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# Land-Form PANORAMA™

User Guide



## Preface

Thank you for choosing Land-Form PANORAMA™ for your business needs.

This User Guide describes the data formats and specification for Land-Form PANORAMA. It is intended to be used by system suppliers and application programmers as a guide to loading and manipulating the data.

Land-Form PANORAMA™ is supplied in two data formats:

- BS 7567 (NTF v2.0)
- Drawing Interchange File (DXF).

If the two format versions differ in their treatment of a particular aspect, the specific differences will be stated. Icons, as shown below, will be used to denote these differences.



For convenience BS 7567 (NTF v2.0 Level 2) is referred to as NTF and BS 7567 (NTF v2.0 level 5) is referred to as NTF level 5 in this Reference Section.



Drawing Interchange File (DXF) is referred to as DXF in this Section.

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## Chapter 1 Overview of Land-Form PANORAMA

Land-Form PANORAMA is available as either digital Contours or Digital Terrain Models (DTMs).

### Digital Contours

Land-Form PANORAMA Digital Contours are a digital representation of the graphic contours used to produce the Ordnance Survey Landranger maps. Additional spot heights, ridge and form lines were added to facilitate the creation of the Digital Terrain Models, these additional features are included in the contour product.

Contours are in vector format and are at 10 metre elevation intervals.

Spot heights are to the nearest metre.

The data has been captured in 20 km by 20 km tiles and is available for the whole country (see Appendix A).

The accuracy of Digital Contours is typically better than 3 m (Root Mean Square Error).

### Digital Terrain Model Data (DTM)

DTM consists of height values at each intersection of a 50 metre horizontal grid, the values have been mathematically interpolated from the contours on the Landranger maps.

Variations in DTM accuracy are to be expected depending upon the nature of the ground. DTM height accuracy is no greater than one half of the vertical interval of the source contour data.

The data has been captured in 20 km x 20 km tiles, and is available for the whole country (see Appendix A).

## Applications

This product offers many exciting opportunities for modelling the real world more closely by the use of three dimensional computing techniques.

The data supports such applications as:

- terrain analysis
- drainage analysis
- visual impact studies
- radio wave propagation.

## Supply Formats and Media

### Supply Formats

Land-Form PANORAMA contours are available in :

- NTF level 2      See Chapter 3
- DXF                See Chapter 4.

Land-Form PANORAMA DTMs are available in:

- NTF Level 5      See Chapter 3
- DXF                See Chapter 4.

## Land-Form PANORAMA Supply Media

Land-Form PANORAMA in NTF format is available on the following media:

<b>Format</b>	<b>Contours</b>	<b>DTMs</b>
9-track ½" magnetic tape ASCII 6250 bpi	44	35
GCR 6250 bpi EBCDIC	44	35
9-track ½" magnetic tape ASCII 1600 bpi	23	18
Phase encoded 1600 bpi EBCDIC	23	18
¼" UNIX tar QIC 24 cartridge	50	40
¼" UNIX tar QIC 150 cartridge	125	100
DEC TK50 LTF Ultrix/VMS cartridge	68	55
5¼" or 3½" MS-DOS floppy disc.	1	1
4 mm DAT cartridge 1.2 Gb UNIX tar	417	333
4 mm DAT cartridge UNIX tar	417	333
CD ROM High Sierra DOS	417	333
Exabyte	417	333

*Note: Numbers refer to average number of tiles.*



DXF is only available on CD-ROM

<b>DTM</b>	<b>Contours</b>
56	112



## Chapter 2 An Overview of NTF v2.0

### Conventions Used in This Guide

Certain conventions are adopted as an aid to interpretation (although in the Appendices the convention is dropped where the context is self-evident).

- [ ] Square brackets are placed around record names, eg [VOLHDREC].
- { } Curly brackets denote field names eg {REC\_DESC} is the Record Descriptor Field.
- [ ]21 A two-digit number following square brackets denotes the Record Descriptor which uniquely identifies the record name between the brackets.
- <S> This is the space character (ASCII code 32).
- <3S> This denotes three successive space characters.
- % The percentage character (ASCII code 37).

## General

### Record Size

NTF data is written to the output device in variable length records, with a maximum record length of 80 characters, which includes {CONT\_MARK} and {EOR}.

### Continuation Mark {CONT\_MARK}

Continuation Records are used where the maximum physical record length of 80 characters does not permit a logical record to be transferred wholly within one physical record. The presence of a Continuation Record is indicated by the value of the Continuation Mark {CONT\_MARK}, which immediately precedes the Record Terminator {EOR}. The value of {CONT\_MARK} is '1' if there is a Continuation Record present and '0' if there is not.

### Record Terminator {EOR}

The end of record terminator is the percent (%) (ASCII 37) character for both formatted and unformatted media.

### Transfer Set

A transfer set normally equates to a single file except where continuation volumes are used when the transfer set exceeds the capacity of the media.

The data the customer receives is in one or more Transfer Sets.

## Transfer Set Structure

### Volume Records

Each Transfer Set starts with a compulsory Volume Header Record [VOLHDREC] and terminates with a compulsory Volume Terminator Record [VOLTERM].

As a transfer set may span one or more volumes, a field within the Volume Header Record indicates which volume in the sequence of volumes within the Transfer Set it is. Similarly, the Volume Termination Record ends either a single volume or a complete transfer set. A field similar to the Continuation Mark is used to indicate completion or continuation.

### Database Records

Database Records transfer information common to all data and their presentation in the subsequent section(s).

An NTF Transfer Set comprises one database. The database commences with a Database Header Record [DBHREC] which sets up the database. It is followed by a number of other database records as indicated below.

#### **Database Header Record [DBHREC]**

This mandatory record indicates the commencement of a database and gives details of:

- The Database name
- NTF Release date
- Feature Classification Table Name
- Release data which applies to the whole transfer set.

#### **Attribute Description Record [ATTDESC]**

These records list and give descriptions of the attributes that can be applied to features within the Transfer Set. These records are not present in Land-Form PANORAMA DTMs.

### **Feature Classification Record [FEATCLASS]**

These records list and give descriptions of all possible feature codes for the Transfer Set. These records are not present in Land-Form PANORAMA DTMs.

### **Data Description Record [DATADESC]**

These records list and define new data fields used within new records defined in Data Format Records [DATAFMT]. These records are not present in Land-Form PANORAMA Contours.

### **Data Format Record [DATAFMT]**

These records list and define new records used to transfer data in the Digital Terrain Model. These records are not present in Land-Form PANORAMA Contours.

## **Section Records**

The Section Records contain the data within the map tile. The section starts with the Section Header Record [SECHREC] followed by the Section Data Records.

### **Section Header Record [SECHREC]**

This mandatory record starts a Section. It contains information and parameters essential for understanding, interpreting and processing some of the fields within the data. It establishes the unit of measure for X, Y and Z coordinates, origins and other constants.

### **Section Data Records**

These contain all the features within the section. The records used within Land-Form PANORAMA Contours and DTMs differ.

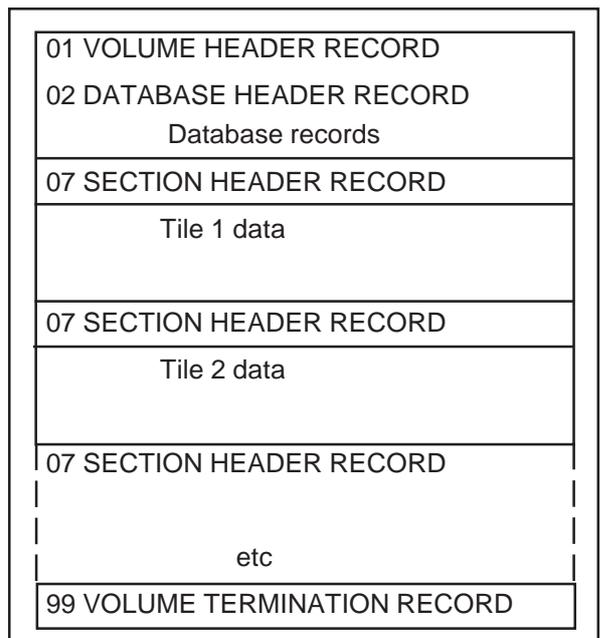
## Supply of Data on Unformatted Media

The Transfer Set normally has one dataset with one or more sections.

Continuation volumes are only used if a section is larger than the capacity of the medium.

A customers order that is larger than the capacity of the medium, is split into two or more Transfer Sets.

As the block length is 2000 bytes and the record length is variable it cannot be determined how many records are in each Data Block. Records do not span Data Blocks, so any space left at the end of a Block is spaces filled (ASCII 32).



\* "99End Of Transfer Set0%"

Magnetic tape output is terminated by two Tape Marks

## Supply of Data on Formatted Media

Data requested on floppy disk, UNIX cartridge or other logically formatted media, as defined by current Ordnance Survey product specifications, is not blocked but is written directly to the output device.

