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SYSTEM/PROJECT/PRODUCT: STC UTC

Data File Format Guide

for an STC UTC System

ISSUE STATE

Note :- Source of documents is shown under Type as below.

1=Paper, 2=VAX, 3=Microfilm, 4=CALTEXT Disc, 5=DECmate Disc,

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1. INTRODUCTION

1.1 Purpose

The purpose of this document is to describe the formats of the data files which are produced by the list option of the data preparation systems which may help you to check the validity of the data stored within a UTC System.

1.2 Scope

The document is written for day-to-day users of a System which is capable of running SCOOT Version 2.4 or later. Users of the handbook should have attended an STC Data Preparation training course.

1.3 Related documents

Note: In the references below, the characters 'xxx' substitute for the 3 digit number which uniquely identifies a particular UTC System i.e. the customer variant for these documents.

1.3.1	666/UH/16940/000	Systems Requirement Specification for an STC UTC System
1.3.2	666/UH/16940/xxx	Customer Requirements Specification
1.3.3	666/HA/16940/000	Hardware & Maintenance Handbook
1.3.4	666/HB/16940/000	Operators Handbook for an STC UTC System
1.3.5	666/HD/16940/000	Data Preparation Handbook for an STC UTC System
1.3.6	666/HE/16940/000	System Handbook for an STC UTC System
1.3.7	666/HF/16940/000	SCOOT User Guide
1.3.8	666/HG/16940/000	System Management Handbook for an STC UTC System
1.3.9	666/HH/16940/000	Guide to Data Preparation
1.3.10	666/HB/16101/002	SCOOT V2.4 Traffic Handbook

1.3.11 666/HP/16940/000 Plan Preparation Handbook for a STC UTC System

1.3.12 666/HT/16940/000 Timetable Preparation Handbook for an STC UTC System

1.4 Definitions

For all definitions and abbreviations used in this and related UTC documentation see 666/KE/16066/000 UTC Glossary of Terms.

1.5 Issue state and amendment

Issue 01.00A	-	First draft
Issue 01.00B	-	Second draft after informal review
Issue 01.00	-	First numeric issue
Issue 02.00	-	Inclusion of upper and lower controller timings, Summer Time, System printer and Dial-up terminal. Modification of Terminal data.
Issue 03.00	-	9th February 1993, DC 7573, Inclusion of Telecommand 12, multi-computer systems and tidal flow data.
Issues 04 to 06	-	Not Issued.
Issue 07.0	-	Updates and amendments. Document issue now aligned with Software Issue.
Issue 08.0	-	November 1993, inclusion of plan file formats, changes for more than 2 demand dependent stages and new remote request types.
Issue 09.0	-	Not issued.
Issue 10.0	-	Revised and updated to reflect V10 software.
Issue 10.0 to 16.0		Not Issued
Issue 17.0	-	Modified to Microsoft Word and updated to reflect version 17.0 of the UTC software
Issue 18 to 20		Not Issued
Issue 21		Revised and updated to reflect V21 software.
Issue 22		Not Issued
Issue 23		Revised and updated to reflect V23 software.

Issue 24	Not issued
Issue 25	Not issued
Issue 26	Revised and updated for Lincoln Tidal Flow modifications at V26 software.
Issue 27	Not issued
Issue 28	Updated
Issue 29	Not issued
Issue 30	Updated for communications profiles for UTMC mark 2 (UG405)
Issue 31	Not issued
Issue 32	Add CO reply bit for junctions & pelicans
Issue 33	Not issued
Issue 34	For TC12 and UTMC OTUs allow position of first SCOOT detector to be specified manually.
	Number of bits in junction and pelican formats increased from 19 to 32. This can only be accessed from HTML data entry.
	Allow MOVA configuration on pedestrian controllers
	Allow PV control bit for junctions

2. INTRODUCTION TO THE DATA FILES

2.1 General

The list option of the data preparation program can produce data in one or all of the following categories:

- UTC Data
- SCOOT Data
- Plan Data
- Time of Day Timetable Data
- Day of Week/ Date of Year Timetable Data
- UTC Message Texts
- SCOOT Message Texts
- Overlay OTU bits information
- OTU equipment allocation

The UTC Data category is sub-divided into the following categories:

- SCN Data
- Junction timings data
- Equipment data

The SCOOT Data category is sub-divided into the following categories:

- Area Data
- Region data

Each category of data is contained within a data file. The categories of data and corresponding file names are shown below:

UTC Data - SCN Data	SCNS.MAC
UTC Data - Junction timings data	TIMINGS.MAC

UTC Data - Equipment data	DATA.MAC
SCOOT Data - Area Data	AREA.DAT
SCOOT Data - Region XX Data	REGION.XX
Time of Day Timetable Data	TODn.MAC
Day of Week/ Date of Year Timetable Data	DWYTTB.MAC
UTC Message Texts	LANGnUTC.MAC *
SCOOT Message Texts	LANGnSCO.MAC *
Terminal Configuration Data	TRMCNF.MAC

* Note : The “n” in “LANGn” above refers to the English and Foreign Language message files on the System. By default, “LANG0” is English and, where configured “LANG1”, “LANG2” etc. refer to other languages configured on the system.

The contents of the UTC Message Texts and SCOOT Message Texts are self explanatory. Descriptions of the other data files are contained within this document. The description of the contents of a particular file are listed under the name of the data file.

2.2 Terminology

To help you understand the data formats, the meanings of some of the terms used are provided below.

2.2.1 Macro

In the context of this document a macro is the name given to the type of data which follows. When the data is listed on a wide carriage printer each type of data will occupy a single line on the paper, the macro will always be the first item in the line of data.

2.2.2 IRN

The IRN or Internal Reference Number is a number which is used by the UTC program to refer to an item of equipment. Each IRN is automatically allocated by the software when the data is entered into the System using the forms data entry procedures. The OTU IRNs are the physical data channels which connect the Telecommand-8 or Telecommand-12 instation to an OTU and must be allocated by you.

2.2.3 Junction

It should be noted that the terms 'intersection' and 'junction' mean the same within this document.

2.3 Frequently Used Fields

Certain data fields occur in many of the data formats and are described here to avoid unnecessary repetition.

SCN	The System Code Number. This must be set up in accordance with the hardware configuration.
DESCRIPTION	The text which is used to describe the equipment or its location in output messages The text string must not exceed 15 characters in length and is enclosed "<" and ">". The string can contain any printable ASCII character, e.g. A..Z,a..z,0..9,"$","/", etc.
IRN	The IRN is a three digit (1 to 999) Internal Reference Number of an equipment. IRNs are automatically allocated by the forms management system for use by the UTC System computer programs.
OSN	The OSN or Outstation Number is the IRN of the outstation to which the equipment is connected.
WORD	The OTU address on which the equipment is allocated, in the range 1 to 4.
DUO	This parameter is no longer used. It will always be 0.

2.4 Telecommand 12 Systems

The information contained in this handbook refers to systems with both TC8 and TC12 hardware. Where there are any specific modifications for TC12 then this is indicated in the text.

2.5 Multi-Computer Systems

The same comment as described in 2.4 above also applies to multi-computer systems.

2.6 System Data

The SYSDAT macro defines the computer for the data following it. A SYSDAT macro MUST always precede a new data macro.

Format:

```
SYSDAT N
```

Parameters:

N The traffic computer for which the following data applies:

- 1 computer 1;
- 2, 3, ... successive computers;

99 all computers.

Single computer systems will only use the SYSDAT 1 macro.

3. EQUIPMENT FILE - DATA.MAC

The data descriptions in this section are in the order in which they appear in the DATA.MAC file listing.

3.1 Count Detector File, Car Park Occupancy Lifetime and Other Data

Format:

```
FILLIF DETLIF OTUDUR OTULIF CPOC UDMODE 1-IN-N LOG HC
```

Parameters:

DETLIF — The number of days that the count detector data storage files will be kept on a TCC in a multi-computer System before being deleted. This parameter is not used in single computer Systems.

OTUDUR — The LOGOTU operator command starts the logging of control and reply word data in a disc file. The value of the OTUDUR parameter, in hours, determines how long logging will last, unless previously stopped by an operator.

OTULIF — The number of days that the OTU logging data storage files will be kept before being deleted.

CPOC — The number of days that the car park occupancy data is retained.

UDMODE — The default upload/download transfer mode. The possible values are:

- 0 Continuous mode
- 1 Split mode
- 2 One in N mode

LOG HC — If hurry call messages are to be logged. The possible values are:

- 0 Do not log hurry call messages
- 1 Log hurry call messages

Example:

```
SYDAT  99
          DETLIF  OTUDUR  OTULIF CPOC UDMODE 1-IN-N LOG HC
FILLIF      30      24      07    24      0      04     1
```

3.2 Archive File Lifetime Data

Format:

```
FILARC DETDAY DETWEEK SYSLOG
```

Parameters:

DETDAY The number of days that the count detector data storage files will be kept on the TMC of a multi-computer System or the combined TMC/TCC in a single computer System before being deleted.

DETWEEK The number of weeks that the weekly summary file will be kept before being deleted.

SYSLOG The number of days that the system log archive file will be kept before being deleted.

Example:

```
SYSDAT 99
      DETDAY DETWEEK SYSLOG
FILARC  15     12      10
```

3.3 Communications Profiles

Format:

```
COMDAT ID TYPE NAME CONTOL CONCLR 1HRTOL 1HRCLR 3MTOL 3MCLR TXHREP SNMPTO SNMPRC SSRI RSHOFF KAINT PROCTO
     LATE OPMODTO PRESCH
```

Parameters:

ID The profile number, range 1 to 9999.

TYPE The OTU type this profile is valid for. A number string with combinations of 1, 2 and 3. Where 1 = for TC8/TC12, 2 = for UTMC mark 1 and 3 = for UTMC mark 2.

NAME The name given to this profile, up to 15 bytes long.

CONTOL If no reply is continuously received from an outstation for this number of seconds then an outstation no reply fault (511) will be raised. For OTU types other than UTMC mark 2 this is limited to 1-3 seconds. See also section 5.1 Timing Tolerances.

CONCLR Once a 'no reply' fault has been raised the outstation must return valid replies for this number of seconds before the fault is cleared.

1HRTOL	If this number of transmission errors occur in one hour then an outstation intermittent fault (513) will be raised.
1HRCLR	Once an intermittent fault is raised if less than this number of transmission errors occurs in a hour then the intermittent fault will be cleared.
3MTOL	Three-minute tolerance. A persistent fault (512) will be raised if more than this number of transmission errors occurs within the persistent reset time (by default 3 minutes).
3MCLR	Three-minute clear time. This value sets the time interval for persistent fault checking. It is also the number of seconds for which valid replies must be received before a persistent fault is cleared.
TXHREP	OTU transmission error hourly fault threshold. Every hour, on the hour, the system reports the number of TX errors seen on OTUs. If the number of TX errors for an OTU is greater than this number then the OTU is included in the report otherwise it is not. Default is 1.
SNMPTO	SNMP timeout (millisec). If no acknowledgement is received in response to an SNMP message then the sender waits this long before retrying. Depends on the typical line response time.
SNMPRC	SNMP retry count. How many times to retry on an SNMP timeout. On lines that have long response times or limited bandwidth, retries should be minimised at the cost that delivery of some data may be delayed. On OTUs that have good bandwidth and response times then the retries can be set quite aggressively.
SSRI	SCOOT Sample Reporting Interval. This is the number of seconds for which SCOOT detector data will be batched. Increasing this value will reduce the overall amount of network traffic sent from the OTU but at the cost of being less tolerant of network delays and fractionally degraded SCOOT performance.
RSHOFF	Re-send Hold-off time (sec). If an SNMP message fails to be sent after the SNMP timeout and retry count, then this parameter specifies how long to back off before trying to send further messages. It is recommended that this value be left set to 1.
KAINT	Keep-Alive Interval (sec). Specifies the maximum time that is allowed to pass between the OTU sending data to the instation. 0 disables keep-alive; the OTU only sends data when the reply data changes. Other values require the outstation to send a message to the instation after this time whether or not any reply data has changed. For good quality private networks, it is recommended to set this to 1. For ADSL or wireless networks, larger values could be used. E.g. 2 to 4 seconds.
PROCTO	In the absence of reply data, this is the maximum amount of time that the system will wait before assuming reply data has not changed and processing the unchanged replies. If keep-alive is enabled this value should be set to its maximum (30).

LATE SNMP messages that are delayed by this number of seconds are flagged as late and are counted as a TX error for the purposes of intermittent and persistent TX fault monitoring.

OPMODTO Number of seconds that OTU will stay online if no communications are received from the instation. After this duration, the OTU will reset to stand-alone mode. (5-99 sec)

PRESCH Maximum number of seconds into the future that the system will consider pre-scheduling control.

Examples:

A UTC system which has been upgraded to support UTMC mark 2 will have the following pre-defined Communications Profiles. It is recommended that they should not be altered, but that new profiles should be created based on their contents. Existing TC8, TC12 or UTMC mark1 OTUs will be reformatted to use profile zero, which will default to using the existing timings in TIMTOL and the OTU one-hour TX threshold defined in the UTC customer configuration item 1_HOUR_OTU_TX_THRESHOLD.

```
;       Id Type Name            CONTOL CONCLR 1HRTOL 1HRCLR 3MTOL 3MCLR TXHREP
;
;                                                  For UTMC only -->   SNMPTO SNMPRC
;
;                                                  For UTMC mk2 only -->             SSRI RSHOFF KAINT PROCTO LATE OPMODTO PRESCH
;
COMDAT  0001  12 <TC8/TC12/UTMC1 >  003  0030  0015   0015   15    0180    01  0000     00     1     1     01    30    02    30     04
COMDAT  0002   3 <Private line   >  005  0030  0015   0015   15    0180    01  0250     02     1     1     01    30    03    30     04
COMDAT  0003   3 <Internet       >  006  0030  0015   0015   15    0180    01  0300     02     2     1     02    30    03    30     04
COMDAT  0004   3 <Wireless       >  008  0040  0020   0015   15    0180    01  0300     02     4     2     04    30    03    30     04
COMDAT  0005   3 <Leased Line    >  004  0030  0015   0015   15    0180    01  0000     00     1     1     01    30    02    30     04
```

3.4 Telecommand 12 PC

Format:

```
SCN DESCRIPTION MODEMS PROP TYPE OFFSET WALTIM MPANEL
```

Parameters:

MODEMS The number of modems configured for the TC12 PC.

