



Z. GIS File Specification

We define here the precise format conventions as used by GIS files within **SATURN**. They have a similar structure to other **SATURN** data files whereby blocks of data are identified by an opening record such as 11111, 2222 etc. and are terminated by a 99999 record. Blocks must appear in numerical order and are terminated by a final 99999 record.

In addition a GIS file should contain a title on the very first record followed by an optional and very short set of namelist parameters prior to the first set of 11111, etc. records.

It is furthermore assumed that the standard filename "extension" is "gis", e.g., network.gis. (See Section 3.3.)

In general, because most GIS files are likely to be generated interactively in **P1X**, users need not be too concerned about the specific formats used. They are supplied below for completeness and to enable, for instance, the reformatting of externally generated (digitised) data.

RECORD 0.1 - Title

Cols 1 - 28 A text record containing an (arbitrary) file title

RECORD 0.2 - NAMELIST PARAMETERS (Optional)

These consist of a header record &PARAM, one or more records defining the following parameters which are only relevant to the node co-ordinate data section (BLOCK 8 below) and have the same standard interpretation as used in network .dat files plus an &END record.

DUTCH	If TRUE node numbers may have up to 8 digits. Default - .FALSE.
IROCKY	By default the sector corresponding to a zone may be derived by dividing the zone number by IROCKY (a very bad spelling of HIERARCHY!). If 0 does not apply.
XYFORM	The "format" used to define node X, Y co-ordinates under the 55555 data records - see Section 6.8. Default - '215'

BLOCK 1 - ENCLOSED POLYGONS

These records define a set of "corner" point co-ordinates which define an enclosed polygon. They need not constitute a "closed" set in the sense that the final point need not equal the first; hence the final edge joins the first and last corners.

Record 1.1

Cols 1 5 11111

Record 1.2.1 Start of a new polygon (FORMAT (2F10.2, 3I5, 3X, A12))

Cols 1 - 10 X coordinate of the first "corner" (decimal point in col. 8)



- Cols 11- 20 Y coordinate of the first “corner” (decimal point in col. 18)
- Cols 21- 25 Pen colour (in range 1 to 16)
- Cols 26- 30 A non-zero if the area is to be “in-filled”
- Cols 31- 35 An equivalent zone number if the area represents a zonal boundary (N.B. use the zone “name” as opposed to its “sequential number”.)
- Cols 36- 40 Line width in mm. (Real – decimal place in col. 39)
- Cols 41 - 60 An alphanumeric title for the area (as yet not used)

Record 1.2.2 Co-ordinates of the polygon’s next (up to) 4 “corners”:

- Cols 1- 10 X coordinate of the next+1 “corner” (decimal in col. 8)
- Cols 11- 20 Y coordinate of the next+1 “corner” (decimal in col. 18)
- Cols 21- 30 X coordinate of the next+2 “corner” (decimal in col. 28)
- Cols 31- 40 Y coordinate of the next+2 “corner” (decimal in col. 38) etc.

where a polygon is terminated either by the next 20 columns for (X,Y) being blank or, if the final corner is the 4th on a record, by a blank record following. A new polygon commences on the next record (1.2.1) or is terminated by:

Record 1.3 End of Polygons

- Cols 1- 5 99999

BLOCK 2 - POLYLINES

These records define a set of “points” making up a “polyline”. They may be plotted either as a line joining successive points or as a “bandwidth” joining those points. The latter might be used to represent a river.

Record 2.1

- Cols 1- 5 22222

Record 2.2.1 Start of a new polyline (FORMAT (2F10.2, 2I5, A1)

- Cols 1- 10 X coordinate of the first “corner” (decimal in col. 8)
 - Cols 11- 20 Y coordinate of the first “corner” (decimal in col. 18)
 - Cols 21- 25 Pen colour (in range 1 to 16)
 - Cols 26- 30 The (integer) line width in millimetres “on the screen” if col. 31 is blank
- OR
- The (integer) line width in metres “on the ground” if col. 31 is ‘G’ (In either case 0 or blank for a line)

Col 31 'G' or blank

Record 2.2.2 Co-ordinates of the next (up to) 4 "corners":

Cols 1- 10 X coordinate of the second "corner" (decimal in col. 8)

Cols 11- 20 Y coordinate of the second "corner" (decimal in col. 18)

Cols 21- 30 X coordinate of the next+2 "corner" (decimal in col. 28)

Cols 31- 40 Y coordinate of the next+2 "corner" (decimal in col. 38) etc.

where the polyline is terminated either by the next 20 columns for (X,Y) being blank or, if the final corner is the 4th on a record, by a blank record following. A new line then commences on the next record (2.2.1) or is terminated by:

Record 2.3 End of polylines

Cols 1- 5 99999

BLOCK 3 - IKONS

These records define a set of "ikons" and their co-ordinates, where an "ikon" is one of a standard set given below.

Record 3.1

Cols 1- 5 33333

Record 3.2.1 (FORMAT (2F10.2, I5, F5.0, I5))

Cols 1- 10 X coordinate (decimal in col. 8)

Cols 11- 20 Y coordinate (decimal in col. 18)

Cols 21- 25 Pen colour (in range 1 to 16)

Cols 26- 30 Ikon height in millimetres "on the screen" (no decimal)

Cols 31- 35 Ikon number representing:

1 - a monopoly-style house

2 - a BR symbol

3 - a car park

4 - a church

5 - a hospital

6 - a Tetley pub

7 - a square box with a letter inside (see col. 45)

8 - a LT logo

9 - a regular n-sided shape

Cols 36- 40 Background pen colour for ikon 7 (in range 1 to 16)

Col 45 The letter used in ikon 7 (text)

Record 3.2.2 As 3.2.1 for the next ikon

etc., etc. until terminated by:

Record 3.3

Cols 1- 5 99999

BLOCK 4 - TEXT

These records define a set of co-ordinates and of text to appear centred at those points

Record 4.1

Cols 1- 5 44444

Record 4.2.1 (FORMAT (2F10.2, 2I5, 2X, A28))

Cols 2- 10 X coordinate of the centre of the text (decimal in col. 8)

Cols 11- 20 Y coordinate of the centre of the text (decimal in col. 18)

Cols 21- 25 Pen colour (in range 1 to 16)

Cols 26- 30 Character height in millimetres (no decimal)

Cols 33- 60 Text (left justified)

Record 4.2.2 As 4.2.1 for second text entry

Record 4.3

Cols 1- 5 99999

BLOCK 5 - NODE NAMES

These records define a set of alpha-numeric names to be associated with nodes and/or zones.