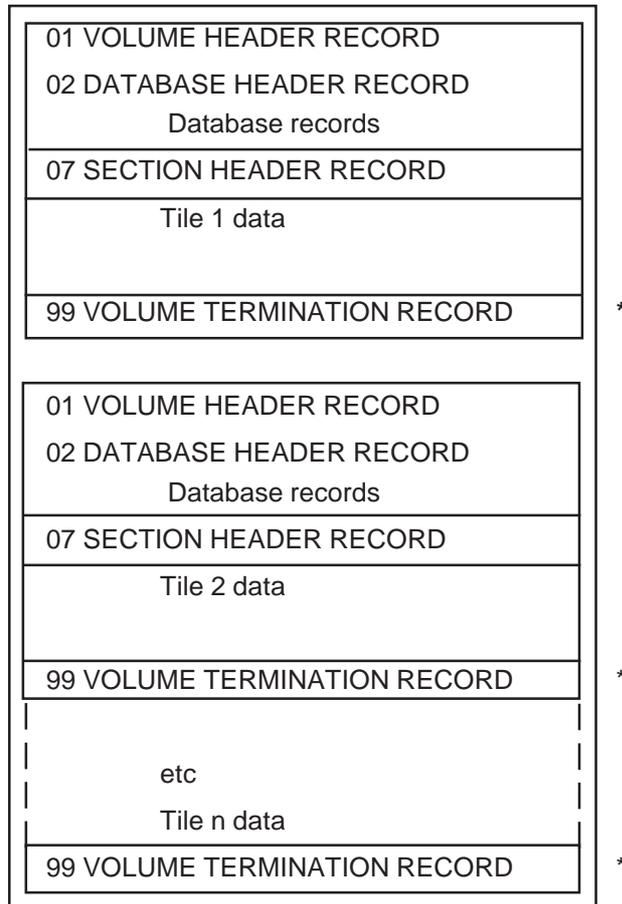
The Transfer Set has one dataset and one section.

One or more Transfer Sets are put onto the medium.

A customers order that is larger than the capacity of the medium, is put onto two or more of that medium.

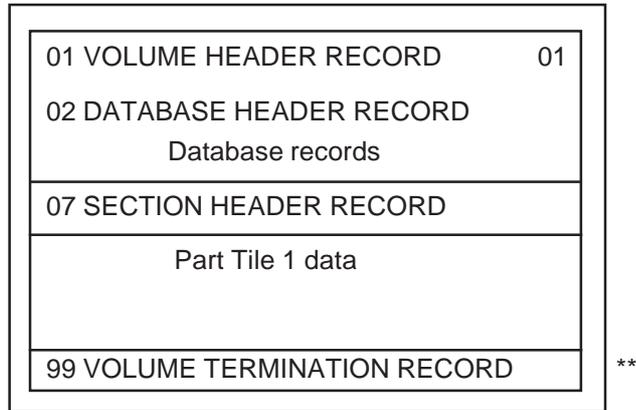
Continuation volumes are only used if a Transfer Set is larger than the capacity of the medium.

**Formatted Media (transfer set less than media capacity)**

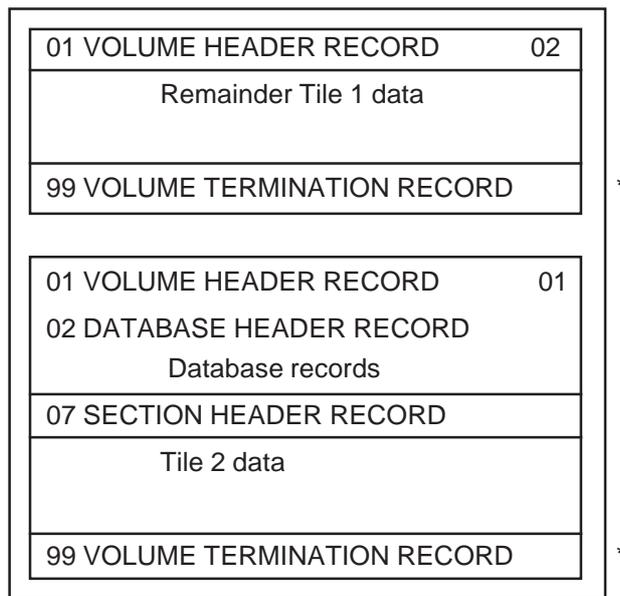


\* "99End Of Transfer Set0%"

**Formatted Media (transfer set greater than media capacity)**



\*\* "99End of Volume 01 Transfer Set Continues On  
Volume 02 1%"



\* "99End Of Transfer Set0%"

## File Naming Conventions Used

- On unformatted media the file is unnamed.
- On formatted media NTF files are identified by {SECT\_REF}.NTF where {SECT\_REF} is that field within the [SEHREC] record.



## Chapter 3 Land-Form PANORAMA Data in NTF

### Land-Form PANORAMA Contour Data

#### Section Data Records

##### Point Feature

Each point feature is depicted by the use of the following records:

	Description in NTF
POINT RECORD	[POINTREC]
TWO DIMENSIONAL GEOMETRY RECORD	[GEOMETRY1]

Point features exist independently. In Land-Form PANORAMA, these features are spot heights.

##### Line Feature

Each line feature is depicted by the use of the following records:

	Description in NTF
LINE RECORD	[LINEREC]
TWO DIMENSIONAL GEOMETRY RECORD	[GEOMETRY1]
CONTINUATION RECORD FORMATTED AS GEOMETRY RECORDS	[CONTREC]

When a contour falls entirely within a single tile its first and last coordinate pair are coincident, unless the alignment is broken for clarity or the contour is split into several features. When a contour line crosses a tile edge, the contour line record starts/ends at the crossing point on the tile edge.

### Coordinates

Coordinate values and the number of coordinate pairs in a feature are transferred in the [GEOMETRY1] NTF record. Coordinate pairs that will not fit in the [GEOMETRY1] record are placed into following Continuation Records [CONTREC].

Each coordinate within the data is expressed as a string of ten numeric characters. Leading zeroes are present to complete the ten characters.

All coordinates are measured from the local origin, which is the South West corner of a tile.

To convert coordinate data to full National Grid coordinates, add the coordinates of the feature to those of the South West corner of the tile. The South West corner coordinates are contained within the {X\_ORIG} and {Y\_ORIG} fields of the Section Header Record [SECHREC].

### Feature Codes

The point and line records contain feature codes describing the feature depicted. The values of these codes and their description are given below:

Feature Code	Description
0200	Spot Height
0201	Contours
0202	Lake
0203	Breakline
0204	Coastline
0205	Ridge line
0207	Form line

## Land-Form PANORAMA Digital Terrain Models

### Introductory Records for DTMs in NTF v2.0 Level Five

These are described on pages 2.2 and 2.3.

### Section Data Records

#### Grid Header Record [GRIDHREC]

The record describes the 50 metre grid structure detailed below.

#### Grid Data Record [GRIDREC]

Each grid Data Record gives the 401 height values (reading south to north) for one column of the grid. The first Grid Data Record in the file describes the westernmost column, i.e. the western edge of the tile. Each subsequent record details the next column eastwards, until the 401st and final record lists the height values for the eastern edge of the tile.

Each value is assigned by the use of the following records:

GRID DATA RECORD	Description in NTF [GRIDREC]
23 CONTINUATION RECORDS (per column)	[CONTREC]

Repeated 400 times (i.e. occurs 401 times)

There are no point or line features supplied for DTMs.

Heights are represented as values at the intersections of a 50 m grid.

## Coordinate System

The 20 km x 20 km tile is equally divided by a fixed 50 m grid.

The Grid Data Records contain no horizontal coordinates. Instead, the horizontal position of an individual height value may be calculated from the field {COL\_START} and the position of the height within the record.

To calculate to full National Grid coordinates, add the {COL\_START}-1 and row position less 1 of the point of interest to those of the SW corner of the tile. The SW corner coordinates can be read from the {X-ORIG} and {Y-ORIG} fields in the Section Header Record [SECHREC] 07. That is:

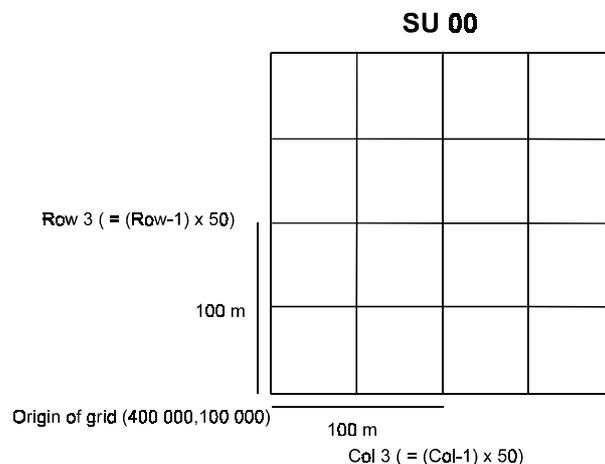
$$\text{Easting} = (\text{Column} - 1) \times 50 + \{\text{X-ORIG}\}$$

$$\text{Northing} = (\text{Row} - 1) \times 50 + \{\text{Y-ORIG}\}$$

For example, coordinate at row 3, column 3 within 100 km square SU 00, full coordinate reference 400 000, 100 000 is:

$$\text{Easting} = 2 \times 50 + 400\,000 = 400\,100$$

$$\text{Northing} = 2 \times 50 + 100\,000 = 100\,100$$



Within the Grid Data records, height values are held as strings of four characters, to the nearest metre. Leading zeroes are present to complete the four characters. Heights below Mean Sea Level are indicated with a minus sign in the first character position.

