file using LITES2 or IPATCH and rerun I2MGD.

WREOT, error writing tape mark on 'name'

Explanation: The program has been unable to write a tapemark to the magtape. The associated system error messages will give further information.

User action: Check correct mechanical operation of the tapedeck and rerun I2MGD.

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

MGD2I UTILITY

UTILITY MGD2I

FUNCTION

MGD2I reads a magnetic tape in Marine Geophysical Data (MGD77) exchange format, and produces an Internal Feature Format (IFF) file for the specified map sheet in the input data. A 'map sheet' is a single file or dataset on the input tape.

FORMAT

\$ MGD2I output-file-spec

Command qualifiers

/DEVICE=magtape-drive
/[NO]DIAGNOSTICS
/FC=feature-code
/FRT=file-spec
/[NO]REWIND
/SELECT=integer

Defaults

/DEVICE=MSA0:
/NODIAGNOSTICS
/FC=10
/FRT=LSL\$FRT:MGD77_ACD_TABLE.FRT
/NOREWIND
/SELECT=1

PROMPT

_Output-IFF-file: output-file-spec

PARAMETERS

output-file-spec

- This parameter specifies the name of an IFF file, and is compulsory. The map sheet read from the input tape is output to this file; this defaults to the first sheet in the input. The /SELECT qualifier can be used to select a different sheet. The default device and extension LSL\$IF:.IFF are applied to the output file specification when it is parsed.

COMMAND QUALIFIERS

/DEVICE=magtape-drive

- The /DEVICE command qualifier specifies the magnetic tape device on which the input tape is to be read. The default device name is MSA0:.

/DIAGNOSTICS
/NODIAGNOSTICS (default)

- When /DIAGNOSTICS is present, the MGD2I utility will output diagnostic messages as it processes the input tape. These messages include brief information about each new sheet encountered on the tape and details of each block in the required input sheet as it is processed.

/FC=feature-code

- This qualifier is used to specify the Feature Code (FC) which the program will give to all the features which it creates in the output IFF file. That is, the dummy feature used to hold the header information Ancillary Code (AC) entries, and the features used to hold the coordinates and attribute data for each logical data record on the original tape.
The default feature code is 10.

/FRT=file-spec

- The /FRT command qualifier specifies a Feature Representation Table (FRT) file which the program will read to determine the AC codes given to the AC entries, in the IFF file, created to hold header and feature attribute information. The program MGD2I always refers to these ACs using the same names, but the user may alter the codes, onto which these names map, by changing the FRT file.
The default file specification is LSL\$FRT:MGD77_ACD_TABLE.FRT. If a file specification is given with /FRT, it is parsed against this default.

/REWIND
/NOREWIND (default)

- The /REWIND qualifier, when present on the command line, specifies that the magnetic tape should be rewound, by MGD2I, to the 'BOT' position before reading of, or searching for, any sheet is started. The /REWIND qualifier may be used in combination with the /SELECT qualifier to read a sheet in a particular position, counted from the start of the tape.
When /NOREWIND, the default, is used, the reading or searching of the tape starts from the present tape position. The user should ensure that the current tape position is a sensible place from which to begin (see /SELECT).

/SELECT=integer

- This qualifier is used to select a sheet to be read from the input tape. The 'integer' specifies the required sheet number. This qualifier may be used with either /REWIND or /NOREWIND to start the search for the sheet from the start of the tape or from the current tape position, respectively.
If sheet 1 is specified with the /SELECT qualifier, the program will

attempt to read a dataset starting at the current tape position. If sheet 2 is specified with the /SELECT qualifier, the program will search forwards from the current tape position to find the first tapemark, which is considered to mark the end of the first sheet and the start of the second, and will start to read from the block immediately following it. Similarly, for sheet 3, the program searches for the second tapemark before starting to read the dataset, and so on.

The end of the datasets on the tape (the end of volume) is marked by two consecutive tapemarks.

The default is to read the first sheet found on the tape. That is, from the sheet starting at the current tape position.

The user should ensure that the tape is positioned correctly before any operations are attempted with MGD2I.

RESTRICTIONS

None

DESCRIPTION

MGD2I is a utility to transfer a map sheet from a MGD77 format magnetic tape, to an Internal Feature Format (IFF) disk file. A 'map sheet' is a single file or dataset on the input tape. Sheets which span more than one tape should be treated as separate sheets on the different tapes, with separate IFF files being generated from each tape using MGD2I. These separate IFF files may subsequently be merged if required.

The user may specify which sheet to transfer by means of the /SELECT qualifier. The program will search forwards through the tape, counting the number of end of file markers (tapemarks), until the tapemark before the beginning of the required sheet is reached.