PROP The additional propagation delay in mSec. Normally 0.

TYPE The local digital output wall map type, having the value 0 for none, 8 for TC 8, and 12 for TC12

OFFSET This is the offset within the PC where the digital IO data will be received. Valid entries are 0 or 4 for TC 8 and 1 or 2 for TC 12.

WALTIM Specifies if this PC sends the time to the wallmap (0/1)

MPANEL Specifies if this PC drives an Outstation monitor panel (0/1)

Examples:

```
          SCN     DESCRIPTION    MODEMS PROP TYPE OFFSET WALTIM MPANEL
TC12PC 001 001 <Test PC One >   32      00 12     1       1   1
```

3.5 Modems

Format:

```
MODEM DUPLEX TYPE SPEED
```

Parameters:

DUPLEX 0 = half duplex, 1 = full duplex mode.

TYPE The modem type. 0 = radial, 1 = multipoint

SPEED The transmission rate.

Examples:

```
      MODEM DUPLEX TYPE SPEED
MODEM 01     0     1    1200
MODEM 02     0     1    1200
```

3.6 Outstations (TC8)

Format:

```
OSNDAT SCN DESCRIPTION VALID TYPE COMPRO  ADDRESS 1 to 4
```

Parameters:

VALID The validity of the OSN. If it is set to 1 the OSN is valid. If it is set to 0 the OSN is not valid and any reply data from equipment connected to this OSN is not checked and no control data is sent. Normally an OSN which has been set to invalid would not exist and would have no equipment defined for it.

TYPE The type of outstation. 0 = TC8. 1 is used for TC12 outstations. See section 3.7 below. 2 is used for all types of UTMC Outstations (see 3.8 below)

COMPRO The Communications Profile number. This must be one of the values defined in COMDAT (see section 3.3) or zero, which means that default values defined in TIMTOL (section 5.1) will be used.

ADDRESS The addresses configured for the Outstation. Up to 4 addresses may be used by an Outstation. Zeros signify an address is not configured. The addresses must be contiguous and must not cross over a 4-address boundary.

Examples:

```
          SCN      DESCRIPTION      VALID TYPE  COMPRO  ADDRESS 1 to 4

OSNDAT  001 120  <CONWAY/ HEMINGF>   1     0    0000   001    002    003    000
OSNDAT  001 130  <CONWAY/EXMOUTH >   1     0    0000   005    006    000    000
OSNDAT  001 140  <CON/VITT/CATH  >   1     0    0000   009    010    011    000
```

3.7 Outstations (TC12)

Format:

```
OSNDAT SCN DESCRIPTION VALID TYPE COMPRO SCODET MODEM LINE CONTROL REPLY UDTYPE
```

Parameters:

VALID The validity of the OSN. If it is set to 1 the OSN is valid. If it is set to 0 the OSN is not valid and any reply data from equipment connected to this OSN is not checked and no control data is sent. Normally an OSN which has been set to invalid would not exist and would have no equipment defined for it.

TYPE The type of outstation. 1 = TC12. (0 is used for TC8 and 2 for all types of UTMC outstations).

COMPRO The Communications Profile number. This must be one of the values defined in COMDAT (see section 3.3) or zero, which means that default values defined in TIMTOL (section 5.1) will be used.

SCODET The start position of the first detector on the OTU, in terms of word and mask. Zero means automatic. Only available on HTML interface

MODEM The TC12 modem number.

LINE The line number on the TC12 PC. The maximum number of lines available on a TC12 PC is a function of the control and reply bytes (below).

CONTROL The number of control bytes used.

REPLY The number of reply bytes used.

UDTYPE This indicates if the OTU has the Remote Handset facility and the type of OTU. Possible values and their meanings are:

0	No remote handset facility
1	Free-standing OTU with remote handset facility
2	Integral OTU with remote handset facility
3	Integral OTU in an ST800 controller with remote handset facility

Examples:

```
          SCN       DESCRIPTION     VALID TYPE  COMPRO  SCODET  MODEM LINE CONTROL REPLY UDTYPE
OSNDAT  051 110  <FIRST TC12 OSN >   1     1    0000    00 0    01   01    2      06     0
OSNDAT  051 120  <TEST OSN       >   1     1    0000    01 1    01   02    2      06     1
OSNDAT  051 130  <OTU D1         >   1     1    0000    00 0    01   03    2      06     2
OSNDAT  051 140  <LAST OTU       >   1     1    0000    00 0    01   04    3      06     3
```

3.8 Outstations (UTMC)

Format:

```
OSNDAT SCN DESCRIPTION VALID TYPE COMPRO SCODET HOSTNAME MIB CONTROL REPLY AUTOLAY
```

Parameters:

VALID The validity of the OSN. If it is set to 1 the OSN is valid. If it is set to 0 the OSN is not valid and any reply data from equipment connected to this OSN is not checked and no control data is sent. Normally an OSN which has been set to invalid would not exist and would have no equipment defined for it.

TYPE The type of outstation 2 = any type of UTMC. (0 is used for TC8 and 1 for TC12 outstations).

COMPRO The Communications Profile number. This must be one of the values defined in COMDAT (see section 3.3) or zero, which means that default values defined in TIMTOL (section 5.1) will be used.

SCODET The start position of the first detector on the OTU, in terms of word and mask. Zero means automatic. Only available on HTML interfaceHOSTNAME The I/P address of the OTU

MIB The initial letter of the manufacturer of the UTMC outstation. The options are S for Siemens simple mark 1 UTMC, P for Peek (or Full) mark 1 UTMC and U for mark 2 UTMC.

CONTROL The number of control bytes used.

REPLY The number of reply bytes used.

AUTOLAY A flag to select automatic equipment bit layout or the control and reply bytes. Value 'Y' or 'N', defaults to 'N'. This item is not shown on the data base entry forms, as it is reserved for future use.

Examples:

```
;         SCN       DESCRIPTION   VALID TYPE COMPRO  SCODET              HOSTNAME             MIB  CONTROL
REPLY AUTOLAY
;
OSNDAT  099 110  <Test UTMC OTU 1>  0     2   0001    00 0    <10.1.1.1                     >  S     2       10
N
OSNDAT  099 120  <Test UTMC OTU 2>  0     2   0002    01 1    <10.1.1.2                     >  U     2       10
N
```

3.9 Intersection Control Bit Formats

Each intersection has associated with it a data format type. This type describes which control and reply bits the intersection uses. The System is capable of supporting 200 data format types, the formats are defined using two macros, BITDAT and DATBIT. BITDAT defines the control bits and DATBIT the associated (if any) reply bits. Not all control bits have associated reply bits, and similarly not all reply bits are associated with a control bit. The first section defines all control and reply pairs which are related:

Related Control and Reply bits

Control: Dn SG SL TS FM LL FF EP SO MO

Reply : DRn SR OL CS FC LC FR EC SB / DC * MR

where: 'n' may normally be 1 or 2. For systems configured for 8 demand dependent stages 'n' may be in the range 1 to 8.

* - only one of the SB or DC bits is permitted on a system

Unrelated Control and Reply Bits

Control: DX GA GO* FF TIn* AM* PM* PV

Reply : DF GP1 LFm EV RR MC CF LO SD HC SB PI TF BF BDn TP* TLF* TCF* SB1* SA
AR DFM LOS ML MF CO

where: * = specially configured item

‘m’ may be 1 to 3

‘n’ may be 1 to 4

Format:

```
SYSDAT

BITDAT TYPE BIT1 BIT2 BIT3 BIT4 BIT5 ......... BIT32
```

Parameters:

TYPE	The format type number (1-200), the associated reply bits are defined in the DATBIT macro with the same format type number.
BIT1 to BIT32	This shows the position of the particular control bit relative to the starting point for the format. The starting point is defined in the ISNDAT macro. The bits are defined using the bit mnemonics shown below. The maximum number of control bit mnemonics allowed in any format type depends upon the number of control bits allowed on the OTU (i.e. 16 for a free-standing OTU and 24 for an integral OTU). To determine the maximum number of control bits allowed in any particular format type, the number of intersection stages should be subtracted from the maximum number of control bits allowed on the OTU. In the format type, any bits which are not defined will appear as '**'. The user should remember that the display plan monitor (DIPM) screen can only show a maximum of 16 control and reply bits.
Dn	Simulate demand for demand-dependent stage n.
DX	Simulate all demand dependent stages.
SG	Synchronise group timer.
SO	Solar switch override.
SL	Switch part-time signals.
GA	Green wave active.
TS	Synchronise the controller's real time clock.
FM	Assume fallback mode.
LL	Inhibit local link.
FF	Flash amber/red.

GO	Gap Out
EP	Allow local extensions for bus priority
TIn	Switch off Tram Priority function (1=off, 0=on)
AM	Switch on AM peak period
PM	Switch on PM peak period
MO	MOVA priority control
PV	Pedestrian phases disabled, active pedestrian phases terminated

Example:

```
        TYPE  BIT1  BIT2  BIT3  BIT4  BIT5  BIT6  ..........  BIT32
SYSDAT  9
BITDAT  01    DX    **    **    **    **    **                **
BITDAT  02    D1    D2    DX    **    **    **                **
```

3.10 Intersection Reply Bit Formats

Format:

```
DATBIT TYPE BIT1 BIT2 BIT3 BIT4 BIT5 BIT6 .....BIT32
```

Parameters:

TYPE	The format type (1-200), associated control bits are defined in the BITDAT macro with the same format type number.
BIT1 to BIT32	This shows the position of the particular reply bit relative to the starting point for the format. The starting point is defined in the ISNDAT macro. The bits are defined using the bit mnemonics shown below. The maximum number of reply bit mnemonics allowed in any format type depends upon the type of OTU. A TC8 OTU can only have a maximum of 16 intersection reply bits, all of which must be contained in the first word (address). The maximum number of reply bits allowed in a format type on a TC12 OTU is 16. In the format type, any bits which are not defined will appear as '**'. The user should remember that the display plan monitor (DIPM) screen can only show a maximum of 16 control and reply bits; to see other reply bits the MONI display should be used.
DRn	Demand for stage n running
DF	Detector fault

SR	Group timer synchronised
GP1	Group 1 indication
OL	Part-time signals switched
LF1	Lamp failure other than LF2
LF2	Lamp failure of two reds on the same phase
LF3	Lamp failure defined by user
EV	Emergency vehicle detected
CS	Clocks Synchronised confirmation
RR	Remote reconnected
MC	Manual control
CF	141 controller fault
FC	Fallback mode confirmed
LC	Local link inhibited
LO	Lamps off
SD	Pseudo demand
HC	Hurry call
SB	Solar bright
DC	Dimming Confirm
FR	Flashing confirmation
PI	Pedestrian Inhibit
TF	Test Facility
BF	Battery fail
BDn	Bus priority demand bit, where n is in the range 1 to 4

EC	Bus extension confirm
TP	Controller has given tram priority
TLF	Tram phase lamp fail
TCF	Tram controller (watchdog) Failure
SB1	Solar bright monitor bit
SA	LRT surge protect status
AR	LRT artificial request status
DFM	LRT detector fault
LOS	LRT OTU status
MR	MOVA control confirm
ML	MOVA normal operating mode
MF	MOVA control fault
CO	Cabinet door open

Examples:

```
            TYPE  BIT1 BIT2 BIT3 BIT4 BIT5 BIT6 ....BIT32
    DATBIT   01   DF   LF1  LF2  RR   **   **       **
    DATBIT   02   DR1  DR2  DF   LF1  LF2  RR       **
```

3.11 Junction Data

Format:

```
  SCN      DESCRIPTION     IRN OSN SCN  WRD T99  LNK STG BIT GRP FOR INH SLS DOW DLY HC SU      GRNS       SIDE GRNS
                                        FLG  LST BIT NUM TMR MAT SSK GNF CHK IGN TMR
```

Parameters:

OSN SCN The SCN of the OTU on which this equipment is allocated.

LNKLST The number of the linked list to which this ISN belongs. If it is set to 0 then this ISN does not belong to a linked list. The linked list number should be between 1 and the configured number of linked lists. The equipment may be a slave (with a leading !) or a master member of the list. Equipments in a linked list are all isolated if one of the master equipments becomes faulty.

For example: - Adjacent intersections synchronised by CLU while under local control would be on the same linked list.

STGBIT The position in the outstation data word of the F and G bits. This parameter should be the bit position of FA and GA.

DATBIT The position of the data bits. This parameter should be the bit position of the first data bit as specified by the format number (FORMAT) of this intersection.

GRPTMR Indicates whether this intersection has a group timer. 0=No 1=Yes. If it has a group timer and a SG bit configured the system will try to synchronise the group timer when asked.

FORMAT The format number which gives the formats of the data bits. The formats (BITDAT and DATBIT) are defined in the previous sections. The format number should be between 1 and 16 (1 and 100 for TC12).

INHSSK Indicates if signals stuck messages are to be inhibited for this intersection. 0=No 1=Yes. This should be set to 1 for a controller which has only 1 non-demand-dependent stage.

SLSGNF The meaning of the SL bit. 0 means SL=1 switches off the lights. 1 means SL=0 switches off the lights. If there is no SL bit on this intersection put 0.

DOWCHK Indicates if the time synch reply indicates the controllers day of the week.

DLYIGN Indicates the maximum delay from a new stage request being sent to the intergreen being seen by the System.

HCTMR Hurry call timer. The number of seconds after the returning of an HC bit for which plan compliance checking is suspended; default 240 seconds.

GRNS This field is present to allow for future expansion.

SIDEGRNS This field is present to allow for future expansion.