## Chapter 4 An Overview of DXF

### Introduction

This chapter describes the representation of Land-Form PANORAMA in Ordnance Survey's implementation of DXF including the DXF group and section structure.

### General

It is assumed that the reader of this guide is familiar with the sections about DXF in the appropriate AutoCAD manual, published by Autodesk Ltd., Cross Lane, GUILDFORD, GU1 1UJ, or an equivalent document published by the reader's software supplier if a CAD package other than AutoCAD is to be used.

### Overview

#### Structure of Land-Form PANORAMA Contours

Land-Form PANORAMA Contours has a vector 'point and line' data structure; within this structure a feature may be a point or a line. Each feature is free-standing: its topological relationship to any other feature is not expressed in the data.

Features are classified by type and each type is placed in a separate DXF layer.

## Line Features

A feature is a subjective entity; that is, so long as the constituent lines are of the same description (layer), a feature need not fully describe a logical piece of detail. The extent of a feature is determined by digitising conventions and will not always coincide with the topology.

Each line feature is composed of a string of coordinate pairs (or triples) implicitly joined by straight lines. Vector (point and line) data was originally intended for map production.

## Structure of Land-Form PANORAMA DTMs

The DTM tiles in DXF consist of a series of heightened points arranged on a 50 m grid comprising 401 points by 401 points.

Each of these points have full three dimensional coordinates.

The first point is positioned on the south west corner of the tile, with further points at 50 m intervals northwards to the northern edge of the tile, creating a column of 401 points. The next column will start on the southern edge of the tile 50 m east of the origin, again progressing in 50 m intervals to the north edge of the tile.

This pattern is repeated until the final point, which falls on the north east corner of the tile. Therefore, there are a total of 160 801 points on each tile.

## DXF Layers

### Generalised Feature Record Representation

The following is a simplified generalisation of the way individual feature records are organised in Ordnance Survey's implementation of DXF:

Point	LAYER	Coordinate Triple		
2-D Line	LAYER	Coordinate Pair	Coordinate Pair	Height

### Layer Names

British Standard 1192: Part 5: 1990 - (Guide for structuring of computer graphic information) shall be adopted.

Each layer name is an eight character string. The first four characters relate to the AUG/Autodesk system, with G (GIS) as the source of the information, and 800-899 as the part code. This product will be **G804**.

The remaining four digits relate to existing Ordnance Survey Digital Map Data in their own NTF system and will be leading zero filled.

For example:

G8040201 - Contours

The full range of possible layer names is shown on the next page. Any source feature codes that do not appear on this list will be ignored.

## Layers Lists

The following are lists of layers that may be included in a Land-Form PANORAMA DXF data file and are shown in numerical order of feature code.

### Layer Names and Descriptions for Land-Form PANORAMA Contours in DXF

Layer Name	Description	Linetype	Entity	Colour	Symbol
G8040200	Spotheights	CONTINUOUS	INSERT	WHITE	SPOTH
G8040201	Contours	CONTINUOUS	POLYLINE	BROWN	
G8040202	Lakes	CONTINUOUS	POLYLINE	CYAN	
G8040203	Breakline	CONTINUOUS	POLYLINE	WHITE	
G8040204	Coastline	CONTINUOUS	POLYLINE	BLUE	
G8040205	Ridgelines	CONTINUOUS	POLYLINE	GREEN	
G8040207	Formlines	CONTINUOUS	POLYLINE	WHITE	
G8040571	Footnotes and Grid Values	STANDARD	INSERT	WHITE	
G8040572	Grid lines	CONTINUOUS	LINE	WHITE	
G8040573	Grid values	STANDARD	TEXT	WHITE	
G8040575	Default	CONTINUOUS	POLYLINE	WHITE	

## Layer Names and Descriptions for Land-Form PANORAMA DTMs in DXF

Layer Name	Description	Linetype	Entity	Colour
G8100030	DTM Height Data	CONTINUOUS	POINT	WHITE
G8100571	Footnotes and Grid Values	STANDARD	INSERT	WHITE
G8100572	Grid lines	CONTINUOUS	LINE/TEXT	WHITE
G8100573	Grid Values	CONTINUOUS	TEXT	WHITE
G8100575	Default	CONTINUOUS	LINE	WHITE

## Map Footnotes

Each map data file contains a set of map footnotes. This includes data on the source and history of the geometric data (the features) contained in the map data file. The following items are all included in the footnotes and are available for display and plotting from a Land-Form PANORAMA map file:

**Note 1:** Top Margin centrally aligned, 700 ground metres,  
Layer: G8040571

Ordnance Survey®

**Note 2:** Top Margin centrally aligned, 600 ground metres,  
Layer: G8020571

Land-Form PANORAMA™ Data

**Note 3:** Lower left margin, 200 ground metres,  
Layer: G8040571

Translation Date dd Mmmmmmmmm CCYY

**Note 4:** Lower left margin, 200 ground metres,  
Layer: G8040571

Tile reference number \_\_ \_\_ \_\_

**Note 5:** Lower left margin, 200 ground metres,  
Layer: G8040571

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**Note 6:** Lower right margin, 200 ground metres, Layer: G8040571

The derived scale of the product is dependent  
upon the source data.

**Note 7:** Lower right margin, 200 ground metres,  
Layer: G8040571

Height given in metres above Newlyn Datum.

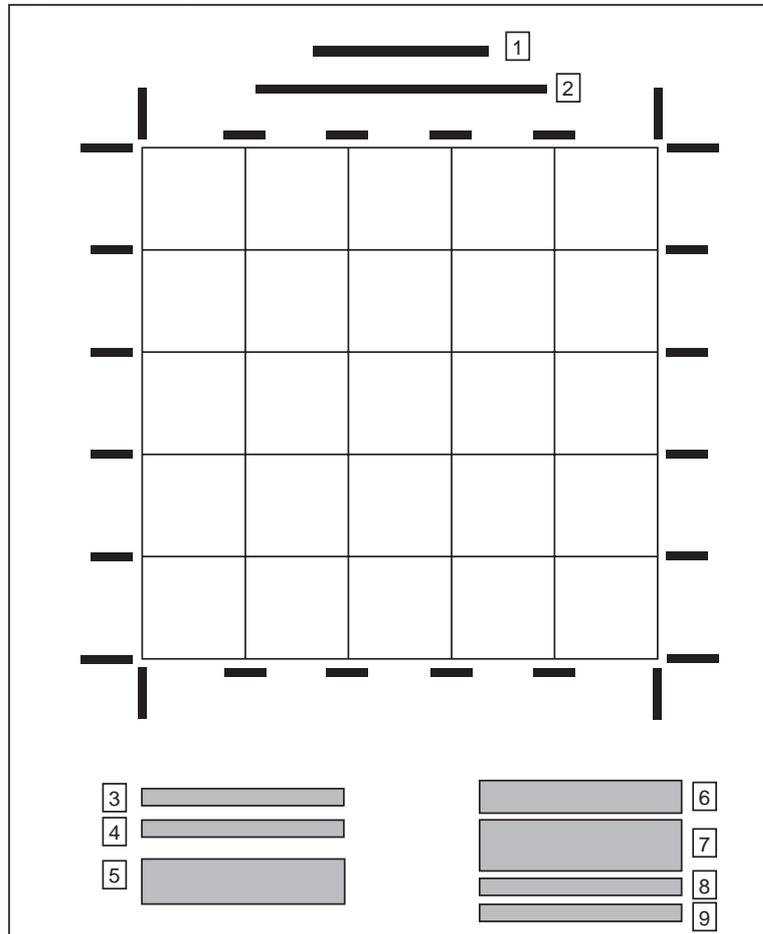
**Note 8:** Lower right margin, 200 ground metres,  
Layer: G8040571

Date of last amendment dd Mmmmmmmmm CCYY

**Note 9:** Lower right margin, 200 ground metres,  
Layer: G8040571

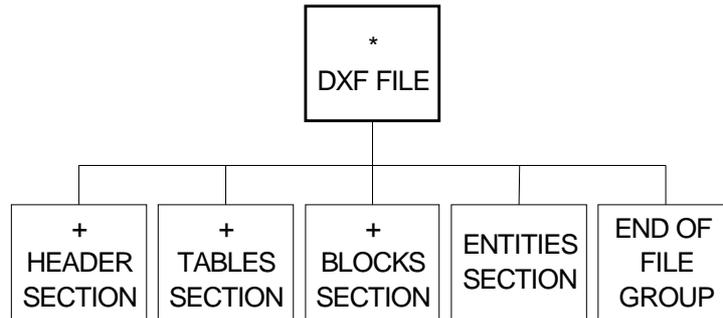
Product specification

Figure 4.1: Layout of Footnotes



## DXF File Structure for Land-Form PANORAMA

The DXF file is structured into a number of sections, each of which holds specific information relating to the drawing. The overall organisation of the file is as follows:



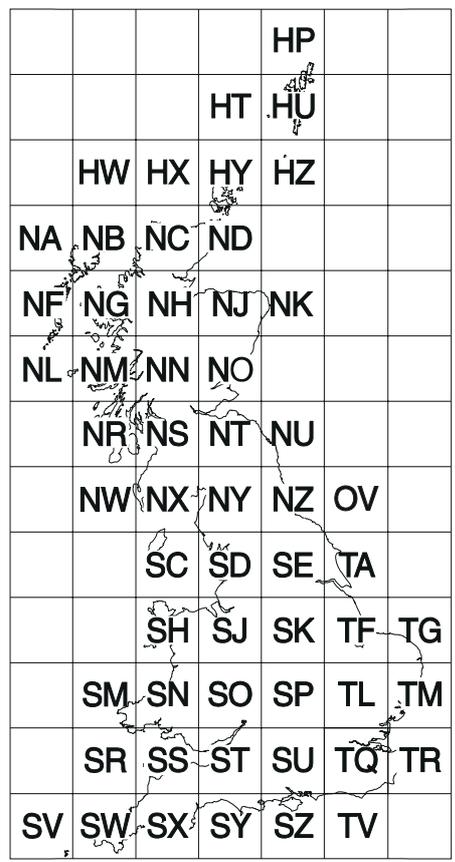
Key:

\* = One or more

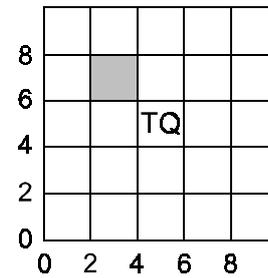
+ = Optional

## Appendix A The National Grid

Land-Form PANORAMA tiles are identified by quoting the National Grid reference of the south-west corner of the area they cover. The Ordnance Survey National Grid divides Great Britain into squares 100 km by 100 km. Each of these squares has a unique two-letter reference, e.g. TQ in the diagram below.



Each Land-Form PANORAMA 20 km by 20 km tile is described by adding a two-digit reference to the 100 km by 100 km square reference, with the Easting first followed by the Northing, e.g. TQ26.



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## Appendix B Record Definitions for the Transfer of Land-Form PANORAMA Contour Data in NTF

### NTF Record List

This list comprises the valid record types used in the NTF v2.0 level 1 Transfer Set Land-Form PANORAMA Contour Data.

Desc	Description	Record Name
00	Continuation Record - continues a logical record when the physical limit of 80 characters for other record types is exceeded	[CONTREC]
01	Volume Header Record - defines the donor and data type	[VOLHDREC]
02	Database Header Record - transfers data about the database	[DBHREC]
05	Feature Classification Record - defines data classifications (feature codes)	[FEATCLASS]
07	Section Header Record - coordinate and structure types, unit scale, factors, etc.	[SECHREC]
15	Point Record - identifies the definition of node points	[POINTREC]
21	Two-dimensional Geometry Record - defines the two-dimensional geometry for a link or node	[GEOMETRY1]
23	Line Record - identifies the definition of a link	[LINEREC]
40	Attribute Description Record - defines attribute descriptions and their fields	[ATTDESC]
99	Volume Terminator Record - defines the end of the transfer set	[VOLTERM]

Note: Desc = descriptor

## Volume Header Record [VOLHDREC] 01

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	01	
DONOR	03:22	A20	ORDNANCE SURVEY<5S>	
RECIPIENT	23:42	A20	<20S>	Not used
TRANDATE	43:50	D8	19940120	Date of transfer: yyyyymmdd
SERIAL	51:54	I4	0000	Not used
VOLNUM	55:56	I2	01	Volume number 01 to 99
NTFLEVEL	57:57	I1	1	NTF Level 1
NTFVER	58:61	R4,2	0200	NTF version 2.00
NTFOR	62:62	A1	V	Variable length records
EOR	63:63	A1	%	% on unformatted media or Defaults to % for formatted media
DIVIDER	64:64	A1	\	Divider used to terminate variable length text fields
CONT_MARK	65:65	I1	0	No continuation record
EOR	66:66	A1	%	ASCII 37

## Database Header Record [DBHREC] 02

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	02	
DBNAME	03:22	A20	OS_LANDRANGER_CONT<2S>	Database name i.e. PANORAMA contours
DDNAME	23:42	A20	DEFAULT_02.00<7S>	Standard NTF data dictionary name
DDATE	43:50	D8	19920515	Date of standard data dictionary
DDBASE	51:70	A20	<20S>	Not used
DDBDATE	71:78	D8	00000000	Not used
CONT_MARK	79:79	I1	1	Continuation record follows
EOR	80:80	A1	%	ASCII 37

### Continuation of Database Header Record

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	00	
FCNAME	03:22	A20	<20S>	Not used
FCDATE	23:30	D8	00000000	Not used
DQNAME	31:50	A20	<20S>	Not used
DQDATE	31:58	D8	00000000	Not used
DATA_MODEL	59:60	I2	00	Data model type - undefined
CONT_MARK	61:61	I1	0	No continuation record
EOR	62:62	A1	%	ASCII 37

## Feature Classification Record [FEATCLASS] 05

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	05	
FEAT_CODE	03:06	A4	0200	Feature Code
CODE_COM	07:16	A10	<10S>	Not used
STCLASS	17:36	A20	<20S>	Not used
FEATDES	37:*	A*	Spotheights	Feature Description
DIVIDER	*.*	A1	\	
CONT_MARK	*.*	I1	0	No continuation record
EOR	*.*	A1	%	i.e ASCII 37

\* = variable integer value

## Section Header Record [SECHREC] 07

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	07	
SECT_REF	03:12	A10	SS68<6S>	PANORAMA Sheet Number
COORD_TYP	13:13	I1	2	Rectangular coordinates
STRUC_TYP	14:14	I1	1	Vector data
XYLEN	15:19	I5	00000	Default length of 10 characters for X,Y coordinates
XY_UNIT	20:20	I1	2	Metres
XY_MULT	21:30	R10,3	0000001000	Multiply X and Y coord by 1.000
ZLEN	31:35	I5	00000	Default length of 10 characters for Z coordinates
Z_UNIT	36:36	I1	2	Metres
Z_MULT	37:46	R10,3	0000001000	Multiply Z coord by 1.000
X_ORIG	47:56	I10	0000260000	NG eastings of SW corner of tile
Y_ORIG	57:66	I10	0000180000	NG northings of SW corner of tile
Z_DATUM	67:76	I10	0000000000	Defines which Datum is used for height
CONT_MARK	77:77	I1	1	Continuation record follows
EOR	78:78	A1	%	ASCII 37

### Continuation of Section Header Record

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	00	
XMIN	03:12	I10	0000000000	Abbreviated Eastings of SW corner of tile
YMIN	13:22	I10	0000000000	Abbreviated Northings of SW corner of tile
XMAX	23:32	I10	0000020000	Abbreviated Eastings of NE corner of tile
YMAX	33:42	I10	0000020000	Abbreviated Northings of NE corner of tile
XY_ACC	43:47	R5,2	00000	Not used
Z_ACC	48:52	R5,2	00500	Statement of vertical accuracy: 5 metres
SURV_DATE	53:60	D8	19851008	Nominal date of survey: yyyyymmdd
LAST_AMND	61:68	D8	19931101	Date of last amendment: yyyyymmdd
COPYRIGHT	69:76	D8	19931101	Copyright date: yyyyymmdd
CONT_MARK	77:77	I1	0	No continuation record
EOR	78:78	A1	%	ASCII 37

## Point Record [POINTREC] 15

Field	Position	Format	Value Example	Description
REC_DESC	01:02	A2	15	
POINT_ID	03:08	I6	000001	Feature Serial Number
VAL_TYPE	09:10	A2	HT	Attribute mnemonic
VALUE	11:16	A6	000258	Value of HT (in metres)
FEAT_CODE	17:20	A4	0200	Feature code
CONT_MARK	21:21	I1	0	No continuation record
EOR	22:22	A1	%	ASCII 37

## Two-Dimensional Geometry Record [GEOMETRY1] 21

Field	Position	Format	Value Example	Description
REC_DESC	01:02	A2	21	
GEOM_ID	03:08	I6	000000	Not used
GTYPE	09:09	A1	2	Point feature: 1, Line feature: 2
NUM_COORD	10:13	I4	0005	Number of coordinates, a counter for {X_COORD}, {Y_COORD} and {Q_PLAN}
X_COORD	14:*	I10		X coordinate or easting
Y_COORD	*:*	I10		Y coordinate or northing
QPLAN	*:*	A1	<S>	Not used
CONT_MARK	*:*	I1	0	No continuation record or
			1	Continuation record follows
EOR	*:*	A1	%	ASCII 37

The group of records {X\_COORDS}, {Y\_COORDS} and {QPLAN} may repeat to end of physical record and through one or more Continuation Records {NUM\_COORDS} times.