Record 5.1

Cols 1- 5 55555

Record 5.2 (FORMAT (A1, I9, 2X, A28))

Cols 1 A 'C' for a zone to follow

Cols 2- 10 Node/zone name (numerical value)

Cols 13- 40 Its name in characters

**Record 5.3**

Cols 1- 5 99999

BLOCK 6 - LINK NAMES

These records define a set of alpha-numeric names to be associated with those links along routes defined by a set of nodes.

Record 6.1

Cols 1- 5 66666

Record 6.2 (FORMAT (A12, 3X, A65))

Cols 1- 12 A road name in characters (e.g., M1)

Cols 15- 80 A set of nodes through which the road passes such that nodes which are not connected are "interpolated". The format is "free".

Record 6.3

Cols 1- 5 99999

BLOCK 7 - CO-ORDINATES OF CURVED LINKS

These records define a set of co-ordinates for links which may (optionally) be plotted as a set of "poly lines" (i.e. approximating to a curve) through a set of intermediate points rather than as a straight line or as part of an arc from a circle (in which case the user needs to input the centre of curvature of the circle rather than discrete points along the arc).

Record 7.1

Cols 1- 5 77777

Record 7.2.1 Link Identifier (FORMAT 2I10)

Cols 1- 10 Link A-node

Cols 11- 20 Link B-node (Negative for an arc; see below)

Record 7.2.2: Co-ordinates of the intermediate points:

Cols 2- 10 X coordinate of the next+1 point (decimal in col. 8)

Cols 11- 20 Y coordinate of the next+1 point (decimal in col. 18)

Cols 21- 30 X coordinate of the next+2 point (decimal in col. 28) etc.

where the points are terminated either by the next 20 columns for (X,Y) being blank or, if the final point is the 4th on a record, by a **blank record** following. A new line then commences on the next record (7.2.1) or is terminated by:



Record 7.3

Cols 1- 5 99999

N.B. With version 10.6 it is no longer necessary to include a blank record if, as noted above, the number of X,Y points is a multiple of 4. The program scans the following line and, if it contains a valid A-node and B-node in columns 1-20, the assumption is that this must be the start of a new link record and the previous set of curved points is terminated. Data using the older convention is still of course acceptable.

ARCS RATHER THAN POLYLINES

To define the link to have the shape of an arc of a circle the user must:

- a) set the link B-node negative
- b) set the co-ordinates of the centre of the circle as the (only) two values on the next record (7.2.2)

Notes:

If a link is entered twice within the 77777 records (including one entry as (A,B) and a second as (B,A)) then the first is ignored and a warning message generated.

BLOCK 8 - NODE CO-ORDINATES

These records define the co-ordinates of nodes and/or zones. They follow precisely the rules used to define the equivalent data section in network data files - see Section 6.8 - with the one difference being that here the data follows a 88888 header whereas in .dat files they are 55555. Thus for zones sector definitions may also be included. The namelist parameters above are relevant to this data set.

Record 8.1

Cols 1- 5 88888

Record 8.2 Identical to the '55555' records as input to SATNET**Record 8.3**


Cols 1 - 5 99999

RECORD 9 FINAL "END OF FILE" RECORD

Cols 1- 5 99999



Z.1 Version Control

JOB NUMBER: 5101396		DOCUMENT REF: App Z.doc				
Revision	Purpose / Description					
		Originated	Checked	Reviewed	Authorised	Date
1	Re-formatted (Final to DVV)	TF / BG	NS	IW	IW	06/05/06
3	Upgrade to V2 Template	DVV	IW	DVV	IW	28/06/06
3.2	Web release – Sept 06	DVV	NP	IW	IW	08/09/06
3.3	Web release – Jan 07	DVV	NP	IW	IW	04/01/07
3.4	SATURN v10.7 Release	DVV	NP	IW	IW	12/03/07
3.5	Web release – Jul 07	DVV	NP	IW	IW	19/07/07
3.6	SATURN v10.8 Release	DVV	NP	IW	IW	26/01/08
3.7	Web release – Jul 08	DVV	NP	IW	IW	07/07/08
3.8	Web release – Dec 08	DVV	NP	IW	IW	12/12/08
3.8.21	Web release – Feb 09	DVV	NP	IW	IW	16/02/09
3.8.22	Web release – Jun 09	DVV	NP	IW	IW	16/06/09
10.9.10	SATURN v10.9 Release	DVV	DG	IW	IW	04/09/09
10.9.12	SATURN v10.9 Release (Full)	DVV	DG	IW	IW	22/10/09
10.9.17	Web release – Jun 10	DVV	NP	IW	IW	22/06/10
10.9.22	Web release – Dec 10	DVV	AG	IW	IW	06/12/10
10.9.24	SATURN v10.9 Release (Full)	DVV	AG	IW	IW	06/05/11
11.1.09	SATURN v11.1 Release (Full)	DVV	AG	IW	IW	31/03/12