Examples:

```
SCN      DESCRIPTION    IRN OSN SCN  WRD T99  LNK STG BIT GRP FOR INH SLS DOW DLY HC SU      GRNS      SIDE GRNS
                                     FLG  LST BIT NUM TMR MAT SSK GNF CHK IGN TMR
```

```
ISNDAT 001 111 <CONWAY/ARGYLE  >008 001 110   0   0    00  00  00   1  012  0   0  0  03  240 0 <0          > <0           >
ISNDAT 001 121 <CON/HEMINGFORD >009 001 120   0   0    00  04  00   1  014  0   0  0   4  240 0 <0          > <0           >
```

3.12 Pelican Data Word Formats

Each pelican has associated with it a data format type. This type describes which control and reply bits the pelican uses. The System is capable of supporting 200 data format types. The formats are defined using two macros, PBITDT and PDTBIT. PBITDT defines the control bits and PDTBIT the associated (if any) reply bits. Not all control bits have associated reply bits, and similarly not all reply bits are associated with a control bit. The control and where relevant the associated reply bits are defined below: The first section defines all control and reply pairs which are related:

Related Control and Reply bits

Control: SL SO TS MO

Reply : OL SB / DC* CS MR

where: * - only one of the SB or DC bits is permitted on a system

Unrelated Control and Reply Bits

Control: PV PX

Reply : GX PC WC EV DF LFm LO OL RR TF BF BDn CF SB1* CO ML MF

where: * = specially configured item

‘m’ may be 1 to 3

‘n’ may be 1 to 2

Format:

```
PBITDT TYPE BIT1 BIT2 BIT3 BIT4 BIT5 BIT6 .....BIT32
```

Parameters:

TYPE The format type (1-200), the associated reply bits are defined in the PDTBIT macro with the same format type number.

BIT1 to BIT32 This shows the position of the particular reply bit relative to the starting point for the format. The starting point is defined in the PELDAT macro. The bits are defined using the bit mnemonics shown below. The maximum number of reply bit mnemonics allowed in any format type depends upon the type of OTU. A TC8 OTU can only have a maximum of 16 intersection reply bits, all of which must be contained in the first word (address). The maximum number of reply bits allowed in a format type on a TC12 OTU is 16. In the format type, any bits which are not defined will appear as '**'. The user should remember that the display plan monitor (DIPM) screen can only show a maximum of 16 control and reply bits; to see other reply bits the MONI display should be used.

PV Confirm Vehicle green

PX Confirm Pelican wait

SL Switch part-time signals

SO Solar override

TS Synchronise the controller's real time clock.

MO MOVA priority control

Example:

```
SYSDAT 99
        TYPE BIT1 BIT2 BIT3 BIT4 BIT5 BIT6 .....BIT32
PBITDT   01  PV    **   **   **   **   ** .....  **
SYSDAT 2
PBITDT   02  PV    **   PX   **   **   ** .... . **
```

3.13 Pelican Reply Bit Formats

Format:

```
PDTBIT TYPE BIT1 BIT2 BIT3 BIT4 BIT5 BIT6 .....BIT32
```

Parameters:

TYPE The format type (1-200), associated control bits are defined in the PBITDT macro with the same format type number.

BIT'n' This defines which reply bits are present in the format type, and by implication which position they are in. This is done using the following bit mnemonics. Up to 32 bit mnemonics are allowed for each format type. Any bits which are not defined will appear as '**'.

GX	Vehicle Green Confirmed
EV	Pelican emergency vehicle detected
DF	Pelican detector fault
LF1	Pelican lamp failure 1
LF2	Pelican lamp failure 2
LF3	Pelican lamp failure 3
RR	Pelican remote reconnect
WC	Pelican wait confirm
HC	Hurry call
LO	Lamps off
OL	Part-time signals switched
PC	Pedestrian confirm, the green man.
SB	Solar bright
DC	Dimming Confirm
TF	Test Facility
BF	Battery fail
BDn	Bus priority demand bit, where n is in the range 1 to 2
CS	Clocks Synchronised confirmation
CF	141 controller fault
SB1	Solar bright monitor bit
CO	Cabinet door open
MR	MOVA control confirm
ML	MOVA normal operating mode

MF MOVA control fault

Example:

```
SYSDAT 99
        TYPE BIT1 BIT2 BIT3 BIT4 BIT5 BIT6 BIT7 .....BIT32
PDTBIT   01  GX   **   **   **   **   **   .... **

SYSDAT 01
PDTBIT   02  GX   EV   DF   RR   **   **  ..... **
```

3.14 Pelican Data

Format:

```
PELDAT SCN DESCRIPTION IRN OSN SCN WORD DUO BITNUM NOTGX TYPE LNKLST GX UPRNGX PEDGRN UPEDGN
```

Parameters:

BITNUM — The bit position of the first pelican data bit.

OSN SCN — The SCN of the OTU on which this equipment is allocated.

NOTGX — The time for which the pelican does not return GX when it goes to the pedestrian stage.

TYPE — The format type of the pelican. The format types are defined below.

LNKLST — The number of the linked list to which this pelican belongs. If it is set to 0 then this pelican does not belong to a linked list. The linked list number should be between 1 and the configured number of linked lists. The equipment may be a slave (with a leading !) or a master member of the list. Equipments in a linked list are all isolated if one of the master equipments becomes faulty.

For example: - Adjacent intersections synchronised by CLU while under local control would be on the same linked list.

GX — The minimum time for which the pelican will show green to vehicles. This value is used (with the NOTGX time) by the plan preparation program to check the minimum allowable cycle time.

UPRNGX — Highest not GX time that this pelican will report. This will normally only differ from not GX when VA mode is in use.

PEDGRN — The minimum time the pedestrian green man is shown.

UPEDGN — The maximum time the pedestrian green man is shown.

Examples:

```
        SCN      DESCRIPTION     IRN OSN SCN  WORD DUO    BITNUM  NOTGX  TYPE LNKLST  GX    UPRNGX  PEDGRN  UPEDGN
PELDAT  001 111  <Bridge Station> 001 001 110  2    0      12      020   001    00     007      010    000    000
PELDAT  001 123  <CONWAY/CAMDEN > 002 001 111  1    0      08      029   003    00     007      010    000     000
```

3.15 Timetable Plans Only

Format:

```
PLNDAT NUMBER VALUE
```

Parameters:

NUMBER The plan number.

VALUE 0 - means the plan is not restricted.

1 - means the plan may only be called for ALL sub-areas from a timetable i.e. not from the operator PLAN command.

Examples:

```
NUMBER VALUE
PLNDAT 3 0 ;no restriction
PLNDAT 4 1 ;all sub-areas may only be called from a timetable.
```

3.16 Special Facility Data

Format:

```
SPCDAT SCN DESCRIPTION IRN OSN SCN WORD DUO BITNUM SPCCON RRBIT TYPE LN
```

Parameters:

BITNUM The bit position of the first Special Facility data bit.

SPCCON Indicates whether the Special Facility has a confirm bit. Set to 1 if the confirm bit is present, or 0 for no confirm bit (green wave special facility).

RRBIT Indicates whether the Special Facility has a Remote Reconnect bit. Set to 1 if present, or 0 if not.

TYPE "!" is normal, "2" means it is controlled by plan.

LN "!" means a slave in the associated linked list. No "!" means a master.

Examples:

```
       SCN         DESCRIPTION    IRN OSN SCN  WORD DUO BITNUM SPCCON RRBIT TYPE LNKLST
SPCDAT 001 126  <FIFTH SF      >  005 001 120  1    0    13      0     0     1    !10
SPCDAT 005 127  <THIRD SF      >  006 005 110  4    0    00      1     0     2    12
```

3.17 Special Facility Enable by Plan Data

Format:

```
PLNSPC SPCIRN EQUIPMENT FIXED-TIME PLAN LIST SCOOT TPLAN LIST
```

Parameters :

SPCIRN	Special facility IRN.
EQUIPMENT	Junction SCN to be used to determine the correct plan.
FIXED-TIME PLAN LIST	List of fixed time plans for which this special facility is on.
SCOOT TPLAN LIST	List of SCOOT stage translation plans for which this special facility is on

Example:

```
        SPCIRN    EQUIPMENT FIXED-TIME PLAN LIST    SCOOT TPLAN LIST
PLNSPC    002     J 003 111 <1                   ><1        >
```

3.18 Queue Detector Data

Format:

```
QUEDAT SCN DESCRIPTION IRN OSN SCN WORD DUO BITNUM GROUP CANVAL
```

Parameters:

BITNUM	The number of the first data bit on the OTU.
GROUP	The group number for this queue detector. A 'queue formed' will only be reported when all the queue detectors in a queue group have detected a queue. Similarly, only when all the detectors in a queue group have detected that the queues have cleared, will a 'queue cleared' be reported.
CANVAL	The time in seconds between the queue clearing and the clearance being reported. Range: 2 - 127.

For queue groups with more than one queue detector, the longest delay time for the detectors in the group is used as the delay before the message is output.

Example:

```
          SCN       DESCRIPTION    IRN OSN SCN  WORD DUO BITNM GROUP CANVAL
QUEDAT  001 999 <TEST QUE A 1999> 001 001 120  1    0   06    01    002
```

3.19 Queue Detector Alarm Inhibit Data

This macro defines a list of plans. When these plans are running the queue alarm messages fro the specified detector will not be output.

Format :

```
QUEALR QUEALR_DET PLAN_MASK
```

Parameters:

QUEALR_DET The SCN of the queue detector.

PLAN_MASK A list of plans which are inhibited.

Examples:

```
      QUEALR_DET PLAN_MASK
QUEALR  001 999  <1,2,3,4,5,6,7,8,9,10,11>
QUEALR  001 998  NONE
```

3.20 Queue Detector Group Lists

This describes which queue detectors form a queue detector group.

Format:

```
BEGQUE 'n'
QUE 'd'
ENDLIS
```

Parameters:

n The number of the queue detector group.

d The SCN of an individual detector within the queue group.

ENDLIS Indicates the end of the list.

Example :

```
BEGQUE 1
QUE    Q12345
ENDLIST
```

3.21 Car Park Data

Format:

```
CRPDAT SCN DESCRIPTION IRN OSN SCN WORD DUO BIT TYPE DLY CAPCTY AFITHR AFDTHR FLITHR FLDTHR ENTTHR
OCCSTK CHANL SIESP
Parameters:
```

BITNUM The number of first data bit for this car park on the OTU.

Type 0 car parks require 2 bits.

Type 1 car parks require 3 bit.

Type 2 car parks require no bits.

Type 3 car parks require 1 bit.

Type 4 car parks require 15 bits.

Types 5 and 6 car parks require 0 bits

Type 7 car parks require 16 bits. The 16 bits will support a maximum of 23 car parks.

TYPE The car park type:

0 "Intelligent" car park with no closed bit.

1 "Intelligent" car park with a closed bit.

2 "Unintelligent" car park with no closed bit.

3 "Unintelligent" car park with a closed bit.

4 "Semi-intelligent" car park with closed bit and the OPE/CLO commands disabled.

5 Pay and Display Car Park Management system

6 Pay on Foot Car Park Management system

7 Car park system connected to TC12 OTU handset port, e.g. Alfia

where:

Intelligent car parks are ones which return their status (full, almost full, or spaces)

Semi-intelligent car parks are ones which keep a running count of the number of cars present.

Unintelligent car parks are ones which only return the entry or exit of a vehicle.

DLY	The car park change down state delay time. Delay (in minutes) from a change of car park state before it will change to a lower state (e.g. from FULL to ALMOST FULL).
CAPCTY	The capacity of the car park (For "unintelligent" car parks only).
AFITHR	Almost full (increasing) threshold. The value at which the car park status will change from SPACES to ALMOST FULL (for "unintelligent" car parks only). If this value is 0, then the ALMOST FULL state for the car park will be suppressed.
AFDTHR	Almost full (decreasing) threshold. The value at which the car park status will change from ALMOST FULL to SPACES (for "unintelligent" car parks only). If this value is 0, then the ALMOST FULL state for the car park will be suppressed.
FLITHR	Full (increasing) threshold. The value at which the car park status will change from ALMOST FULL to FULL (for "unintelligent" car parks only).
FLDTHR	Full (decreasing) threshold. The value at which the car park status will change from FULL to ALMOST FULL (for "unintelligent" car parks only).
ENTTHR	Entrance sign threshold. The value at which an entrance sign will change from SPACES to FULL (for "unintelligent" car parks only). If omitted, FLITHR is used.
OCCSTK	Occupancy Stuck timer. The length of time to elapse until the system will consider the occupancy to have stuck Range (0-24 hours)
CHANL	OTU Serial Car Park interface channel number (range 1-23).
SIESP	Send spaces to SieSpace? (0/1)

Examples:

```
          SCN     DESCRIPTION      IRN OSN SCN WORD DUO BIT TYPE DLY CAPCTY AFITHR AFDTHR FLITHR FLDTHR ENTTHR OCCSTK CHANL SIESP
CRPDAT 001 321 <TEST CAR PARK 1> 001 013 990 1     0   08   2   0   1000   0900   0890   0970   0950   0990   02     00    0
CRPDAT 001 112 <G1 T2 CAR PARK2> 002 099 990 1     0   00   2   0   0999   0997   0996   0999   0998   0999   02     00    0
```

3.22 Car Park Sign Data

Format:

CPSDAT IRN SGNTYP OSN SCN WORD BITNUM DLYTYP RPLYAV SLAVAIL SMAVAIL BITS GRPS FULL DDLY SO SOBIT

Parameters:

SGNTYP The sign type:

1 - ENTRANCE car park sign.

2 - NAMED car park sign.

3 - CITY car park sign.

BITNUM The number of the first data bit for this car park sign on the OTU.

DLYTYP not used, set to 0.

RPLYAV The reply available indicator. Set to 0 if analysis of any reply bits are NOT required. Set to 1 if reply is to be analysed.

SLAVAIL The SL bit available indicator. Set to 1 if the lamp failure bit is available, otherwise 0

SMAVAIL The SM (Sign Manual) available indicator. Set to 1 if available, or 0 otherwise. This is normally available for CITY and NAMED signs.

BITS Refers to the number of control bits used to define the various states.

GRPS This identifies the number of groups that this sign will be associated with.