## Line Record [LINEREC] 23

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	23	
LINE_ID	03:08	I6	000103	Feature Serial Number
VAL_TYPE	09:10	A2	HT	Attribute mnemonic
VALUE	11:16	A6	000040	Value of HT (in metres)
FEAT_CODE	17:20	A4	0201	Feature code
CONT_MARK	21:21	I1	0	No continuation record
EOR	22.22	A1	%	ASCII 37

## Attribute Description Record [ATTDESC] 40

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	40	
VAL_TYPE	03:04	A2	HT	Attribute mnemonic, e.g. height
FWIDTH	05:07	I3	006	Field width of Attribute Value
FINTER	08:12	A5	I6<3S>	Interpretation of Field, e.g. I6
ATT_NAME	13:*	A*	HEIGHT	Name given to Attribute
DIVIDER	*.*	A1	\	
FDESC	*.*	A*	CONTOUR VALUE	Textual description of Attribute
DIVIDER	*.*	A1	\	
CONT_MARK	*.*	I1	0	No continuation record
EOR	*.*	A1	%	ASCII 37

## Volume Terminator Record [VOLTERM] 99

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	99	
FREE_TEXT	03:*	A*	End of Transfer Set	See note below
CONT_VOL	*:*	I1	0	No further Volumes or
			1	Continuation Volume
EOR	*:*	A1	%	i.e. ASCII 37

\* = variable integer value

Note: If there are further Volume(s) to follow then the FREE\_TEXT field will comprise the following message:

"End Of Volume (n) Transfer Set Continues On Volume (n+1) "

If there are no further Volumes then the FREE\_TEXT field will comprise the message:

"End Of Transfer Set"

## Appendix C Record Definitions for the Transfer of Land-Form PANORAMA DTM Data in NTF

### NTF Record List

This list comprises the valid record types used in the NTF v2.0 level 5 Transfer Set for PANORAMA DTMs.

Desc	Description	Record Name
00	Continuation Record - continues a logical record when the physical limit of 80 characters for other record types is exceeded	[CONTREC]
01	Volume Header Record - defines the donor and data type	[VOLHDREC]
02	Database Header Record - transfers data about the database	[DBHREC]
03	Data Description Record - transfers data dictionary field definitions	[DATADESC]
04	Data Format Record - transfers data dictionary record definitions	[DATAFMT]
07	Section Header Record - coordinate and structure types, unit scale, factors, etc	[SECHREC]
50	Grid header Record - defines DTM grid	[GRIDHREC]
51	Grid Data Record - defines DTM height values for grid	[GRIDREC]
99	Volume Terminator Record - defines the end of the transfer set	[VOLTERM]

Note: Desc = descriptor

## Volume Header Record [VOLHDREC] 01

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	01	
DONOR	03:22	A20	ORDNANCE SURVEY<5S>	
RECIPIENT	23:42	A20	<20S>	Not used
TRANDATE	43:50	D8	19940120	Date of transfer: yyyyymmdd
SERIAL	51:54	I4	0000	Not used
VOLNUM	55:56	I2	01	Volume number (01 to 99) in transfer set
NTFLEVEL	57:57	I1	5	NTF Level 5
NTFVER	58:61	R4,2	0200	NTF Version 2.00
NTFOR	62:62	A1	V	Variable length records
EOR	63:63	A1	%	% on unformatted media
			<S>	Defaults to % on formatted media
DIVIDER	64:64	A1	\	
CONT_MARK	65:65	I1	0	No Continuation record
EOR	66:66	A1	%	ASCII 37

## Database Header Record [DBHREC] 02

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	02	
DBNAME	03:22	A20	OS_LANDRANGER_DTM<3S>	Database name, i.e. PANORAMA DTM
DDNAME	23:42	A20	DEFAULT_02.00<7S>	Standard NTF data dictionary name
DDATE	43:50	D8	19920515	Date of Standard data dictionary
DDBASE	51:70	A20	<S>	Not used
DDBDATE	71:78	D8	00000000	Not used
CONT_MARK	79:79	I1	1	Continuation record follows
EOR	80:80	A1	%	ASCII 37

### Continuation of Database Header Record

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	00	
FCNAME	03:22	A20	<20S>	Not used
FCDATE	23:30	D8	00000000	Not used
DQNAME	31:50	A20	<20S>	Not used
DQDATE	51:58	D8	00000000	Not used
DATA_MODEL	59:60	I2	00	Data model type - undefined
CONT_MARK	61:61	I1	0	No continuation record
EOR	62:62	A1	%	ASCII 37

## Data Description Record [DATADESC] 03

Field	Position	Format	Value Example	Description
REC_DESC	01:02	A2	03	
FIELD_NAME	03:12	A10	GRID_ID	Name of field being defined
FWIDTH	13:15	I3	010	Width of field being defined
FINTER	16:20	A5	I10<2S>	Format description if fixed, A* if variable
FDESC	21:*	A*	GRID IDENTITY	Textual description of field
DIVIDER	.*	A1	\	
NO_DATA	.*	A*	<10S>	Field value when no data available. {FWIDTH} wide
DIVIDER	.*	A1	\	
RANGE_MIN	.*	.*	<10S>	Minimum value for data. {FWIDTH} wide
DIVIDER	.*	A1	\	
RANGE_MAX	.*	A*	<10S>	Maximum value for data. {FWIDTH} wide
DIVIDER	.*	A1	\	
UNITS	.*	A2	<2S>	Not used
CONT_MARK	.*	I1	0	No continuation record
EOR	.*	A1	%	ASCII 37

\* = variable integer value

## Data Format Record [DATAFMT] 04

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	04	
REC_TYPE	03:04	A2	50	{REC_DESC} of Record being defined
REC_NAME	05:14	A10	GRIDHREC<2S>	Name of record being defined
NUM_FIELD	15:16	I2	29	Number of fields in the record
FIELD_NAME	*:*	A10	GRID_ID,3S>	Corresponds to entry in [DATADESC] or BS7567
FUSE	*:*	A1	c or o	Use of field (c=compulsory, o=optional)
CONT_MARK	*:*	I1	1 or 0	Continuation record follows or No Continuation record
EOR	*:*	A1	%	ASCII 37

Notes: The group of fields {FIELD\_NAME} and {FUSE} may repeat to end of physical record and through one or more continuation records {NUM\_FIELD} times.

The use of brackets within this record around any {FIELD\_NAME} and {FUSE} entries indicates that field or group of fields may repeat one or more times.

## Section Header Record [SECHREC] 07

Field	Position	Format	Value Example	Description
REC_DESC	01:02	A2	07	
SECT_REF	03:12	A10	SS68<6S>	PANORAMA Sheet Number
COORD_TYP	13:13	I1	2	Rectangular
STRUC_TYP	14:14	I1	1	Vector
XYLEN	15:19	I5	00000	Default length of 10 characters for X, Y coordinates
XY_UNIT	20:20	I1	2	Metres
XY_MULT	21:30	R10,3	0000001000	Multiply X and Y coords by 1.000
ZLEN	31:35	I5	00000	Default length of 10 characters for Z coordinates
Z_UNIT	36:36	I1	2	Metres
Z_MULT	37:46	R10,3	0000001000	Multiply Z coords by 1.000
X_ORIG	47:56	I10	0000260000	X coordinate of SW corner
Y_ORIG	57:66	I10	0000180000	Y coordinate of SW corner
Z_DATUM	67:76	I10	0000000000	Defines which datum is used for heights
CONT_MARK	77:77	I1	1	Continuation record follows
EOR	78:78	A1	%	ASCII 37

Continuation of Section Header Record

Field	Position	Format	Value Example	Description
REC_DESC	01:02	A2	00	
XMIN	03:12	I10	0000000000	Abbreviated Eastings of SW corner of tile
YMIN	13:22	I10	0000000000	Abbreviated Northings of SW corner of tile
XMAX	23:32	I10	0000020000	Abbreviated Eastings of NE corner of tile
YMAX	33:42	I10	0000020000	Abbreviated Northings of NE corner of tile
XY_ACC	43:47	R5,2	00000	Not used
Z_ACC	48:52	R5,2	00500	Statement of vertical accuracy (5 metres)
SURV_DATE	53:60	D8	19850901	Nominal date of survey: yyyyymmdd
LAST_AMND	61:68	D8	19850901	Date of last amendment: yyyyymmdd
COPYRIGHT	69:76	D8	19850901	Copyright date: yyyyymmdd
CONT_MARK	77:77	I1	0	No continuation record
EOR	78:78	A1	%	ASCII 37

Note: The default length of 10 characters will in practice be overwritten by the redefinition of the {X\_COORD}, {Y\_COORD} and {Z\_COORD} fields to a 6 character field in a [DATADESC] 03 record. Please note that the heights at the intersections of the grid are four character fields defined as {GRIDVAL} in a [DATADESC] 03 record.

## Grid Header Record [GRIDHREC] 50

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	50	
GRID_ID	03:12	I10	0002600180	Grid identity (based on grid origin)
N_COLUMNS	13:16	I4	0401	Number of columns in DTM
N_ROWS	17:20	I4	0401	Number of rows in DTM
N_PLANES	21:24	I4	0001	Number of planes in DTM
X_COORD	25:34	I10	0000260000	Easting of grid corner
Y_COORD	35:44	I10	0000180000	Northing of grid corner
Z_COORD	45:30	I6	000000	Height of grid corner
X_COORD	51:60	I10	0000280000	Easting of grid corner
Y_COORD	61:70	I10	0000180000	Northing of grid corner
Z_COORD	71:76	I6	000000	Height of grid corner
CONT_MARK	77:77	I1	1	Continuation record follows
EOR	78:78	A1	%	ASCII 37

Continuation of Grid Header Record (repeated three times)

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	00	
X_COORD	03:12	I10	0000280000	Easting of grid corner
Y_COORD	13:22	I10	0000200000	Northing of grid corner
Z_COORD	23:28	I6	000000	Height of grid corner
X_COORD	29:39	I10	0000260000	Easting of grid corner
Y_COORD	39:49	I10	0000200000	Northing of grid corner
Z_COORD	49:54	I6	000000	Height of grid corner
CONT_MARK	55:55	I1	0	No continuation record or
			1	Continuation record follows
EOR	56:56	A1		ASCII 37

Note: This record allows the definition of a three dimensional grid showing the lowermost and uppermost planes. In practice, there is only one plane and the grid corner values of each are identical.