If the /SELECT qualifier is not used, or it is used to select sheet 1, no searching of the tape occurs, and the program begins to read from the current tape position. In this case, the user should ensure that the tape is correctly positioned immediately before the first header block of the required sheet.

If the /SELECT qualifier is used to specify some sheet other than the first, then the program will search forwards from the current tape position for tapemarks. The tape need not, in this case, be positioned at the start of a sheet.

If the tape read fails because the tape is at some unexpected position (because of a previous failure, or a user specified escape), the /SELECT qualifier must be used, possibly in conjunction with the /REWIND qualifier, to start again at a correct tape position.

Note that only a single map sheet may be transferred during a single run of the program.

The program performs no validation operations on any sheets which are skipped, when using the /SELECT qualifier, and does not check whether they are complete and correct MGD77 format datasets.

If the /DIAGNOSTICS qualifier is used on the command line, the program produces messages giving information about the sheets and blocks being read from the tape, and any errors or difficulties which may be encountered.

MGD2I transfers information from the header block or blocks of an MGD77 format tape to a dummy feature in layer 0 of the output IFF file. The header information is held in a number of AC entries with codes as defined by the FRT file read by the program. The dummy header feature is given the coordinates of the local origin of the IFF file created by the program. In general, these will be the coordinates of the first data record in the input data.

MGD2I translates each MGD77 logical data record into an IFF feature record in the output file. The data features are contained in layer 1 of the IFF file and are ordered as in the tape file. The longitude, latitude and corrected depth of a data record are transferred to the X, Y and Z coordinates, respectively, of a ZS entry in the corresponding feature. If the corrected depth value is null (ie 99999), it is translated into an IFF undefined value. All the other attributes are transferred to AC entries contained in the feature. The codes of these AC entries are determined from the FRT file read by the program.

Some quantities, for example longitudes, may be subject to rounding errors in their final digit when the program transfers them from the MGD77 format tape file to the output IFF file. This will generally only occur for quantities such as longitude when all 8 of their potential significant figures (digits) are used (ie. greater than 99.99999 degrees). This rounding error is inherent to VAX/VMS data storage methods. It may cause a positional inaccuracy of less than 1 metre on the earth's surface.

The MGD2I program always refers to the types of the AC entries which it constructs using the same AC names. The user may alter the codes of the AC entries written to the output IFF file by changing the FRT file read by the program. The use of the FRT file is described in the 'Data Preparation' section of the documentation for this module.

Details of the structure, content and characteristics of an MGD77 format tape are to be found in the 'Data Format' section of this module's documentation.

It is essential that the tape is mounted as a foreign volume prior to running MGD2I. This is achieved using the DCL command MOUNT with the /FOREIGN qualifier e.g. MOUNT MSA0:/FOREIGN.

EXAMPLES

Transfer the first data set on a tape to an IFF file

```
$
$ alloc mub1:
%DCL-I-ALLOC, LSLM3A$MUB1: allocated
$ mount/foreign mub1:
%MOUNT-I-MOUNTED, mounted on LSLM3A$MUB1:
$ define lsl$frt_acdmax 200
$ mgd2i/device=mub1:/rewind/select=1/frt=mgd77_acd_table/diagnostics
Output-IFF-file: mgd77_testdata
Searching for sheet number 1 (counted from beginning of tape)
Rewinding tape
Found required sheet 1
%LSLLIB-I-IFFOPENED, LSL$DATA_ROOT:[LSL.IFF]MGD77_TESTDATA.IFF;1 opened for
write
Block      1      : 1920 bytes long
First few bytes : 1V3620      MGD77      10295553185902 LA
%MGD2I-W-BLANKNUM, Blank numeric input field for AC M_Data_centre_no
-MGD2I-W-UNCOMPAC, Unable to complete AC with name M_Data_centre_no
Block      2      : 1920 bytes long
First few bytes : 3V3620      +00008101191300000-2980068+0311
Block      3      : 1920 bytes long
First few bytes : 3V3620      +00008101191430000-3000746+0312
Block      4      : 1920 bytes long
First few bytes : 3V3620      +00008101191602000-3026399+0312
Block      5      : 1920 bytes long
First few bytes : 3V3620      +00008101191748000-3056517+0311
Block      6      : 1920 bytes long
First few bytes : 3V3620      +00008101191924000-3083433+0309
Block      7      : 1920 bytes long
First few bytes : 3V3620      +00008101192100000-3110844+0307
Block      8      : 1920 bytes long
First few bytes : 3V3620      +00008101192230000-3133500+0305
Block     10      : Tapemark (EOF)
  ELAPSED:      0 00:00:50.70  CPU: 0:00:12.28  BUFIO: 30  DIRIO: 92  FAULTS: 273
$
```