FULL This refers to the bit pattern that will be sent when the FULL state is required.

DDLY Delay before moving down a state.

SO Solar override available.

SOB Bit opposition for solar override.

Example:

```
       SCN      DESCRIPTION     IRN SGNTYP OSN SCN WORD BITNUM DLYTYP RPLYAV SLAVAIL SMAVAIL BITS GRPS FULL DDLY SO SOBIT
CPSDAT 001 111 <CITY SIGN G123> 001    3   001 130 1    00     0       1       0       0     2    1    00     0  0   00
CPSDAT 001 112 <CITY SIGN G12 > 002    3   002 110 1    08     0       1       0       0     3    2    03     0  0   00
CPSDAT 001 121 <NAMED SIGN G1 > 003    2   001 110 1    09     0       1       0       0     2    1    01     0  0   00
```

3.23 Car Park Sign Group Lists Data

This supplies a list of car park SCNs for a given sign.

ENTRANCE sign types may only have one car park, i.e. one group of one car park.

NAMED sign types may only have one group of car parks.

CITY type signs may have up to 3 groups of car parks.

Format:

```
CPSGRP SCN GROUP SPACES ALMOST CAR PARK SCNs
```

Parameters:

GROUP The car park group numbers belonging to the car park sign.

Range: ENTRANCE 1;

NAMED 1;

CITY 1-5.

SPACES The format of the bits sent to inform the sign to show spaces.

ALMOST The format of the bits sent to inform the sign to show almost full.

CAR PARK SCNs A list of the car park SCNs (max 8) belonging to the appropriate car park group.

Examples:

```
          SCN    GROUP SPACES ALMOST CAR PARK SCNs
CPSGRP 001 321 1     00      01 <01 321,01 322>
```

3.24 Car Park Pay and Display Group Lists Data

Format:

```
PADDATSCN  MACHINE IDENTS
```

Parameters:

MACHINE IDENTS The identities of the pay and display machines which are sited in a car park

Example:

```
      SCN      MACHINE IDENTS
PADDAT 007 911 <0422,0423,0424,0425,0421,0259>
PADDAT 007 911 <0156,0271,0272>
PADDAT 007 912 <0255,0164,0252,0253>
```

3.25 Count Detector Data

Format:

```
CNTDATSCN DESCRIPTION IRN OSN SCN WORD DUO   SCALE    MINVAL    ENTEXT CRPNUM DFPOS VLPRES OMUSCN OMUDET OMUPOS
                                       BITNUM   FORMAT    MINTHR
```

Parameters:

BITNUM The number of the first data bit for this detector on the OTU.

SCALE The number of vehicles represented by one change of state of the least significant count bit returned by the detector. If the scale factor has a value of 0 the count is only incremented when the VC bit changes from 0 to 1 (leading edge count).

FORMAT The count detector format type. These are as follows :-

FORMAT	First Bit	Second Bit	Third Bit	Fourth Bit
0	Pseudo detector (SCOOT loop)			
1	VC	DF		
2	VC1	VC2	DF	
3	VC	VO	DF	
4	VC1	VC2	VO	DF
5	For RMS data from OMUs			

6	For count data from ARTEMIS
7	VS1 VS2 VS3 VS4 (Special Congestion detector)
8	VC (Moveable count detector)
9	Tram Detector (this may have 1, 2, 3, 4, or 5 bits) plus a DF bit

Note: The DF bit is optional.

MINVAL The one minute counts threshold value (0-99).

MINTHR The number of minutes above the "up/down" threshold (0-9) before triggering the alarm.

ENTEXI The car park detector indicator. This can take one of the following values:

0	if the detector is an ordinary count detector.
1	if the detector counts vehicles entering the car park
2	if the detector counts vehicles leaving the car park.
3	If the detector supplies the car park occupancy
4	For a detector which combines the functions of 1 and 3
5	For a SieSpace system

CRPNUM The SCN of the car park for which this detector is supplying information. Set to 0 if previous parameter is 0.

DFPOS The position of the DF bit if NOT immediately adjacent to the other data bits. Put 99 for the DF bit adjacent to the other bits.A value of XX means that there is no DF bit

VL PRES Defines if the VL bit is present.

0 - not present

1 - present

OMUSCN SCN of the OMU on which this equipment is allocated.

OMUDET Identifies which detector on the OMU is required(1-64).

OMUPOS Identifies the position of the data from the OMU(1-16).

Examples:

SCN DESCRIPTION IRN OSN SCN WORD DUO SCALE MINVAL ENTEXT CRPNUM DFPOS VLPRES OMUSCN OMUDET OMUPOS

```
                                                  BITNUM  FORMAT     MINTHR
CNTDAT 001 116 <CP 1 ENTRANCE > 001 001 110 1    0  07  008  01  99    9   0     054 321 99     0    000 000  00    00
CNTDAT 001 117 <CP 1 EXIT     > 002 001 110 1    0  10  008  03  00    9   0     054 321 99     0    000 000  00    00
```

3.26 Occupancy Data

Format:

```
OCCDAT SCN DESCRIPTION IRN UPTHRES DOWNTHRES SMOOTH
```

Parameters:

UPTHRES the value which the averaged occupancy must reach in order to set the occupancy detector 'on'.

Range: 0 - 99 %

DOWNTHRES the value which the averaged occupancy must reach in order to set the occupancy detector 'off' again.

Range: 0 - UPTHRES.

SMOOTH the percentage of the current occupancy and 100% of the averaged occupancy used to calculate the new average occupancy.

Range: 0 - 99 %

Example:

```
          SCN       DESCRIPTION      IRN UPTHRES DOWNTHRES SMOOTH
OCCDAT 002 136 <TEST OCCUPANCY 1> 014  10        05     00
```

3.27 Car Park Queueing Time

Format:

```
QUETIM SCN CRPTYP %OCC QUETIM %OCC QUETIM %OCC QUETIM %OCC QUETIM
```

Parameters:

CRPTYP Type of the car park

%OCC One of 4 percentage occupancies below which QUETIM will be used as the queuing time for the car park.

QUETIM Queuing time in minutes.

Examples:

```
                          Range 1     Range 2     Range 3     Range 4
          SCN    CRPTYP %OCC QUETIM %OCC QUETIM %OCC QUETIM %OCC QUETIM
QUETIM 001 116    4     025   005   040   010   070   015   100   030
```

3.28 Automatic Plan Selection Priorities

This determines the number of the plan which will be run when a particular priority (1 to 6) is selected.

Format:

```
PLNAPS P1 P2 P3 P4 P5 P6
```

Parameters:

P1 to P6 The number of the plan to be selected. The plans are in ascending order of priority.

Examples:

```
PLNAPS 01 04 05 00 00 00
```

3.29 Automatic Plan Selection Plan Masks

The plan masks determine what combination of queue, occupancy, and count detectors must be on for a plan of a particular priority to be started.

Format:

```
MSKAPS SUB-AREA APS_PLN_NO GROUPS
```

Parameters:

SUB-AREA is the sub-area in which automatic plan selection is used.

APS_PLN_NO is the number of the priority to which the particular plan mask applies.

GROUP The plan mask determines what combination of queue, occupancy, or count detectors must be on for a plan or the corresponding priority to be started.

The plan mask is formed by a logical combination, using AND and OR, of QUEUE, VOLUME (= occupancy) and CONGESTION.

If APS is to be triggered when none of the groups are on the value NONE will be used.

Examples:

```
        SUBAREA  APS PLN NO  GROUPS
MSKAPS    010      1      <NONE>
MSKAPS    010      2      <SHORT QUEUE>,<VOLUME>,<SHORT QUEUE.VOLUME>
MSKAPS    010      3      <LONG QUEUE>,<SHORT QUEUE.LONG QUEUE>,<LONG QUEUE.VOLUME>,<SHORT QUE.LONG
QUEUE.VOLUME>
MSKAPS    011      1      <LONG QUEUE>,<VOLUME>
```

3.30 Long Queue Groups APS

Sets up the long queue groups for use in automatic plan selection.

Format:

```
LNQAPS SUBAREA TRIGGER ReRUN TIME DETECTORS
```

Parameters:

SUBAREA Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

ReRUN TIME The APS re-run interval.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
      SUBAREA  TRIGGER ReRUN TIME DETECTORS
LNQAPS 010         1       015     000 000  000 000  000 000  000 000
LNQAPS 011         1       015     010 361  000 000  000 000  000 000
```

3.31 Short Queue Groups APS

Sets up the short queue groups for use in automatic plan selection.

Format:

```
SHQAPS SUBAREA TRIGGER ReRUN TIME DETECTORS
```

Parameters:

SUBAREA Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

ReRUN TIME The APS re-run interval.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
        SUBAREA  TRIGGER ReRUN TIME DETECTORS
SHQAPS 010         1       015     001 999  000 000  000 000  000 000
SHQAPS 010         0       015     010 361  000 000  000 000  000 000
```

3.32 APS Occupancy Groups

Sets up the occupancy (congestion) groups for use in automatic plan selection.

Format:

```
CONAPS SUBAREA TRIGGER ReRUN TIME DETECTORS
```

Parameters:

SUBAREA Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

ReRUN TIME The APS re-run interval.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
        SUBAREA  TRIGGER ReRUN TIME DETECTORS
CONAPS 010         1       015     002 141  000 000  000 000  000 000
CONAPS 011         1       015     001 999  000 000  000 000  000 000
```

3.33 APS Volume Groups

Sets up the volume (flow) groups.

Format:

```
VOLAPS SUBAREA TRIGGER ReRUN TIME DETECTORS
```

Parameters:

SUBAREA Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

ReRUN TIME The APS re-run interval.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
        SUBAREA  TRIGGER ReRUN TIME           DETECTORS
CONAPS  010          1       015     002 141  000 000  000 000  000 000
CONAPS  011          1       015     001 999  000 000  000 000  000 000
```

3.34 Diversion Data

Format:

```
DIVDAT SCN DESCRIPTION GRP TYPE GRPDLY
```

Parameters:

GRP The diversion group number (0,1,2 or 3). Each diversion must be assigned to one of four diversion groups, the group number is used together with the diversion type, to determine what happens when more than one diversion within a group is active simultaneously. “Sign only” diversions are always group 0.

TYPE This is the diversion type within the group and can be 0,1,2 or 3.

If the diversion is in group 0, then the type must be 0, this means that the diversion will only cause the setting of diversion signs - no plan change will be made.

If the diversion is group 1,2 or 3 then the type may be 1,2 or 3. In this case a plan change may be made as well as diversion signs being set. The plan change will be determined from the data set up with the INTREQ macro.

Within a group there may only be one diversion of type 1, one diversion of type 2 and one diversion of type 3. There may be more than one diversion of type 0.

GRPDLY This defines the time which will elapse before a diversion sign is switched on after the relevant command has been implemented. It may have a value in the range 0-15 in half minutes, i.e. 0-7.5 minutes.

Examples:

```
            SCN       DESCRIPTION      GRP  TYPE  GRPDLY
    DIVDAT 002 998 <TEST DIV A 1999>    0     0     01
    DIVDAT 002 999 <TEST DIV A 1999>    0     0     02
```

3.35 Diversion Sign Data

Format:

```
DVSDAT SCN DESCRIPTION TYPE IRN OSN SCN WORD BITNUM TYPE INHIBIT ESSENT SIGNGP SO SOBIT
```

Parameters:

TYPE The type of diversion sign:

1 A normal Diversion sign

2 A ripple diversion sign

3 A sign driven via a SieSpace system

BITNUM The data bit number of the first data bit on the OTU for this diversion sign.

INHIBIT If the inhibit flag is set to 1 sign checking will be inhibited for this sign.

ESSENT The sign essential flag, if set to 1 and the sign is faulty then any diversion using this sign will not be implemented or cancelled.

SIGNGP The diversion sign group number(1-3) to which this sign belongs. The sign delay time is dependant upon the sign group, see GRPDLY in the DIVDAT macro.

Example:

```
;              SCN        DESCRIPTION         IRN TYPE   OSN SCN    WORD  BITNUM BITS INHIBIT ESSENT  SIGNGRP SO SOBIT
DVSDAT  005 161 <Sway Ar Closed >  001  1   005 160  1     10   1    1     0    1       0  00
DVSDAT  030 531 <ELY LINK S2/1  >  002  2   030 530  1     00   3    0     0    0       0  00
DVSDAT  030 533 <ELY LK SLP S2/6>  003  2   030 530  1     06   3    0     0    0       0  00
```

```
DVSDAT  043 228 <WB OS LCS 9    >   53  3   000 000  0     00   0    0     0    0      0  00
DVSDAT  043 429 <EB OS LCS 9    >   54  3   000 000  0     00   0    0     0    1      0  00
```

3.36 NMCS Controlled Equipments

This describes the equipment controlled by an NMCS control system which is linked to the UTC System.

```
;        SCN      DESCRIPTION
;
NMCEQP  042 111 <DBP EQUIPMENT  >
NMCEQP  042 112 <CONTROLROOM OIF>
NMCEQP  042 113 <TUNNEL LCC     >
NMCEQP  042 115 <EB NS LCSI     >
```

3.37 Diversion Sign Aspect Data

Format:

DVSASP SCN ASPECT TEXT

Parameters:

ASPECT The decimal value of the bit pattern sent to a sign

TEXT The text associated with the ASPECT.

Example:

```
          SCN      ASPECT        TEXT
DVSASP 001 998   000       <ACCIDENT AHEAD REDUCE SPEED NOW>
```

3.38 Diversion Lists

This describes which diversion signs make up the diversion.

Format:

```
BEGDIV 'n'
DVS 'd'
ENDLIS
```

Parameters :

'n' The diversion SCN.

'd' The SCN of signs in the diversion.

Example :

```
BEGDIV U01234
DVS    V01000
ENDLIS
```

3.39 Ripple Diversion Lists

This describes which diversion signs make up the ripple diversion.

Format:

```
       SCN   DELAY  ASPECT  Necessary
BEGDIV 'n'
DVS 's' ‘d’ ‘a’ ‘n’
ENDLIS
```

Parameters :

'n' The diversion SCN.