## Grid Data Record [GRIDREC] 51

Field	Position	Format	Value Example	Description
REC_DESC	01:02	A2	51	
GRID_ID	03:12	I10	0002600180	Grid identity (based on grid origin)
SURVEY	13:19	A7	0850901	Method and date of survey
CHANGE	20:26	A7	0000000	Type and date of change
COL_START	27:30	I4	0001	First column in [GRIDREC]
COL_END	31:34	I4	0001	Last column in [GRIDREC]
ROW_START	35:38	I4	0001	First row in [GRIDREC]
ROW_END	39:42	I4	0401	Last row in [GRIDREC]
PLA_START	43:46	I4	0001	First plane in [GRIDREC]
PLA_END	47:50	I4	0001	Last plane in [GRIDREC]
COL_INV	51:51	I1	0	Column inversion: 0 = false
ROW_INV	52:52	I1	0	Row inversion: 0 = false
PLA_INV	53:53	I1	0	Plane inversion: 0 = false
ORDER	54:34	I1	1	Order in which the data is organised: 1 = column, row, plane
INTERPRET	55:55	I1	1	Interpretation of data: 1=numeric
V_OFFSET	56:65	I10	0000000000	Additive constant to be added to values after scaling
V_SCALE	66:75	R10,3	0000001000	Scaling factor for data values, i.e. 1.000
CONT_MARK	76:76	I1	1	Continuation record follows
EOR	77:77	A1	%	ASCII 37
Continuation of Grid Data Record:				
REC_DESC	01:02	A2	00	
N_GRIDVAL	03:10	I8	00000401	Number of values in [GRIDREC] -always 401
CONT_MARK	11:11	I1	1	Continuation record follows
EOR	12:12	A1	%	ASCII 37

There follow 21 continuation records like this:

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	00	
GRIDVAL	*.*	I4	0061	Height at grid intersection (repeated 19 times)
CONT_MARK	79:79	I1	1	Continuation record follows
EOR	80:80	A1	%	ASCII 37

and a final continuation record like this:

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	00	
GRIDVAL	*.*	I4	0022	Height at grid intersection (repeated twice)
CONT_MARK	11:11	I1	0	No continuation record
EOR	12:12	A1	%	ASCII 37

### Volume Termination Record [VOLTERM] 99

<u>Field</u>	<u>Position</u>	<u>Format</u>	<u>Value Example</u>	<u>Description</u>
REC_DESC	01:02	A2	99	
FREE_TEXT	03:*	A*	End of Transfer Set	See note below
CONT_VOL	*.*	I1	0	No continuation volumes or
			1	Continuation volume
EOR	*.*	A1	%	ASCII 37

\* = variable integer value

Note: If there are further Volume(s) to follow then the FREE\_TEXT field will comprise the following message:

"End Of Volume (n) Transfer Set Continues On Volume (n+1)"

If there are no further Volumes then the FREE\_TEXT field will comprise the message:

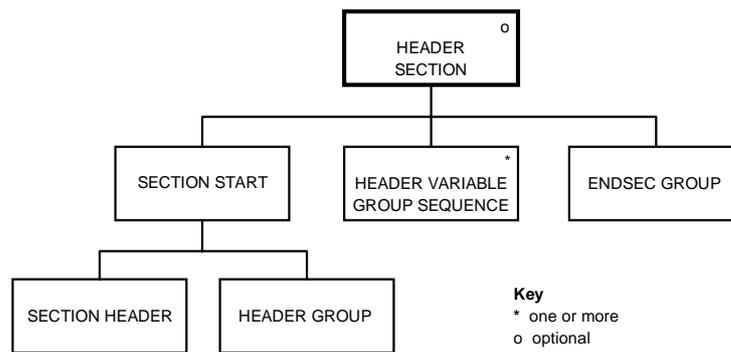
"End Of Transfer Set"

## Appendix D Record Definitions for the Transfer of Land-Form PANORAMA Data in DXF

The following pages contain examples of DXF records with explanatory notes alongside.

### Header Section

A DXF file will commence with a Header Section which will contain general information about the drawing. Each of the groups consists of a variable name and an associated value or values.



Thus:

```

0
SECTION
2
HEADER
9
$ACADVER      AutoCAD drawing database version number
1
AC1009       This indicates Release 11 or 12
9
$EXTMIN      X and Y drawing extents, lower left corner
10
nnnnnnn.nn  Minimum Eastings, (National Grid coordinates)
    
```

20		
nnnnnnn . nn		Minimum Northings, (National Grid Coordinates)
9		
\$EXTMAX		X and Y drawing extents, upper right corner
10		
nnnnnnn . nn		Maximum Eastings, (National Grid Coordinates)
20		
nnnnnnn . nn		Maximum Northings, (National Grid Coordinates)
9		
\$LIMMIN		X and Y drawing limits, lower left corner
10		
nnnnnn . n		X drawing limit, lower left corner, (in the AutoCAD World Coordinate System)
20nnnnnn . n		Y drawing limit, lower left corner, (in WCS)
9		
\$LIMMAX		X and Y drawing limits, upper right corner
10		
nnnnnn . n		X drawing limit, upper right corner, (in WCS)
20		
nnnnnn . n		Y drawing limit, upper right corner, (in WCS)
9		
\$LTSCALE		Global linetype scale
40		
1.0		
9		
\$ATTMODE		Attribute visibility
70		
1		This sets attributes to 'on' when the tile is open
9		
\$FILLMODE		Fill mode 'on' if non-zero
70		
1		
9		
\$TEXTSIZE		Default text height
40		
1.0		
9		
\$TEXTSTYLE		Current text style name
7		
STANDARD		
9		

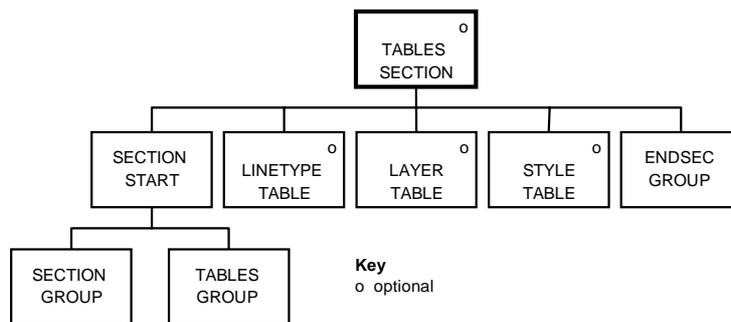
\$CELTYPE	Entity line type name
6	
BYLAYER	
9	
\$CECOLOR	Entity colour number
62	
256	Indicates colour id BYLAYER
9	
\$LUNITS	Units format for coordinates and distances
70	
2	
9	
\$LUPREC	Units precision for coordinates and distances
70	
1	
9	
\$AUPREC	Units precision for angles
70	
1	
9	
\$ANGBASE	Angle zero direction
50	
0.0	
9	
\$ANGDIR	Angle rotation
70	
0	1 = clockwise angles, 0 = counter clockwise angles
9	
\$PDMODE	Point display mode
70	
1	
9	
\$PDSIZE	Point display size
40	
0.0	
0	
ENDSEC	End of Section

## Tables Section

The Tables Section will follow the Header Section and contains definitions of named items. Within PROFILE, it will normally contain three tables:

- The Linetype Table will contain the definition for the solid line linetype.
  - The Layer Table will contain the layer definitions (and their colours and linetypes) for the layers within the drawing.
  - The Style table may define the files from which to access symbols and text fonts. Currently, PROFILE Contours does not specify any styles.

### Level 2



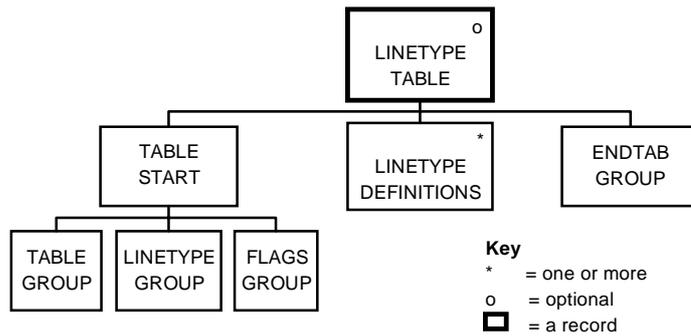
The Tables Section will follow the Header Section and will contain three tables:

- Linetype Table
- Layer Table
- Style Table.