Transfer the next data set on the tape to an IFF file:

```
$
$ mgd2i/device=mub1: mgd77_testdata2
%LSLLIB-I-IFFOPENED, LSL$DATA_ROOT:[LSL.IFF]MGD77_TESTDATA2.IFF;1 opened for
write
%MGD2I-W-BLANKNUM, Blank numeric input field for AC M_Data_centre_no
-MGD2I-W-UNCOMPAC, Unable to complete AC with name M_Data_centre_no
  ELAPSED:      0 00:00:20.26  CPU: 0:00:12.09  BUFIO: 8  DIRIO: 87  FAULTS: 324
$
```

Specifically transfer the second data set on the tape to an IFF file:

```
$
$ mgd2i/device=mub1:/rewind/select=2/diagnostics mgd77_testdata3
Searching for sheet number 2 (counted from beginning of tape)
Rewinding tape
```


Found required sheet 2

%LSLLIB-I-IFFOPENED, LSL\$DATA_ROOT:[LSL.IFF]MGD77_TESTDATA3.IFF;1 opened for
write

Block 1 : 1920 bytes long

First few bytes : 1V3620 MGD77 10295553185902 LA

%MGD2I-W-BLANKNUM, Blank numeric input field for AC M_Data_centre_no

-MGD2I-W-UNCOMPAC, Unable to complete AC with name M_Data_centre_no

Block 2 : 1920 bytes long

First few bytes : 3V3620 +00008101191300000-2980068+0311

Block 3 : 1920 bytes long

First few bytes : 3V3620 +00008101191430000-3000746+0312

Block 4 : 1920 bytes long

First few bytes : 3V3620 +00008101191602000-3026399+0312

Block 5 : 1920 bytes long

First few bytes : 3V3620 +00008101191748000-3056517+0311

Block 6 : 1920 bytes long

First few bytes : 3V3620 +00008101191924000-3083433+0309

Block 7 : 1920 bytes long

First few bytes : 3V3620 +00008101192100000-3110844+0307

Block 8 : 1920 bytes long

First few bytes : 3V3620 +00008101192230000-3133500+0305

Block 10 : Tapemark (EOF)

ELAPSED: 0 00:00:22.60 CPU: 0:00:11.67 BUFIO: 29 DIRIO: 93 FAULTS: 316

\$

\$ **dismount mub1:**

\$ **deallocate mub1:**

\$

MESSAGES (SUCCESS)

These messages are used to indicate that the program has succeeded in performing some action, and do not require any user action.

NORMAL, Normal, successful completion

Explanation: MGD2I has finished its operations successfully and without problems.

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.

ACNOTINFRT, AC with name 'AC-name' not found in FRT

Explanation: The specified AC name was not found in the FRT table supplied to the program. This is probably because one of the ACs used by MGD2I was omitted when the FRT was compiled.

User action: The user should check that all the AC names required for transferring the MGD77 format to an IFF file are present in the FRT file being used. Any that are not should be added before the transfer is re-attempted.

BADACTYP, AC 'AC-name' incompatible with type specified in ACD table

Explanation: The type specified in the ACD table of the FRT file, used with the program, for the named AC is not that expected by the program.

User action: The user should check that the correct FRT file is being used, and that the type specified in the FRT file for the named AC is correct.

BADACVAL, AC 'AC-name' value incompatible with range specified in ACD table

Explanation: The value found in the input MGD77 data for the named AC lies outside the value range (maximum and minimum) specified in the ACD table of the FRT file used with the program.

User action: The user should check that the correct FRT file is being used, and that the value range specified in the FRT file for the named AC is correct. The user should also check, if possible, that the input MGD77 data is correct.

BLANKNUM, Blank numeric input field for AC 'AC-name'

Explanation: A blank numeric field, filled with spaces or nulls, was found in the input MGD77 data, corresponding to the named output AC in the output IFF file. This AC will not be written to the output IFF file.

User action: None.

ILLEGDATATYP, Illegal record type found where data block expected

Explanation: When a logical data record, contained in a data block, was read and processed, its initial character, which was expected to be '3', was found not to be.

User action: The user should ensure that the sheet being read conforms to the MGD77 format, and that the tape is correctly positioned, before again attempting the transfer.

ILLEGHDR1LEN, Illegal length block found for type 1 header

Explanation: When a type 1 header block was read, its length, which is expected to be 1920 bytes, was found not to be.