's' The SCN of a sign in the diversion.

‘d’ The time in seconds from the start of the diversion before the sign aspect change is implemented

‘a’ The number of the required sign aspect.

‘n’ A value of 1 indicates that this sign aspect is necessary for successful implementation of the diversion.

Example :

```
SCN    DELAY  ASPECT NECESSARY
BEGDIV 050 111
RIPDVS 001 998 005   007    1
ENDLIS
```

3.40 Plan Diversion Rule Tables

Format :

```
DIVPLN REQ   DIV SEC 1: SEC 2: SEC 3:
       STATE GRP PLN SA PLN SA PLN SA
```

Parameters :

REQSTATE	The requested state as determined by the INTREQ macro for the specified group.
DIVGRP	The diversion group number (1-3)
PLN	The plan to be called for day sector 1 (AM Peak).
SA	The sub-area number for which the plan is to be called for day sector 1 (AM Peak).
PLN	The plan to be called for day sector 2 (PM Peak).
SA	The sub-area number for which the plan is to be called for day sector 2 (PM Peak).
PLN	The plan to be called for day sector 3 (OFF Peak).
SA	The sub-area number for which the plan is to be called for day sector 3 (OFF Peak).

Example:

```
REQ DIV SEC 1: SEC 2: SEC 3:
STATE GRP PLN SA PLN SA PLN SA
DIVPLN 1 1  1 03   1 03   3 03
```

3.41 Diversion Day Sectors

This sets up the three day sectors to be used by the plan diversion rule tables. The sectors are 1- AM Peak, 2 - PM Peak, 3 - OFF Peak. The AM and PM periods are defined here, the remaining periods within the day are OFF PEAK periods.

Format :

```
DVDYSC DAY AM_start AM_end PM_start PM_end
```

DAY	The day number where Monday is 1 and Sunday is 7.
AM_start	The start time of the AM peak period.
AM_end	The end time of the AM peak period.

PM_start The start time of the PM peak period.

PM_end The end time of the PM peak period.

Example:

```
          DAY AM_start AM_end PM_start PM_end
DVDYSC     1 0800     1000   1600     1730
DVDYSC     2 0810     1010   1630     1800
```

3.42 Diversion Plan Delay Switching Timetables

This is used to set the delay between the diversion request or cancellation, and the introduction of the new plan. The INTRO TIME is the delay between entering the operator command to introduce the diversion and the new plan being introduced. The CANCEL TIME is the delay between entering the operator command to cancel the diversion and the new plan being cancelled, depending on the STATE from which the diversion group is coming.

Format:

```
DVPDLY REQ  DIV CANCEL INTRO
       STATE GRP  TIME  TIME
```

Parameters:

REQSTATE The requested state as determined by the INTREQ macro.

DIVGRP The diversion group number (1-3).

CANCEL TIME The time delay in 1/2 minutes before the plan is cancelled.

The plan is specified by the DIVPLN macro. The STATE used is the STATE that the group was in before the diversion is cancelled.

INTRO TIME The time delay in 1/2 minutes before the plan is introduced.

Examples:

```
         REQ  DIV CANCEL INTRO
       STATE GRP  TIME TIME
DVPDLY 1     1    10   20
DVPDLY 2     1    10   15
```

3.43 Automatic Diversion Selection Masks Data

Format:

```
ADSDAT DIVERSION GROUPS
```

Parameters:

DIVERSION The SCN of the diversion.

GROUPS The boolean expression of groups which will call this diversion.

Example:

```
      DIVERSION GROUPS
ADSDAT 001 998 <VOLUME>
```

3.44 Dependent Diversion Rule Tables

This allows the plans to be run depending upon which diversion is to be run taking into account any diversions currently running.

Format :

```
                    [NEW STATE WHEN CURRENT STATE IS --->]
INTREQ TYPE GROUP 000  001  010  011  100  101  110  111
```

Parameters:

TYPE The diversion type of the diversion to be started.

GROUP The diversion group of the diversion to be started.

NEW STATE The following parameters define the state to go to, depending on the diversion type to be introduced and the current state (before the introduction).

The current state is defined by a 3 bit binary pattern which indicates which of the three diversion types (3,2,1) are currently active, the right hand bit indicates type 1 is active, the middle bit type 2 and the left hand bit type 3 e.g. 101 means that diversion types 3 and 1 are active and diversion 2 is not active.

The new state, shown here as a decimal number, is similarly represented by a 3 bit pattern indicating which of the three diversion types are to become active following the introduction of the new diversion type. This will thus cause diversions to be started (i.e. signs switched on) or cancelled (i.e. signs switched off) according to the difference between the current and the new state.

The new plan to be implemented is defined by the new state in the DIVPLN macro.

The possible current states are:

000 No diversion types in the diversion group are active.

001 diversion type 1 is active in this diversion group.

010 diversion type 2 is active in this diversion group.

100 diversion type 3 is active in this diversion group.

011 diversion types 1 and 2 are active in this diversion group.

101 diversion types 1 and 3 are active in this diversion group.

110 diversion types 2 and 3 are active in this diversion group.

111 all diversion types are active in this diversion group.

Examples:

```
[NEW STATE WHEN CURRENT STATE IS --->]
      TYPE GRP 000 001 010 011 100 101 110 111
INTREQ 3    1   1   2   1   2   3   4   1   2
INTREQ 3    1   1   2   2   5   3   4   1   2
```

In the first example, if the current state is 011 (types 1 and 2 active) and a diversion of type 3 is requested, the new state would be 2 (010). Since a diversion of type 3 is not active in the new state no action would be taken.

In the second example, if the current state was 011 (types 1 and 2 active) and a diversion of type 3 was requested, the new state would be 5 (101). This would cause the diversion type 3 to be started (the signs would be switched off) since its new state is 1, and the diversion of type 2 (new state 0) to be cancelled (the signs would be switched on).

It should be noted that a diversion can only be cancelled by operator command only if that command introduces a new diversion.

The plan according to the new state and time sector would be called as defined in the DIVPLN macro. The plan would be delayed by the time defined in the DVPDLY macro and the sign switching would be delayed according to the values defined in the DIVDAT macro.

3.45 Congestion Group Automatic Diversion Selection

Sets up the congestion groups for use in automatic diversion selection.

Format:

```
ADSCON DIVERSION TRIGGER DETECTORS
```

Parameters:

DIVERSION Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
SUBAREA TRIGGER DETECTORS
ADSCON 093 115 1 001 999 000 000 000 000 000 000
```

3.46 Long Queue Groups Automatic Diversion Selection

Sets up the long queue groups for use in automatic diversion selection.

Format:

```
ADSLNQ DIVERSION TRIGGER DETECTORS
```

Parameters:

DIVERSION Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
DIVERSION TRIGGER DETECTORS
ADSLNQ 093 116 1 001 999 000 000 000 000 000 000
```

3.47 Short Queue Groups Automatic Diversion Selection

Sets up the short queue groups for use in automatic diversion selection.

Format:

```
ADSSHQ DIVERSION TRIGGER DETECTORS
```

Parameters:

DIVERSION Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
SUBAREA TRIGGER DETECTORS
ADSSHQ 093 115 1 001 999 000 000 000 000 000 000
```

3.48 Volume Group Automatic Diversion Selection

Sets up the volume groups for use in automatic diversion selection.

Format:

```
ADSVOL DIVERSION TRIGGER DETECTORS
```

Parameters:

DIVERSION Sub-area number.

TRIGGER Has values 0/1 where

0 = All detectors in a group have to be on before the group is on;

1 = If one of the detectors in the group is on then the group is on.

DETECTORS The list of SCNs of the appropriate detector type.

Example:

```
DIVERSION TRIGGER DETECTORS
ADSVOL 093 116 1 001 999 000 000 000 000 000 000
```

3.49 Remote Request Data

Format:

```
REMDAT SCN DES IRN OSN SCN WORD BIT TYPE SCN PLAN EV-OSN  WORD  EV-BIT EV-DEL SPC-SCN FDET  FCLR RCN
CVY
```

Parameters:

BITNUM The number of the reply bit for remote request.

TYPE The type of remote request i.e.

1 - request fixed time plan in a sub-area

2 - diversion request

3 - green wave request

4 - associated with CASTs

5 - bridge raised

6- bridge raised with diversion request

7- Single vehicle VIP Route

8- Convoy VIP Route

9- Bus detection unit

10- SieTag bus information unit

F - FOG detector

U - User definable remote request

SCN For types 1,5 - the special facility sub-area.

For types 2,6	- the diversion SCN
For type 3	- the green wave SCN
PLAN	For types 1,5 - the fixed time plan
	For types 2,6 - the diversion SCN.
For type 3	- the plan number that contains the timings for the green wave(48-147).
EV-OSN	The special EV OSN number.
EVBIT	The special EV bit number.
EVDEL	The special EV delay in units of 15 seconds.
SPCSCN	The fire station special facility number. Only use with green waves with the EV bits to give flashing confirm while waiting for EV bit.
FDET	The time for which the fog bit is present before action is taken
FCLR	The time for which the fog bit is absent before action is stopped
RCN	Green wave or VIP route cancel bit available (Y/N)
CVY	The maximum convoy length in seconds

Examples:

```
;        SCN     DESCRIPTION      IRN OSN SCN WORD BIT TYPE  SCN    PLAN   EV-OSN  WORD  EV-BIT EV-DEL SPC-SCN FDET  FCLR RCN CVY

REMDAT  007 881 <T1 RR          > 002 007 880  1    00  01 A 007 000 002     0   0  0       0    005   007 881 005    0   <Y> <N>
REMDAT  007 881 <T1 RR          > 002 007 880  1    00  01 A 007 000 002     0   0  0       0    005   007 881 005    0   <Y> <N>
REMDAT  007 882 <Type 2 Rem Req > 003 007 880  1    01  02 U 050 111 0       0   0  0       0      0     0   0   0    0   <N>   0
REMDAT  099 911 <Avenue         > 011 099 910  1    00  3  G 099 111 050   000 000  0      00    000   099 911   0    0   <N> 000
REMDAT  007 111 <Mounbattn Queue> 001 007 110  1    10  4  -   0   0   0     0   0  0       0      0     0   0   0    0   <N>   0
REMDAT  007 883 <Type 5 Rem Req > 004 007 880  1    02  05 A 007 000 001    0   0   0       0    000   007 882 000    0   <Y> <N>
REMDAT  007 884 <T6 Rem Req     > 005 007 880  1    03  06 U 050 111 0       0   0  0       0      0     0   0   0    0   <N>   0
REMDAT  007 885 <T7 Rem Req     > 006 007 880  1    04  07 G 007 885 068   000 000  0      00    000   000 000   0    0   <N> 000
REMDAT  007 886 <T8 Rem Req     > 007 007 880  1    05  08 G 007 886 067   000 000  0      00    000   000 000   0    0   <N> 030
REMDAT  007 887 <T9 Rem Req     > 008 007 880  1    06  09 -   0   0   0     0   0  0       0      0     0   0   0    0   <N>   0
REMDAT  007 888 <T10 Rem Req    > 009 007 880  1    10  10 -   0   0   0     0   0  0       0      0     0   0   0    0   <N>   0
REMDAT  007 889 <Fog Rem Req    > 012 007 880  2    15  F <->  0   0   0     0   0  0       0      0     0   0  05   05   <N>   0
REMDAT  040 181 <Test UDRR      > 010 040 180  1    09  U  -   0   0   0     0   0  0       0      0     0   0   0    0   <N>   0
```

3.50 User Defined Data

Format:

```
USRREM SCN OSN WRD BIT TUNALRM START_MESSAGE FINISH_MESSAGE
```

Parameters:

BIT	The number of the reply bit for remote request.
TUNALRM	Y = Special character sequence included in the text string. Causes C-term to operate a relay card fitted to a specially configured PC user terminal.
	N = Not included. Default.
Note:	The default may only be changed if this facility is configured by STC.
START_MESSAGE	The user configurable reply associated with this bit.

Example :

```
SCN OSN WRD BIT TUNALRM START_MESSAGE FINISH_MESSAGE
USRREM 098 112 098110 1 01 N < > < >
```

3.51 FOG Sub-area Data

Format:

```
FOGDAT SCN SUBAREAS
```

Parameters:

SUBAREAS	List of sub-areas to be affected by this detector.

Examples:

```
SCN Sub-areas
FOGDAT 098 112 013000 014000
```

3.52 Digital IO Wall Map Word Data (TC12 ONLY)

This is used exclusively by wall maps driven by TC12 digital I/O. Four WALDAT macros exist for each WALWRD macro.

Format:

```
WALWRD PC SCN BOARD
```

Parameters:

BOARD The digital I/O board.

Example :

```
          PC SCN  BOARD
WALWRD 001 001  01
```

3.53 Wall Map Data

This allocates the wall map outputs to specific junction, pelicans etc.

Format:

```
WALDAT BYTE NUMBER  BIT0 SCN  BIT1 SCN  BIT2 SCN  BIT3 SCN  BIT4 SCN  BIT5 SCN  BIT6 SCN  BIT7 SCN
```

Parameters:

BYTE The output byte number. Each output word is divided into two

NUMBER bytes (divide by 8 to give board number)

BIT_n SCN The SCN (including equipment letter) of the equipment whose lamp is allocated at this point in the wall map output array.

Example :

```
        BYTE NUMBER BIT0 SCN  BIT1 SCN  BIT2 SCN  BIT3 SCN  BIT4 SCN  BIT5 SCN  BIT6 SCN  BIT7 SCN
WALDAT    001      J 001 111 **** **** P 001 123 **** **** J 001 121 **** **** D 010 511 D 010 512
```

3.54 Fault Code Data

Defines the faults that may be used by a Fault Management System.

Format:

```
FLTDAT FAULTS
```

Parameters:

FAULT Fault code from the UTC System.

Example:

```
FAULT FAULT FAULT FAULT FAULT
SYSDAT 99
FLTDAT 0111 0112 0113
```

3.55 Tidal Flow Data

This is only for systems configured for this facility.

Format:

```
TIDDAT SCN DESCRIPTION OSN WORD BITNUM TYPE CC UF MF TOL ASPECTS RTC RTCBIT CXBIT
```

Parameters:

TYPE	Type of Tidal flow system. A Type of 1 indicates a normal, above ground, tidal flow system whereas a type of 2 indicates a Tunnel tidal flow system.
CC	Computer Control reply bit position, (range 0 to 15). Its value indicates whether the equipment is under computer control (1) or not (0).
UF	Urgent Fault reply bit position (range 0 to 15). 0 = no fault, 1 = urgent fault.
MF	Minor Fault reply bit position (range 0 to 15). 0 = no fault, 1 = minor fault.
TOL	Tolerance. The allowed variation of inter-aspect time, in seconds, outside of which a fault will be reported.
CC_LT	Control confirmation set/clear time limit (seconds).
ACD_LT	Aspect change delay limit (seconds)
INT_LT	Inter-aspect change time maximum time allowed (seconds)
ASPECTS	The number of configured aspects. Currently fixed at 3. This number of ASPDAT macros will be defined (see next section).
RTC	The real-time synchronisation time in 2400 hour format. "1200" means 12:00 noon, for example. Valid only if RTCBIT is selected.
RTCBIT	Bit number of the TS bit and corresponding CS reply bit. Valid 0-15. Set to 99 if not configured.
CXBIT	Bit number of the Emergency Close centre lane control bit. Valid 0-15. Set to 99 if not configured.

CRBIT Bit number of the Clear Emergency centre lane closure control bit. Valid 0-15. Set to 99 if not configured.

Example :

```
;      SCN      DESCRIPTION    OSN    WORD BITNUM TYPE CC UF MF TOL CC_LT ACD_LT INT_LT ASPECTS RTC  RTCBIT CXBIT CRBIT
TIDDAT 040 111 <Test TIDL   > 040 110  1    00    1    03 04 05 30     10     30    060     3   1200   99    06    07
```

3.56 Aspect Data

This is only for systems configured for this facility.

Format:

```
ASPDAT SCN ASPECT MINTIM MAX1 MAX2 MAX3
```

Parameters:

ASPECT The aspect number, in the range 1 to 3.

MINTIM The minimum time, in seconds, for which the aspect can be expected to run. During this time changes will be prohibited. The permitted range of values is 0 to 999 seconds.

MAX1 The maximum time from one reply bit ceasing to the new bit being

MAX2 returned, when an aspect is being changed. Permitted values are in the

MAX3 range 0 to 999 seconds. An "ERR" indicates this change will not be observed.

Example :

```
        SCN     ASPECT MINTIM MAX1 MAX2 MAX3
ASPDAT 024 111   1     120   060  030  ERR
```

3.57 Analogue Sensor Data

This is only for systems configured with this facility.

Format :

```
SNSDAT SCN     DESCRIPTION       OSN SCN WORD BIT CHAN STA
TYPE    UNITS SMOOTH ONTHR OFFTHR LOSNS LOVAL HISNS HIVAL
```

Parameters :

BIT	Bit position on the OTU, either 0 or 8
CHAN	Sensor channel number in the range 1 to 15
STA	Status Channel. 0 = NO, 1 = YES. Whether this channel contains status information for the sensor.
TYPE	A free format text string for defining the sensor channel type. It is suggested that a standard set of type descriptors be defined for all sensors on a system.
UNITS	A free format text string for defining the units of measurement. It is suggested that a standard set of measurement descriptors be defined for each system.
ONTHR	Alarm ON threshold. If the sensor value passes this threshold then an alarm is set.
OFFTHR	Alarm OFF threshold. If the sensor value passes below this threshold then the alarm is cleared.
LOSNS	Low raw sensor data used to calibrate a real value (see LOVAL)
LOVAL	The real sensor value when the sensor output is the same as that given by LOSNS.
HISNS	High raw sensor data used to calibrate a real value (see HIVAL)
HIVAL	The real sensor value when the sensor output is the same as that given by HISNS.

Example :

```
SNSDAT SCN     DESCRIPTION       OSN SCN WORD BIT CHAN STAT TYPE    UNITS  ONTHR OFFTHR LOSNS LOVAL HISNS HIVAL
SNSDAT 077 141 <test 1         > 077 140  1    0   01   0  <NO2  > <ppb  >    50     40  0001  -555  1023  2000
```

3.58 Analogue Sensor Group Data

This is only for systems configured with this facility.

Format :

```
BEGGRP
GRPSNS
ENDLIS
```

Parameters :

BEGGRP	Beginning of the group definition.

GRPSNS SCN of sensors in the group. There is one of these lines for each sensor in the group.

ENDLIS End of the group definition.

Example :

```
SYSDAT    1

BEGGRP   001
GRPSNS   077 141
GRPSNS   077 142
ENDLIS
```

4. UTC SCN DATA - SCNS.MAC

4.1 Introduction

The SCNS.MAC file contains SCN and description information for those elements of the system which are not included in the DATA.MAC file.

4.2 Hardware (Computer) SCN To IRN Conversion

Format:

```
HRDSCN IRN SCN DESCRIPTION
```

Example:

```
       IRN SCN       DESCRIPTION
HRDSCN 002 002 000 <TRAFFIC COMP. A>
HRDSCN 003 003 000 <TRAFFIC COMP. B>
```

4.3 Telecommand 12 PCs

Format:

```
SCN DESCRIPTION
```

Example:

```
        SCN     DESCRIPTION
T12SCN 001 001 <Test PC One >
```

4.4 Subarea - CPU Data

Format:

```
SUBCPU IRN CPU DESCRIPTION
```

Parameters:

IRN	The sub area IRN (1-99)
CPU	The number of the CPU which controls the sub area.

Example:

```
SYSDAT 99
        IRN   CPU DESCRIPTION
SUBCPU  001    2  <SUB AREA 1 >
SUBCPU  002    3  <SUB AREA 2 >
```

4.5 Sub-area - SCN Data

Format:

```
SUBSCN IRN SCN DESCRIPTION PC SCN
```

Example:

```
SYSDAT 1
       IRN SCN      DESCRIPTION     PC SCN
SUBSCN 001 004 000 <SUB AREA 4 >    001 001
SUBSCN 002 005 000 <SUB AREA 5 >    002 001
```

4.6 SCOOT Node SCN To IRN Conversion

Format:

```
NODSCN IRN SCN DESCRIPTION
```

Example:

```
SYSDAT 1
       IRN  SCN     DESCRIPTION
NODSCN 001 002 111 <COLMAN-AVENUE S>
NODSCN 002 002 123 <COLMAN-MUSTARD >
NODSCN 003 002 131 <COLMAN-S PARK >
```

4.7 SCOOT Region CPU Data

Defines which scoot regions are connected to which CPU and allows for future expansion.

Format:

```
REGCPU REGION CPU
```

Parameters:

REGION The SCOOT region (AA-ZZ).

CPU The number of the CPU which controls the SCOOT region.

Example:

```
          REGION CPU
REGCPU     AP    1
REGCPU     AS    1
```

4.8 Green Wave SCN To IRN Conversion

Format:

```
GWVSCN SCN DESCRIPTION IRN
```

Examples:

```
         SCN     DESCRIPTION      IRN
GWVSCN 011 111 <HIGH STREET    > 001
GWVSCN 011 112 <BRIDGE STREET  > 002
```

4.9 OMU Data

Format:

```
OMUSCN SCN DESCRIPTION
```

Examples:

```
OMUSCN   040 111   <Badgers Barn   >
```

4.10 NMCS Data

This macro cross references UTC SCNs to NMCS geographical references for equipments controlled by UTC via an NMCS system.

Format:

```
NMCDAT SCN TCC EQUIP IDENTITY
```

Examples:

```
             SCN    TCC  EQUIP    IDENTITY
NMCDAT   K 042 115  1   <TLI>  <A4232/9220A1      >
```

5. JUNCTION TIMINGS DATA - TIMINGS.DAT

5.1 Timing Tolerances

Format:

```
TIMTOL MINSTG MAXSTG INTGREEN MAXCCTIME CONTOL CONCLR 1HRTOL 1HRCLR 3MINTOL 3MINCLR
```

Parameters:

MINSTG	The tolerance to be applied to measurements of the minimum stage green times, (1-9 sec)
MAXSTG	The tolerance to be applied to measurements of the maximum stage green times, (1-9 sec)
INTGREEN	The tolerance to be applied to measurements of the inter green times, (1-9 sec).
MAXCCTIME	The maximum time to be used for controller checks, (1-19 minutes).
CONTOL	Tolerance Time for all three faults.
CONCLR	Clear Time for all three faults.
1HRTOL	Number of faults tolerated in 1Hr.
1HRCLR	Clear tolerance for number of faults tolerated in 1Hr.
3MINTOL	Number of faults tolerated in a 3 minute period.
3MINCLR	Clear tolerance for faults tolerated in 3 minute period.

Example:

```
        MINSTG MAXSTG INTGREEN MAXCCTIME CONTOL CONCLR 1HRTOL 1HRCLR 3MINTOL 3MINCLR
TIMTOL  2      5       4        10       3     30     15     15       15    180
```

5.2 General System-wide Timings

Format:

```
GENTIM CPS RESP DVS RESP SD STUCK
```

Parameters:

CPS RESP	Maximum response time for car park signs.
DVS RESP	Maximum response time for diversion signs.

SD STUCK SD Bit stuck timeout limit.

Example:

```
          CPS RESP DVS RESP SD STUCK
GENTIM     60        040       24
```

5.3 Controller Timings - Intersections

Format:

```
ISN SCN NUM STAGES
```

This macro defines to which intersection the following data applies.

Example:

```
ISN 01121 2
```

5.4 Controller Timings - Stage Timings

This macro defines the minimum and maximum green for the stage, whether it is valid to move to this stage from another stage and if so the intergreen time. There must be one DEFSTG for each possible stage, the first DEFSTG is stage A, the second stage B etc.

Format:

```
DEFSTG TYPE MAX MIN STG1 STG2 STG3 STG.....
```

Parameters:

TYPE The stage type, NORM for a normal stage, DD for dependent stages.

MAX The maximum green in seconds for this stage in fallback mode. Range 0- 127. This value MUST be the 'stage run time' defined in the controller for the time of day that the timetable initiated controller checks program is to run. If controller checks are run by operator command, the value defined here may not be the same as that defined for the controller at the time that the controller checks program is run. In this case 'maximum green fault' error messages will be output by controller checks.

MIN The minimum green for the stage in seconds. Range 0-68. Min must be smaller than max.

STG'n' This field specifies whether you can move from the current stage to stage 'n'. If the move is possible then the intergreen value in seconds is inserted, if not then NOS(no such stage change) is used. At the junction from one stage to itself a NOS should be entered as an 'x' in the data entry screen. The stages should be read as 1, 2, 3, etc

across the columns from left to right and from top to bottom in the rows. The intergreen time shown is that from the stage represented by the row to the stage represented by the column. The number of columns and rows will be the same as that specified for the number of stages in the Junction data form, or ISNDAT macro.

Example:

```
        Type Max Min Stg1 Stg2 Stg3 Stg4  ...
DEFSTG NORM  20   7  NOS    6    7    7
DEFSTG NORM  40   7    5  NOS    5  NOS
DEFSTG D1    16   7    5  NOS  NOS    7
DEFSTG D2     7   7  NOS    7    7  NOS
```

5.5 Controller timings - Upper Stage Timings

If the controller has been configured for upper and lower stage timings, this macro defines the upper values for each equivalent lower (default) value defined in section 5.4. Each upper timing must be equal or greater to the equivalent lower value, and defined and non-existent intergreens must correspond exactly to the defaults. There must be one UPRSTG for each possible stage, the first UPRSTG is stage A, the second stage B etc.

Format:

```
UPRSTG TYPE MAX MIN STG1 STG2 STG3 STG.....
```

Parameters:

TYPE This parameter is left blank for the upper timings. See 5.4 for the stage types.

MAX See 5.4.

MIN See 5.4.

STG'n' See 5.4.

Example:

```
From From From From From ...
Type Max Min Stg1 Stg2 Stg3 Stg4 Stg5 ...
UPRSTG 25 10 NOS 7 7 7
UPRSTG 40 10 8 NOS 7 NOS
UPRSTG 20 10 10 NOS NOS 7
UPRSTG 15 10 NOS 7 7 N0S
```

5.6 Controller Timings - Fallback And Test

This macro defines the maximum green fallback cycle test sequence.

Format:

```
FBACK P1 P2 P3 P4 P5
```

Parameters:

P1 The cycle time in fallback mode or NSNT for "No synchronisation and no controller checks" NSBT for "No synchronisation but controller checks of (VA, FT, ML)"

P2 The time in seconds into the group timer's cycle when this controllers fallback plan is to begin.

P3 TESTFLAG this is either:

NOTEST for "fallback mode not to be tested".

TALL for "fallback mode is always to be tested (VA, FT)".

TTDAY for "fallback mode only to be tested at time of day (timetable) checks (CLU, ML)".

P4 The real-time synchronisation time in 2400 hour format. "1200" means 12:00 noon, for example.

P5 The next parameters specify the fallback sequence with all demands present. It MUST be the fallback sequence defined in the controller for the time of day that the controller checks timetable initiated program is to run.

NOTE: If controller checks are run by operator command the fallback sequence may not be the same as that defined here (depending on when the checks are initiated). In this case an error will be reported by the controller checks program.

Example:

```
FBACK NSBT 0 TALL 1200 1 2 3 4
```

5.7 Controller Timings - Cyclic Test Sequence

This allows the intergreens to be tested on a cyclic sequence. This macro is mandatory.

Format:

```
MINGRN P1 P2..........P'n'
```

Parameters:

P1 Stage 1 on the test.

P2... Stage 2

P'n' The last stage on the MINGRN line will be followed by the first stage on the NCIG line.

NOTE: 'n' may be up to 3 times the number of configured controller stages.

Example:

```
MINGRN 1 4 2 4 3 1 3 2
```

5.8 Controller Timings - Non-Cyclic Test Sequence

This allows the intergreens to be tested on a non-cyclic sequence. This macro is not mandatory.

Format:

```
NCIG P1 P2..........P'n'
```

Parameters:

P1 Stage 1 on the test, this will be preceded by the last stage on the FBACK line.

P2... Stage 2.

P'n' The last stage on the NCIG line will be followed by the first stage on the FBACK line.

NOTE: 'n' may be up to 3 times the number of configured controller stages.

Example:

```
NCIG 1 4 2 4 3 1 3 2
```

5.9 Controller Timings - Secondary Green Tests

This defines the stages (up to two) to be used for secondary maximum green tests.

Format:

```
SECSTG P1 P2
```

Parameters:

P1/P2 The stages to be used for secondary maximum green tests.

Example:

```
SECSTG 2 3
```

6. SCOOT DATA

The SCOOT data is held in a number of files. There is a header file (AREA.DAT) which contains a list of the data items which are general to, and required by, the whole of the area under the control of SCOOT.

All of the remaining data is held in 'region' files where a region is a geographical sub-division of the SCOOT area. The region files are named as REGION.'nn' (where 'nn' is in the range AA to ZZ).

The SYSDAT macro is used within each file to define for which computer the subsequent data is destined. In a single computer system the SYSDAT macro is always equal to 1.

The data is arranged hierarchically in each region file. The region specific data appears first, followed by one or more nodes. For each node there are numerous data items, some define the node itself, others define detectors, links, stages and UTC equipments which belong to the node.

For detailed explanations of the meaning of parameters defined in this document you should consult the SCOOT Traffic Handbook (Reference 1.3.10).

6.1 Area Data

There is only one AREDAT macro in the system. This macro is contained in a separate file called AREA.DAT. Before the data is 'prepared' i.e. converted from the format shown here to that used by the on-line traffic system, and checked for validity, the AREA.DAT file is automatically concatenated with all the region files.

Format:

```
AREDAT START LAG END LAG SET GATE MODEL LIGHT MEDIUM HEAVY NONE CONG FLT GRN FLT
```

Parameters:

START LAG	The normal system-wide start up delay for traffic on a link, i.e. the time lag before the traffic moves when the signals go green.
END LAG	The normal system-wide end delay for traffic on a link, i.e. the time lag during which traffic continues to move after the signals have changed from green.
SET GATE MODEL	For use with gating. This parameter should be set to 0 for setting gating from the SPLIT optimiser, and it should be set to 1 for setting gating from the SCOOT model.
LIGHT	Congestion Level - Range 1 to 98.

Must be less than the MEDIUM level (see below). This (and the Medium/Heavy Congestion levels) is used in the picture display software to work out the colour to display for the LINK CONGESTION object (see the Operator Handbook, Reference 1.3.4).

The colour to be used for light congestion is also specified and may be chosen from one of the following colours: Red, Green, Blue, Yellow, Magenta, Cyan, Black, and White.

MEDIUM Congestion level - Range LIGHT+1 to 99.

Must be less than the HEAVY level (see below)
The Colour for Medium congestion.

HEAVY Congestion Level - Range MEDIUM+1 to 100.

The Colour for Heavy congestion.

NONE The Colour for No congestion

CONG FLT The colour of the link congestion object when the link is faulty

GRN FLT The colour of the link green object when the link is faulty

Example:

```
;       START LAG  END LAG  SET GATE MODEL  LIGHT CONG   MEDIUM CONG    HEAVY CONG     NONE     CONG FLT   GRN FLT
AREDAT    02         03          0          001 <GREEN > 010 <WHITE  >  050 <MAGENTA>  <GREEN  > <RED    > <MAGENTA>
```

6.2 Region Data

This macro appears only once at the start of each region file.

Format:

```
REGDAT SCN INICYT PC SCN
```

Parameters:

SCN The two letters representing the region (AA-ZZ).

INICYT The initial region cycle time - Range 32 to 64 in steps of 4, or 64 to 120 in steps of 8, or 120 to 240 in steps of 16. This sets up the default region cycle time when the SCOOT System is started or when the SCOOT database is re-initialised.

PC SCN SCN of the TC12 PC. The SCN consists of all zeros for TC8 Systems.

Example:

```
          SCN INICYT  PC SCN
REGDAT AP   120    010 001
```

6.3 Node Data

A number of NODDAT macros will normally occur within a region file. As all the SCOOT data is listed hierarchically all the data which is subordinate to the node, i.e. equipment data (EQPDAT), stage data (STGDAT), link data (LNKDAT and LNKSTG), and detector data (DETDAT and SOFDET), will be listed after a NODDAT macro together with any bus detector data. Once all the data which is subordinate to a particular node has been listed the next NODDAT macro (for the next node in the region) will occur.

Format:

```
NODDAT   SCN        MAXCYT   CYCFIX  NAMSTG  DOUBLE  FORCED  FIRST   REMOVED IN   SECOND  REMOVED IN ;
REMSTG  1 2 3 4 5 6  REMSTG  1 2 3 4 5 6
```

Parameters:

SCN The node SCN, subarea (2 digits with a leading zero) and node id (3 digits). By convention this is the same as the principal UTC equipment controlled by the node.

MAXCYT The maximum cycle time in seconds. Range 32 to 240.

CYCFIX The cyclic fixed time. Range 0 to 63.

This is the amount of time during a SCOOT cycle that is lost to traffic (e.g. Pedestrian stages, intergreens).

NAMSTG The stage (usually with the longest duration) during which offset optimisation will occur.

REMSTG The removable stage on this node, i.e. a stage which may not be used at some times of day. Range - a STGDAT SCN digit for this node (see Section 6.5), or 0 if there is no removable stage. There may only be one removable stage on a node.

DOUBLE Defines whether or not the node is initially double cycling. Must be set to Y or N.

FORCED Defines whether or not the cycling status of the node is to be forced. Must be set to Y or N.

FIRST REMSTG REMOVED Defines whether or not the first removable stage is removed in each of the translation plans 1 through 6. A 'Y' against a translation plan number indicates the stage is removed, a 'N ' indicates the stage is

IN 1 2 3 4 5 6	not removed

SECOND REMSTG REMOVED IN 1 2 3 4 5 6	Defines whether or not the Second removable stage is removed in each of the translation plans 1 through 6. A 'Y' against a translation plan number indicates the stage is removed, a 'N ' indicates the stage is not removed

Example:

```
;       SCN      MAXCYT  CYCFIX  NAMSTG  DOUBLE  FORCED FIRST   REMOVED IN   SECOND  REMOVED IN
                                                        REMSTG  1 2 3 4 5 6  REMSTG  1 2 3 4 5 6

NODDAT  012 121   120      000     1       N       N       2    N Y N N N N    0    N N N N N N
```

6.4 Equipment Data

This macro is subordinate to the NODDAT macro. For each node there may be a number of EQPDAT macros which define the UTC equipment which is associated with the node.

Format:

```
EQPDAT TYPE SCN
```

Parameters:

TYPE	Equipment type, may be either J (Junction) or P (Pelican).
SCN	The five digit SCN.

Example:

```
TYPE SCN
EQPDAT J 06 231
```

6.5 Stage Data

This macro is subordinate to the NODDAT macro. For each node there will be a number of STGDAT macros which define the SCOOT stages which are used on this node.

Format:

```
STGDAT SCN MOVEMENT MINLEN MAXLEN CHATIM
```

Parameters:

SCN	The stage suffix, this is a digit ranging from 1 to 7, representing the stage part of the SCOOT SCN.
MOVEMENT	This parameter is used on SCOOT only systems to indicate which movement is to be forced on street..
MINLEN	The minimum stage length. Range 7 to 63. This must include the longest preceding UTC intergreen.
MAXLEN	The maximum stage length. Range MINLEN to maximum SCOOT cycle time. The maximum must be greater than or equal to the minimum.
CHATIM	This is the stage change time i.e. the time at which this stage starts in the cycle. Range 0 to node cycle time minus 1.

Example:

```
        SCN MOVEMENT  MINLEN MAXLEN CHATIM
STGDAT 1    0         13     070    010
STGDAT 2    0         23     080    056
STGDAT 3    0         13     090    094
```

Note: The sum of the Minimum Stage lengths (MINLEN) must not be greater than the maximum SCOOT cycle time. The sum of the Maximum Stage lengths (MAXLEN) must be equal to or greater the maximum SCOOT cycle time.

6.6 Stage Skipping Data

This macro is subordinate to the NODDAT macro. For each node there will be a number of SSKDAT macros which define the SCOOT stages which may be skipped in a particular translation plan.

Format:

```
SSKDAT SCN TRNPLN 1 2 3 4 5 6 7
```

Parameters:

SCN	The stage suffix, this is a digit ranging from 1 to 7, representing the stage part of the SCOOT SCN.
TRNPLN	The number of the translation plan in which the specified stage may be skipped
1, 2, 3, 4, 5, 6, 7	The stage number of the skip destination. If this stage is allowed as a destination stage this is denoted by Y

Example:

```
;         SCN    TRNPLN      1  2  3  4  5  6  7
SSKDAT     2       1         N  Y  Y  Y  N
SSKDAT     3       1         Y  Y  N  Y  Y
```

6.7 Link Data

This macro is subordinate to the NODDAT macro. For each node there will be a number of LNKDAT macros which define the SCOOT links which are attached to the node. The hierarchical nature of the SCOOT data means that all the data which is subordinate to the link, i.e. the link stage data (LNKSTG), and detector data (DETDAT) and (SOFDET), will be listed after a LNKDAT macro. Once all the data which is subordinate to a particular link has been listed the next LNKDAT macro (for the next link on the current node) will occur.

Format:

```
LNKDAT SCN TYPE SL? SLLINK C UNODE D U MAIND BOTNOD BLNK CONNOD CLNK SOFT? EQTYP EQPSCN STAGE GREENS A B C D E F G H
```

Parameters:

SCN	The link suffix, this is a letter representing the link part of the SCOOT SCN.
TYPE	The link type, valid types are: N - a normal link (i.e. has different upstream and downstream nodes). E - an entry link. X - an exit link. F - a filter link. U - an uncontrolled link.
SL?	This will be set to ‘Y’ if the link has a stop line detector
SLLINK	The SCN of the stop line upstream link.
C	The class of the link, either vehicular or bicycle. 'N' for normal (vehicle) link, 'B' for bicycle link.
UNODE	For normal links, the SCN of the upstream node. For other links, the current node number.
D	The downstream node through stage. This is the stage SCN suffix of the current node which gives green to this link.

U	The upstream node through stage. This is the stage SCN suffix at the upstream node which lets traffic onto this link.
MAIND	The main downstream link suffix. This is the link downstream of the node which if blocked would cause outflow from the current link to cease. Valid entries are: the link letter of a valid downstream link "0" if there is no main downstream link
BOTNOD	The node for the bottleneck link, or all '0's if there is no bottleneck link.
BLNK	The link which if congested will cause the green time on the current link to be reduced, or '0' if there is no bottleneck link.
CONNOD	The node associated with CONLNK.
CLNK	The link whose weighting and importance factors will be used as an alternative when there is congestion on the current link, or '0' if there is no congestion link.
SOFT?	Set to 'Y' if this link is to be used for on-line saturation flow (SOFT) calculations, 'N' if not.
EQTYP	The type of UTC equipment which is associated with the control of traffic on this link either 'J' for a junction or 'P' for a pelican.
EQPSCN	The SCN of the above junction or pelican. This must be one of the equipments defined in an EQPDAT macro for the current node.
STAGE GREENS A B C D E F G H	These eight fields define the UTC stages which will give green to the current link. A '1' against a stage letter indicates that this UTC stage will give green to the link A '0' indicates either the stage does not give green to this link, or there is no such stage (intersections with more than 4 stages are uncommon).

Example:

```
        SCN TYPE SL? SLLINK  C UNODE   D U BD MAIND BOTNOD BLNK CONNOD CLNK SOFT? EQTYP EQPSCN STAGE GREENS A B C D E F G H
LNKDAT L   E    N  000 000 N 001 222 2 0 0     C  000000    0 000 000 0      N     J  001 123            0 1 0 0 0 0 0 0
```

6.8 SOFT detector data

This macro is subordinate to the LNKDAT macro, it will only appear if the SOFT? parameter in the LNKDAT macro is set to 'Y'. It is used to define SCOOT detectors

which may be used in the calculation of on-line saturation flow (SOFT).

Format:

```
SOFDET DNODE LINK DETECTOR
```

Parameters:

DNODE The SCN of the down steam node to which the detector to be used for SOFT is connected.

LINK The link on which the detector to be used for SOFT resides.

DETECTOR The number of the detector on the above link which is to be used for SOFT.

Example:

```
       DNODE   LINK  DETECTOR
SOFDET 001 211   E       1
```

6.9 Bus detector data

This macro is subordinate to the LNKDAT macro, it will only appear if bus data is defined in the link data form.

Format:

```
BUSDAT LINK  TYPE  BUSSCN  BUSDET  BUSTAG SCN  READER ID
```

Parameters:

LINK The link on which the bus detector resides.

TYPE The type of equipment which generates the bus demand which can be one of the following,

- J Junction controller
- P Pelican Controller
- Z Remote Request (type 9)

BUSSCN The SCN of the equipment which generates the bus demand.

BUSDET When the equipment is a junction or pelican controller, this is the number of the BD bit associated with this link.

BUSTAG SCN The SCN of the bus tag reader which is associated with this link which generates a type 10 remote request

READER ID This is the identity of the bus reader.

Example:

```
          LINK  TYPE  BUSSCN   BUSDET  BUSTAG SCN  READER ID
BUSDAT     G     J    007 211    01    000 000     00
```

6.10 Link Stage data

The LNKSTG macro is subordinate to the LNKDAT macro. Each LNKSTG macro is used to define 1 of up to 6 translation plans for the link. Each translation plan defines whether the link is given green once or twice in the cycle and on which SCOOT stages these greens occur.

Format:

```
LNKSTG TRNPLN GREENS 1stSTA 1stEND 2ndSTA 2ndEND
```

Parameters:

TRNPLN Up to 6 translation plans may be defined with associated link stage data. Plan 1 is compulsory.

GREENS The number of times green is given to the link and vehicles exit from it. Range 1 to 2.

1stSTA The SCOOT stage on which the green for this link begins.

1stEND The SCOOT stage on which the green for this link ends.

2ndSTA If there are two greens (GREENS = 2) this parameter defines the SCOOT stage on which the second green for this link begins.

2ndEND If there are two greens (GREENS = 2) this parameter defines the SCOOT stage on which the second green for this link ends.

Example:

```
          TRNPLN  GREENS  1stSTA  1stEND  2ndSTA  2ndEND
LNKSTG     1       2        1       3       5       6
```

6.11 Detector Data

The DETDAT macro is subordinate to the LNKDAT macro. It is used to define which detectors are associated with the link. A number of DETDAT macros may occur if the link has more than one detector associated with it. Location on a TC12 OTU is allocated in the same manor, with the bits divided into words and then a mask.

Format:

```
DETDAT SCN OSN SCN WORD MASK
```

Parameters:

SCN — The SCOOT SCN suffix. Range 1-9. Detectors must be numbered in sequence from 1 for each link.

OSN SCN — The SCN of the outstation to which the detector is connected. This field is supplied for information only and is not used in the construction of the SCOOT database.

MASK — The position of the 4 reply bits within the address.

0 - Bits 0,1,2,3

1 - Bits 4,5,6,7

2 - Bits 8,9,10,11

3 - Bits 12,13,14,15

where bit 0 is the least significant bit.

Example:

```
          SCN  OSN SCN  WORD  MASK
DETDAT     1   007 770  2      1
```

7. TIMETABLES

7.1 Dwyttb Timetables

7.1.1 Introduction

This file defines which timetable is to be used for each day of the year. There are two sets of definitions viz:

Date of year schedule.

Day of week schedule.

Note: A useful feature when defining timetables is the ability to enter comments into the file, by preceding those comments with ; (semi-colon).

7.1.2 The Day of Year Schedule

Defines which timetable is to be used on a particular day of the year. A value here takes priority over a value in the day of week schedule. If there is no definition in here for a particular date, the day of week schedule value is used.

Format:

```
DATE TTABLE NO
```

Parameters:

DATE	The date of year in the form dd:mm
TTABLE NO	The timetable number to be used for this date. This has a value between 1 and the max timetable number for this system, standard system size 20.

Examples:

```
10:03 05
30:11 18
```

7.1.3 The Day of Week Schedule

Defines which timetable is to be used on a particular day of the week. If there is a value in the date of year schedule for the current day of week, then that value is used instead of the value here.

Format:

```
DAY TTABLE NO
```

Parameters:

DAY The day of the week.

TTABLE NO The timetable number to be used for this date. This has a value between 1 and the max timetable number for this system.

Examples:

```
MONDAY     8
THURSDAY   20
```

7.2 TOD'n'.MAC Timetables

7.2.1 Introduction

A Time of Day timetable file defines which events are to occur at a particular time, during the day for which the timetable has been selected. There are 'n' possible timetables, where 'n' is a number in the range of 1 to 20. Each timetable is held in a separate TOD'n'.MAC file.

Note: A useful feature when defining timetables is the ability to enter comments into the file, by preceding those comments with ; (semi-colon).

Format:

```
<DESCRIPTN>
TIME COMMAND <SCN><ScSCN><TERM><VALUE><STAGE><PARAM>
```

Parameters:

<DESCRIPTN> A description of the timetable can be included between the "<" and ">" brackets at the beginning of the timetable file. The description has a maximum length of 40 characters and is displayed to a UTC System user by means of the OUTT command.

TIME The time of day at which the following command is to be actioned. It has the format:

HH:MM[:SS]

where :

HH - hours (00 to 23)

MM - minutes (00 to 59)

[SS] - seconds (00 to 59).

NOTES:

(a) The seconds element of time is an optional parameter.

(b) If the time is preceded by a day of the week, e.g. Weds, then that command will only be actioned at that time on the particular day of the week

(c) If the time is preceded by a date, e.g. 3-Apr-01, then that command will only be actioned at that time on the particular date.

COMMAND The command to be actioned.

The following parameters are command dependant, i.e. different commands require different parameters. Some parameters are optional for a particular command. The exact format for a particular command may be found in the UTC System Operators Handbook ref. 1.3.4.

SCN The UTC System code number.

ScSCN The SCOOT System code number.

These have the format LNNNNN

where L - equipment letter.

NNNNN - five digit SCN number.

TERM The terminal number.

VALUE A number.

STAGE The stage identifier.

PARAM The SCOOT database parameter.

NAME A particular name relevant to the command.

DATE The date of year.

+/- Used when values are to be amended either positively or negatively.

Examples:

```
08:30 OPFD D01125                    SCN
21:45 CAPA C01123 425                SCN VALUE
08:00:10 CHAN STOC N** 10            PARAM ScSCN VALUE
07:30 CHDC
```

7.2.1(a) Once a Week Events

If it is desired that a certain command be run at a specified time on one particular day of the week, the time for that event should be preceded by a 3 letter abbreviation of the day of the week. For example to action CAST 99 at 15:30 on Wednesdays the following command would be entered into the time table.

```
Wed 15:30:00 ACAS 99
```

7.2.1(b) Single Shot Events

If it is desired that a certain command be run at a specified time only on one particular date, the time for that event should be preceded by the date as shown in the example below: For example to action CAST 101 at 06:30 on the 19th December 2005 the following command would be entered into the time table.

```
19-DEC-05 15:30:00 ACAS 99
```

7.2.2 Example Time of Day Timetable

An example time for a typical week day for a UTC System with SCOOT is shown below.

```
<WEDNESDAY TIMETABLE>
00:01  PLAN   A01000 5
00:01  ACAS   OPRAB
00:01  SCOO   RAB
00:01  CHAN   MAXC   RAB    96
02:01  CHCK   T01001
06:30  ACAS   AMRAB
06:30  CHAN   TREN   RAB    ON
06:30  PLAN   A01000 1
06:30  CHAN   DSTS   N***   OK
06:40  CHDC
07:15  CHAN   TREN   RAB    OFF
09:15  ACAS   OPRAB
09:15  PLAN   A01000 2
16:00  PLAN   A01000 3
```

```
16:00  ACAS   PMPRAB
16:30  CHAN   TRAF   ON
17:30  CHAN   TRAF   OFF
18:00  CHAN   FDWN   RAB    YES
19:00  ACAS   OPRAB
19:00  PLAN   A01000 2
19:00  CHAN   FDWN   RAB    NO
```

8. TERMINAL DATA FILE - TRMCNF.DAT

8.1 Printer data

Format:

```
PRINTER=(SCN="scn",PHYSICAL_NAME="name",DESCRIPTION="descr",
LOG_PRINTER="log",TYPE="type',LANGUAGE="lang",BAUD_RATE='n')
```

Parameters:

scn	Printer SCN
name	VMS port description
descr	A descriptive name for the printer
type	The type of printer. It may be one of:
	1- Compaq hardcopy devices such as LA120,LA100,LA34 etc.
	2- PCL level 3 printer such as an HP DeskJet
	3- for a basic ASCII character only output device
log	Whether the printer is a log printer or not. Value may be "YES" or "NO"
lang	The output language for the printer.
n	the baud rate. It may be one of:
	300
	1200
	2400
	4800
	9600
	19200

Example:

```
PRINTER=(SCN=01001,PHYSICAL_NAME=_LTA701:,DESCRIPTION="Log Printer",
LOG_PRINTER=YES,TYPE=HARDCOPY,LANGUAGE=ENGLISH,BAUD_RATE=9600)
```

8.2 Terminal

Format:

```
TERMINAL=(SCN=01006,PHYSICAL_NAME="name",DESCRIPTION="descr",
TYPE='type',SUB_AREAS=(S1....SN),COLOUR_PRINTER='col', BW_PRINTER='mono',
LANGUAGE='lang',UTC_OUTPUT='out', COMMAND_LEVEL='lv', BAUD_RATE='n')


TERMINAL=(SCN='scn',PHYSICAL_NAME='device',SUB_AREAS=(S1.....SN),
TYPE='t',COMMAND_LEVEL='l',COLOUR_PRINTER='cp',
BW_PRINTER='bw',Output List,BAUD RATE='n')
```

Parameters:

scn	the scn allocated to this terminal, entered without the equipment type letter. For example, T01001 would be entered as 01001.
device	the device name. This takes the form of _LTAnnnn: where 'nnnn' is the LAT port.
S1...SN	a list of sub-areas for this terminal to control/monitor. This can be replaced by ALL, meaning all sub-areas can be controlled.
n	the baud rate, specified as for PRINTER above.
t	the terminal type, one of:

1- Compaq hardcopy devices such as LA120,LA100,LA34 etc.

2- PCL level 3 printer such as an HP DeskJet

3- for a basic ASCII character only output device

4- VT100, VT131 etc.

5- The TECHEX 48 line colour terminal.

6- IBM_PC running the CTERM emulator,

	7- VT200
	8- VT200 extended i.e. citoh VT224
	9- VT320/VT420
l	The command level of this terminal, a value between 1 and 16.
cp	the SCN of the colour printer, to which dumps of colour screens will be sent. The equipment type letter is not entered. i.e. T01006 should be entered as 01006.
bw	the SCN of the black and white printer, to which dumps of monochrome screens and other outputs can be sent. The equipment type letter is not entered. i.e. T01006 should be entered as 01006.
OUTPUT	a list of the output types which are to be allowed on this terminal.
LIST	The available types are:
	SCOOT_COMMANDS
	SCOOT_OUTPUT
	UTC_COMMANDS
	UTC_OUTPUT
	DCL_COMMANDS
	URGENT_TERMINAL
	INHIBIT_ATTACH
	OVRB_ALLOWED
	NARROW_PAPER
	STATUS_LINE
	MODEM_TYPE
	LOG_PRINTER
	RMS_OUTPUT
	USER_CONFIG_ALLOWED

The list should be entered as:

Output type=YES/NO

with commands separated by commas. The default value is NO.

Example:

```
TERMINAL=(SCN=01006,PHYSICAL_NAME=_LTA703:,DESCRIPTION="Bus Priority",TYPE=IBM_PC, SUB_AREAS=ALL,
COLOUR_PRINTER=01005, BW_PRINTER=01003,LANGUAGE=ENGLISH, UTC_OUTPUT=YES, COMMAND_LEVEL=01,
BAUD_RATE=9600)
```

8.3 Modem Ports

Format :

```
MODEM = (DEVICE = 'device', CPU = 'c', SPEED = 'n')
```

Parameters :

device — the device. Takes the form of _TXA'm': where 'm' is the terminal number, or _OPA0: for the console.

c — the processor number. H01000 would be 1.

n — the baud rate, specified as for Printer, see Section 8.1.

Example :

```
MODEM = (DEVICE = _TTA2:, CPU = 1, SPEED = 2400)
```

8.4 Dial-up Users

Format:

```
DIALUP=(USR_ID='id',PASSWORD='pw',PHONE_NO='phone',
SUB_AREAS=(S1...SN),TYPE='t',COLOUR_PRINTER='cp',
BW_PRINTER='bw',BAUD_RATE='n',Output List,
COMMAND_LEVEL='l')
```

Parameters:

id — the user identification name, as a string of 6 to 12 alphanumeric characters.

pw — the password associated with the user identification, as a string of 6 to 12 alphanumeric characters.

phone	the dial-back phone number as a numeric string up to 30 digits. If the terminal is not defined as dial-back, then NO should be entered.
n	the baud rate, specified as for PRINTER in PRI.
l	The command level of this terminal, a value between 1 and 16.
cp	the SCN of the colour printer, to which dumps of colour screens will be sent. The equipment type letter is not entered. i.e. T01006 should be entered as 01006.
bw	the SCN of the black and white printer, to which dumps of monochrome screens and other outputs can be sent. The equipment type letter is not entered. i.e. T01006 should be entered as 01006.
OUTPUT	a list of the output types which are to be allowed on this terminal.
LIST	The available types are: - SCOOT_COMMANDS - SCOOT_OUTPUT - UTC_COMMANDS - UTC_OUTPUT - DCL_COMMANDS - URGENT_TERMINAL - OVRB_ALLOWED - NARROW_PAPER - STATUS_LINE - RMS_OUTPUT - USER_CONFIG_ALLOWED

The list should be entered as:

Output type=YES/NO

with commands separated by commas. The default value is NO.

Example:

```
DIALUP=(USR_ID=ABCDEFGH,PASSWORD=MANAGER,SUB_AREAS=ALL,
PHONE_NUMBER=0712123355,COLOUR_PRINTER=01007,
BW_PRINTER=01006,TYPE=VT320,DCL_COMMANDS=NO,
SCOOT_COMMANDS=YES,SCOOT_OUTPUT=YES,UTC_COMMANDS=NO,
COMMAND_LEVEL=3,STATUS_LINE=YES,BAUD_RATE=9600)
```

8.5 Daylight Saving Time

Format:

```
DST=('date1','date2')
```

Parameters:

date1 — the first day at which daylight saving time, or local summer time, begins. The system clock has one hour added at 1am of that day. The date descriptor is in the form dd-mmm-yy where :

dd = day (01, 02, ...)

mmm = month (JAN, FEB, ...)

yy = year (01, 02, ...)

Note: If "NONE" is entered for the start date the System will automatically calculate the start and end dates using the rules which are defined within POSIX.

date2 — the day at which summer time ends. The system clock has one hour taken off at 2am of that day. The same format as date1 is used. date2 must be later than date1.

NOTE: Both dates must occur in the same year. No double summer time is available.

Example:

```
DST=(25-MAR-91,28-OCT-91)
```

8.6 System Printer

Format:

```
SYSTEM_PRINTER=(<TERMINAL SCN>)
```

Parameters:

TERMINAL SCN	The SCN of the terminal assigned to the system printer, entered without the equipment type letter. For example T01002 should be entered as 01002.

Example:

```
SYSTEM_PRINTER=(01001)
```

9. PLAN FORMATS

The plan formats are described in the Plan Preparation Handbook, reference 1.3.11.

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