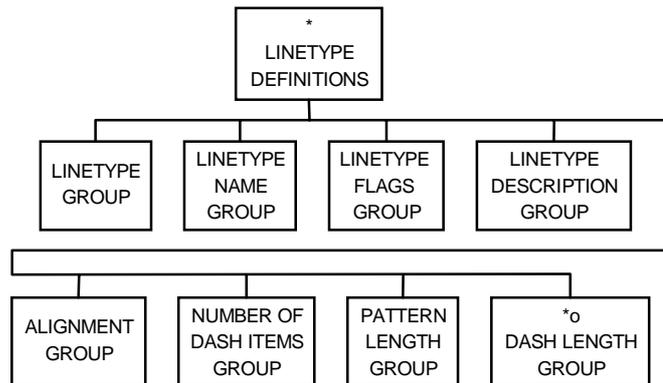
## Linetype Table

The Linetype Table will contain definitions for the following line type:

- solid line



### Level 4

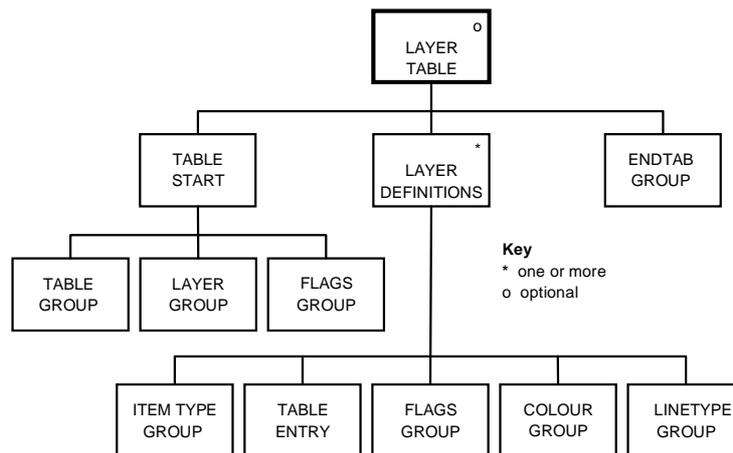


**Key**  
 \* = one or more  
 o = optional

DXF Example	Notes
0	
TABLE	Table start
2	
LTYPE	Linetype Table
70	
1	Flags group
0	
LTYPE	Linetype definition
2	
CONTINUOUS	Name of linetype
70	
64	Flags group
3	
solid line	Linetype description
72	
65	Alignment
73	
0	Number of dash items
40	
0.0	Pattern length
0	
ENDTAB	End of Linetype Table

## Layer Table

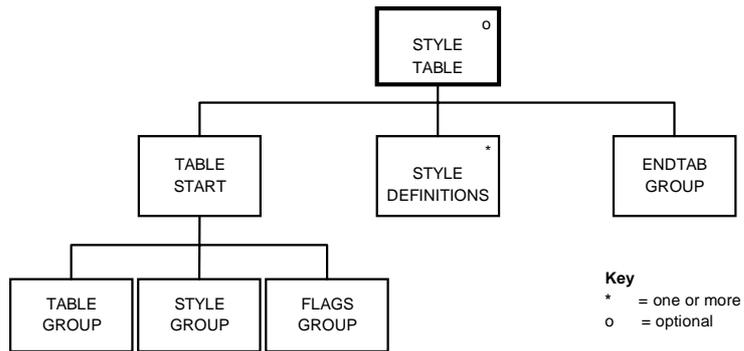
### Level 3



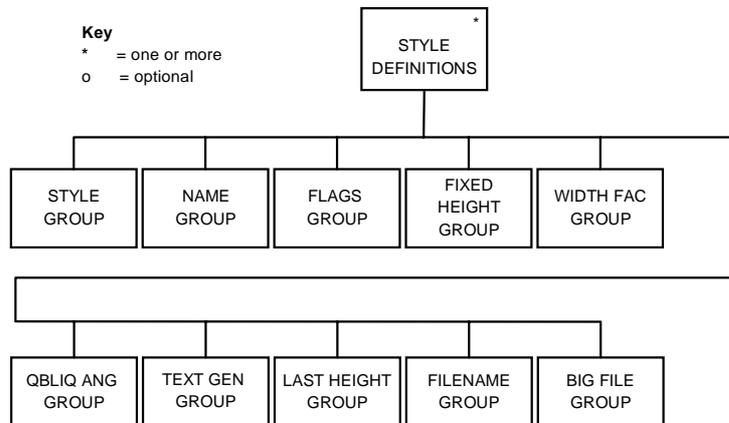
## Style Table

The Style Table is part of the Tables Section and defines the files from which to access symbols and text fonts.

### Level 3



### Level 4



**DXF Example**

```
0
TABLE
2
STYLE
70
    5
0
STYLE
2
STANDARD
70
    64
40
0.0
41
1.0
50
0.0
71
    0
42
1.0
3
SIMPLEX.SHX
4

0
STYLE
2
MONOTEXT
70
    0
40
0.0
41
1.0
50
0.0
71
    0
42
1.0
```

Appendix D Record Definitions for the Transfer of Land-Form PANORAMA Data in DXF

---

```
3
MONOTXT .SHX
4

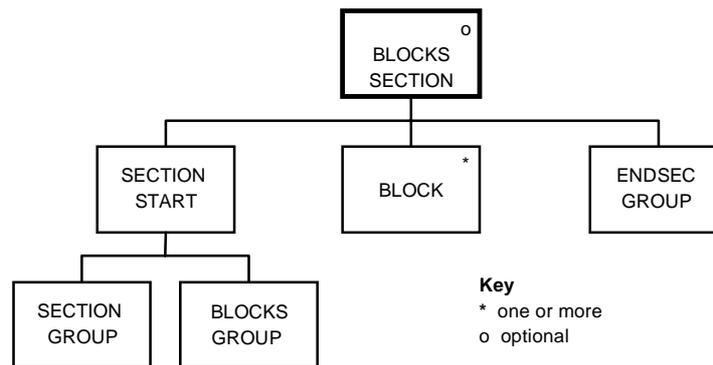
0
STYLE
2
MONOTXT
70
    0
40
0.0
41
1.0
50
0.0
71
    0
42
1.0
3
MONOTXT .SHX
4

0
ENDTAB
```

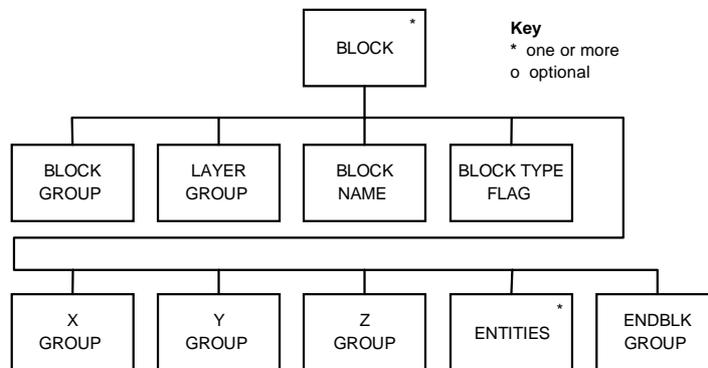
## Blocks Section

The Blocks Section defines the symbols (or blocks) which may appear in the drawing. These can be made up from any number of entities such as polylines.

### Level 2



### Level 3



## Entities Section

The Entities section will contain DXF entities for:

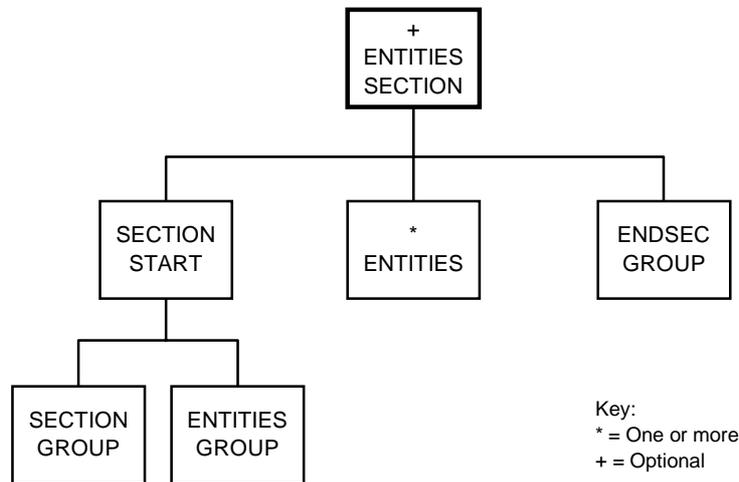
- OS map footnotes data, (INSERT entities)
- Grid and neatline, (TEXT and LINE entities)
- OS map features, (TEXT, POLYLINE and INSERT entities).