User action: The user should check that the sheet being read, and in particular the header blocks, is a complete and correct MGD77 format dataset. The user should also check that the tape was correctly positioned before the transfer was attempted. The transfer may then be retried.

ILLEGHDR1TYP, Illegal block type found where type 1 header expected

Explanation: When a type 1 header block was read, its initial character, which is expected to be '1', was found not to be.

User action: The user should check that the sheet being read, and in particular the header blocks, is a complete and correct MGD77 format dataset. Also, the user should check that the tape was correctly positioned before the transfer operation was attempted. The transfer may then be retried.

ILLEGNUM, Non-numeric characters found instead of number

Explanation: Characters which were not numeric, or '+' or '-', were found while attempting to read a numeric field in one of the header or data blocks read from the input magnetic tape.

User action: The user should check that the tape complies with the MGD77 format and has not been corrupted. Another possible cause of this message is the use of space or null characters to pad undefined fields; if this is the case, then these warnings can be ignored.

SEQOUTOFORD, Sequence number 'integer' out of order or incorrect

Explanation: The specified sequence number (held in columns 79-80 of a type 1 header block sequence) is does not have the value 'sequence-number'.

User action: The user should check that the sheet being read conforms to the MGD77 format, and that the tape is correctly positioned, before trying the transfer again.

SKIPHDR2, Skipping type 2 header blocks

Explanation: MGD2I has encountered one or more type 2 header blocks in the sheet being transferred. Since these are not defined in the MGD77 format, they are being ignored. The program should function normally, transferring header information and data to the output IFF file, providing the remainder of the tape adheres to the MGD77 format.

User action: The user should check that the input magnetic tape contains MGD77 format datasets which are complete and correct. If the sheet is correct apart from the type 2 header, it will be transferred normally with the exception of the generation of this message.

UNCOMPAC, Unable to complete AC with name 'AC-name'

Explanation: The MGD2I program was unable to construct the named AC entry in the output IFF file.

User action: The user should examine any other errors produced before or after this one to determine the reason for the failure.

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.

BADTAPEDEV, There is a fault with the specified tape device

Explanation: There is a fault with the tape device specified in the command line which prevents it the tape being read by the program.

User action: The user should examine any other messages generated to determine the cause of the error.

ENDOFVOL, End of volume encountered on tape

Explanation: The end of volume marker (two successive tapemarks) has been found on the input magnetic tape, before the required sheet was reached.

User action: The user should respecify the command line, making appropriate use of the /REWIND and /SELECT qualifiers to transfer a sheet which lies before the end of the volume.

ILLEGFC, Illegal feature code (not between 1 and 32767)

Explanation: The /FC command qualifier has been used to attempt to specify a feature code not in the legal range.

User action: The user should respecify the command line, ensuring that the feature code specified lies in the legal range.

ILLEGSHEET, Illegal sheet number (not 1 or more)

Explanation: The /SELECT command line qualifier has been used with a negative integer instead of a legal sheet number.

User action: The user should re-enter the command line, ensuring that the sheet number specified with the /SELECT qualifier is legal, that is, that is 1 or more.

NOIFFCP, No corner point (CP) entry found in IFF file

Explanation: The CP entry in the output IFF file, created by MGD2I, cannot be found. This could be due to corruption of the file possibly by some external agency.

User action: The user should check for possible causes of file corruption. If the problem persists, the system manager should be consulted.

NOIFFHDRZS, The header feature ZS entry cannot be found in IFF file

Explanation: The header feature's ZS entry in the output IFF file, created by MGD2I, cannot be found. This could be due to corruption of the file, possibly by some external agency.

User action: The user should check for possible causes of file corruption. If the problem persists, the system manager should be consulted.

NOIFFMD, No type 2 map descriptor (MD) entry found in IFF file

Explanation: The MD entry in the output IFF file, created by MGD2I, cannot be found. This could be due to corruption of the file possibly by some external agency.

User action: The user should check for possible causes of file corruption. If the problem persists, the system manager should be consulted.

NOIFFRA, No range (RA) entry found in IFF file

Explanation: The RA entry in the output IFF file, created by MGD2I, cannot be found. This could be due to corruption of the file possibly by some external agency.

User action: The user should check for possible causes of file corruption. If the problem persists, the system manager should be consulted.

NOTMOUNTFOR, Input tape device is not mounted /FOREIGN

Explanation: The input tape device has not been mounted /FOREIGN, as is required by the MGD2I program.

User action: The user should issue the MOUNT/FOREIGN 'magtape-drive' DCL command and then re-attempt the transfer from tape using the MGD2I program.

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.