The structure of each different entity is as follows:

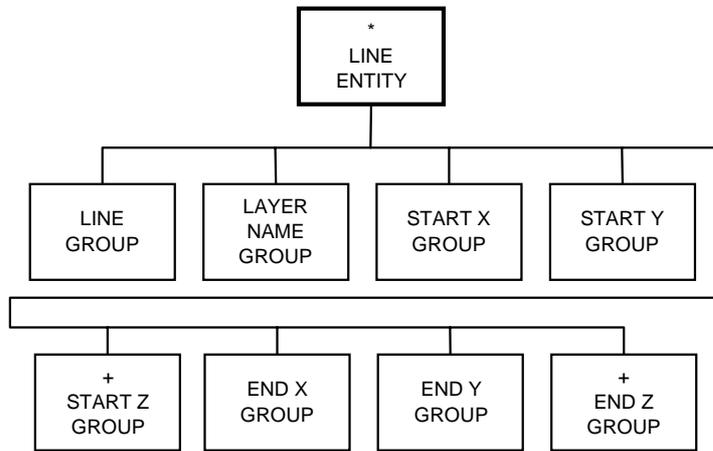
- INSERT entities - these consist of:
  - INSERT entity type group (Attribute number: 0)
  - Layer name group (8)
  - Block name group (2)
  - X coordinate group (10)
  - Y coordinate group (20)
  - Z coordinate group (30)
  - X scale factor (41) [optional]
  - Y scale factor (42) [optional]
  - Orientation group (50) [optional if 0]
- LINE entities - these consist of:
  - LINE entity type group (0)
  - Layer name group (8)
  - Start X coordinate group (10)
  - Start Y coordinate group (20)
  - End X coordinate group (11)
  - End Y coordinate group (21)
- POLYLINE entities - these consist of:
  - POLYLINE entity type group (0)
  - Layer name group (8)
  - Vertices follow flag group (66)
  - Polyline elevation (30)
  - Polyline flag group (70) [optional]
  - A number of VERTEX entities [shown below]
  - SEQEND group (0)
- VERTEX entities - these consist of:
  - VERTEX entity type group (0)
  - Layer name group (8)
  - X coordinate group (10)
  - Y coordinate group (20)
  - Z coordinate group (30)

- TEXT entities - these consist of:
  - TEXT entity type group (0)
  - Layer name group (8)
  - X coordinate group (10)
  - Y coordinate group (20)
  - Text height group (40)
  - Text string group (1)
  - Justify type group (72) [optional if 0]
  - Justify type group (73) [optional if 0]
  - Orientation group (50) [optional if 0]
  - Text style group (7) [optional]
  - Align X group (11) [only present if Justify group is present and has a value of 2]
  
- Align Y group (21) [only present if Justify group is present and has a value of 2]

**LEVEL 2**

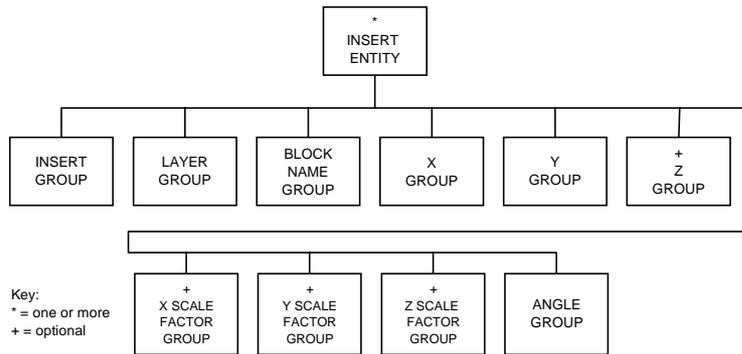


**Level 3**



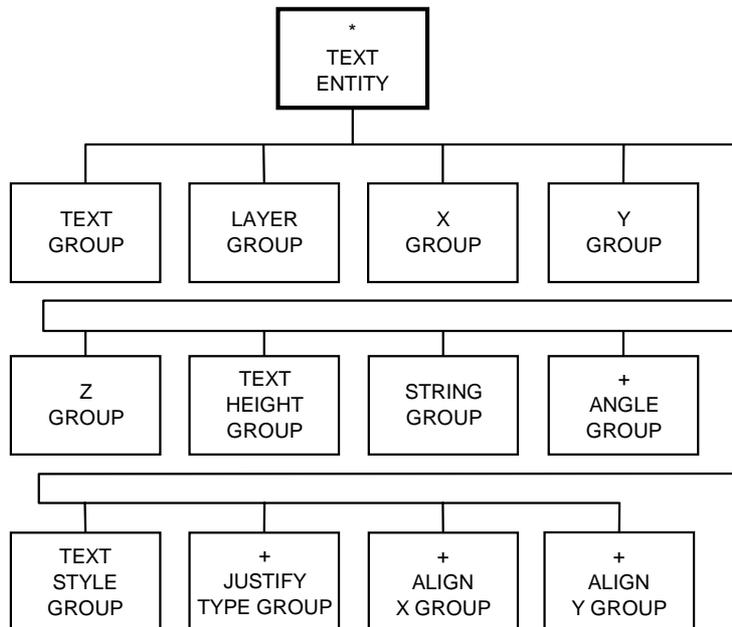
Key:  
 \* = one or more  
 + = optional

**Level 3**



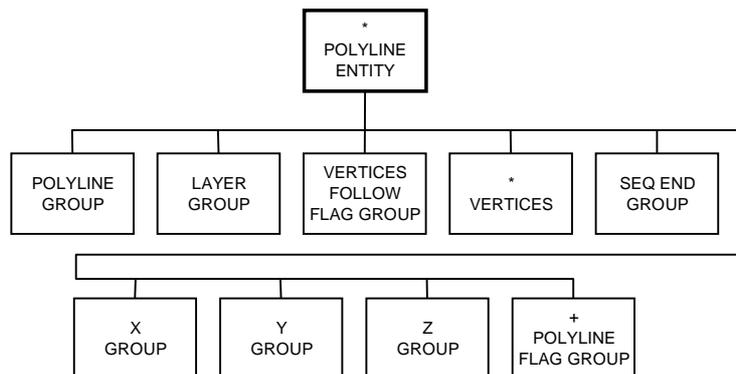
Key:  
 \* = one or more  
 + = optional

**Level 3**



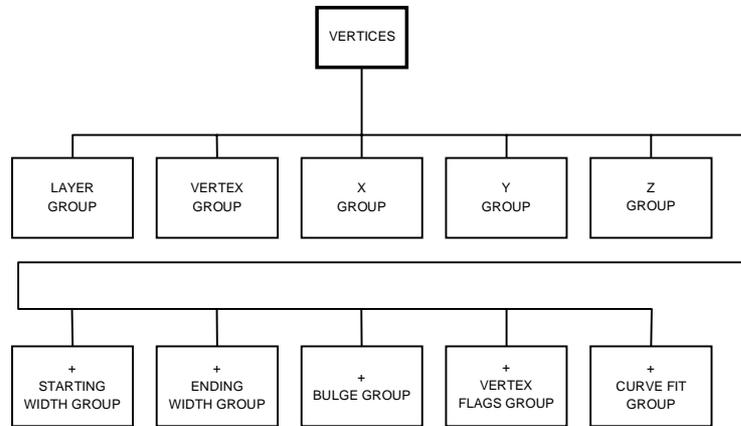
Key:  
 \* = one or more  
 + = optional

**Level 3**



Key:  
 \* = one or more  
 + = optional

#### Level 4



Key:  
+ = Optional

#### End of File Group

This group will end with DXF EOF, (End Of File) group.



---

## Appendix E Terms and Conditions

The following give a brief guide to the terms and conditions of supply and use of Land-Form PANORAMA. A full description is detailed in the signed customer contract held by your organization.

### Use of Land-Form PANORAMA

Land-Form PANORAMA is supplied under annual payment arrangements. An initial supply fee is charged for the first year - a lower annual fee is charged for each subsequent year of use.

The fee includes use on up to 50 visual display terminals and up to 5000 hard copies, including internal-use copyright fees.

Copyright of Land-Form PANORAMA is retained by Ordnance Survey for 50 years from the end of the year the data was fixed.

### Delivery of Land-Form PANORAMA

Customers are advised to copy the supplied data to a back-up medium.

Written notification of any deficiency in the data or damage to the goods must be given to Ordnance Survey within 28 days of receipt of Land-Form PANORAMA.

### Invoice

Payment in full, of the amount shown on the invoice, is due 30 days after the invoice date. The only exception is where Ordnance Survey have agreed extended terms with a customer.

## Copyright

All Ordnance Survey Digital Map Data are Crown copyright. Full details of the conditions under which Ordnance Survey Digital Map Data may be processed/manipulated or copied by a customer – whether or not for use on visual terminals or for making hard copies – are contained in Ordnance Survey leaflet: *Copyright 3 - Digital Map Data*. These are available from Ordnance Survey. For more information on Ordnance Survey Digital Map Data Copyright, please see below. Users should check the terms and conditions with Ordnance Survey before using the data. It is also the responsibility of the holder of the Digital Map Data to ensure that any output contains the required copyright acknowledgement.

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Copyright  
Ordnance Survey  
Romsey Road  
SOUTHAMPTON  
SO16 4GU

Telephone 01703 792684  
Fax 01703 792535

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## Appendix F Product Performance Report Form

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Please photocopy and send completed to:

Ordnance Survey  
Land-Form Products Manager  
Romsey Road  
SOUTHAMPTON  
SO16 4GU

---

Type of Data (delete as appropriate):

PANORAMA Contours/DTMs

Problem description/suggestion for:

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

Quotation/Order Ref: .....

Your Name: .....

Company: .....

Address: .....

.....

.....

.....

.....

Tel: .....

Fax: .....

