IECC Data Preparation

IDPM 0902

Issue 4

Date 29 October 1999

Gateway Reference

For approval and authorisation of this document, please refer to the IECC Applications Manual Contents, RT/E/S/10040.

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Published and issued by
Director, Asset Management
Railtrack plc
Railtrack House
Euston Square
LONDON
NW1 2EE

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Amendment Record

Issue	Date	Description
4	29/10/99	Converted to Word format by AEA Technology Rail. Same as Issue 3, except for incorporating the appendix Sections 7.1. and 7.2 in Issue 3 into the current document as Sections 7 and 8. No other changes made.

Author	Approved	Date	Authorised	Date
	R.G. Clark.	29/10/99		12/10/00

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1 Introduction

This document is the reference manual for the GWS data compiler and contains information concerning the following subjects :-

- installation of the GWS data compiler;
- input file preparation and syntax description;
- error messages and their interpretation;
- a worked example of a GWS data compiler source file.

Users of Automated Data Preparation (ADP) tools may use this document to check and modify ADP prepared data.

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2 Assumptions And Restrictions

2.1 The Central Parameter File may be referred to within this document by its abbreviation, CPF.

2.2 The reader of this document is assumed to be familiar with the contents of the CPF.

2.3 A **.SA** file is the output of a screen drawing utility. In the context of this document, it contains information concerning TD map element names, the area the TD map element is in and the TD map element type. The GWS Level 2 compiler has the ability to extract this information from the **.SA** files.

2.4 An alien TD map is a TD map for which **.SA** files do not exist, as it is not generated by a screen drawing utility. This is not an error condition. An alien TD map is an alternative means of creating a TD map. In the GWS Input file, TDMAP statements can be used to handle TD map updates for alien TD maps.

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3 Overview Of Components

The GWS data compiler generates the fixed site dependent object files for the GWS subsystem in three phases :-

- level 2 compilation - reads high level input files to produce the level 1 input files. Validation of the input file is rigorous at this level;
- level 1 compilation - reads lower level input files produced by the level 2 compilation phase to produce even lower level files suitable for compilation into object files by the UNIX system C compiler. Validation of the input files is less rigorous at this level;
- C compilation - reads the very low level input files produced by the level 1 compilation phase to produce object files which may be loaded onto the computer boards for the GWS subsystem.

The GWS data compiler consists of five components :-

gws-	the top level shell executable. This file contains the declaration of environment variables which give the file paths of the remaining four files;
gws3-	controls level 1, level 2 and C compilation;
gws2-	performs the level 2 compilation phase;
gws1-	performs the level 1 compilation phase;
tvgtdmap.a-	a text processor used to resolve TD map elements in level 2 compilation.

In addition to the above components it is assumed that a UNIX system C compiler is present and on the user's executable search path.

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4 File Preparation

This section describes the input text file format and the effect of the data fields on the subsystem operation. The syntax is described in English, but for a more rigorous description of the input file syntax, refer to section 8.

There is only one input file for the GWS data compiler.

4.1 GWS INPUT FILE

The GWS Input file contains statements which are combined with the data objects declared in the CPF and other IECC files to generate the GWS site dependent fixed data areas. A GWS Input file contains statements which may be categorised into the following seven logical groups :-

- CPF statement;
- signalling items;
- TD berth elements;
- remote link status;
- subsystem status;
- contingency plans;
- miscellaneous.

The GWS logical groups are described below. Each statement is accompanied with narrative text describing the meaning of the statement.

4.1.1 CPF statement

CPF: { FILE '../SERVICE/cpf1' }

The **CPF:** statement must be present and is used to set the search path which the compiler uses to load the CPF.

4.1.2 IDENTITIES section

The format of this section is as follows :-

```
IDENTITIES      {
        Interlocking {
                INFORM SubsystemList { ItemList }
                TDMAP  TDMapList     { ItemList }
        }
}
```

Where :-

Interlocking The logical name of an interlocking subsystem, as entered in the CPF

ItemList A list of signalling identities or the keyword ALL

SubsystemList A list of the logical names of subsystems, as entered in the CPF

TDMapList A list of TD map names

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The **IDENTITIES** section is used to describe what the GWS will do when signalling items change state. These actions are entered in the GWS Input file for each interlocking. The text within the curly brackets is dependent on the action required to be performed by the GWS when signalling items in the interlocking change state. Two distinct kinds of action can be entered for any signalling item :-

- change of state to be sent to other subsystem;
- update element of an alien TD map.

The **INFORM** statement is used to cause the GWS to tell other subsystems about changes in the state of signalling items. The maximum number of subsystems which can be informed is two. More than one **INFORM** statement can be used to select combinations of signalling items and subsystems.

The **TDMAP** statement is used to cause the GWS to send TD map updates to elements of alien TD maps on the changing of the state of signalling items. The update of TD map elements will generally be handled automatically by the GWS data compiler as it reads the **.SA** files. However, if a **.SA** file has not been created for the TD map, then the **TDMAP** statement may be used to ensure that the GWS sends TD map updates for signalling items which are elements of alien TD maps. This will be in addition to any TD map elements identified in the **.SA** files and appearing on other TD maps. More than one **TDMAP** statement can be used.

All the interlockings on the network must be present in the **IDENTITIES** section even if there are no **INFORM** or **TDMAP** statements between the curly brackets.

4.1.3 BERTHS section

The format of this section is as follows :-

```
BERTHS {
        RECALL          { SubsystemList }
Subsystem {
                        BERTHS          { FullBerthList }
                        INFORM SubsystemList    { BerthList}
                        ETBFOR          SubsystemList   { BerthList }
                        DRWFOR          SubsystemList   { BerthList }
                        TDMAP  TDMapList        { BerthList }
        }
}
```

Where :-

BerthList	A list of TD berth identities or the keyword ALL
FullBerthList	A list of TD berth identities
Subsystem	The logical name of a display subsystem, as entered in the CPF
SubsystemList	A list of the logical names of subsystems, as entered in the CPF
TDMapList	A list of TD map names

The **BERTHS** section is used to describe what the GWS will do when TD berth contents change. The TD berths are listed in this section and allocated to display subsystems which control them.

The **RECALL** statement is used to describe the subsystems which may recall by berth or description from any of the TD berths in the IECC.

There is a statement for each display subsystem which lists the TD berths allocated to it together with the actions that the GWS is required to take when the contents of the TD berths change. Four kinds of action can be entered for any TD berth:-

- berth contents to be sent on subsystem initialisation;
- ET berths and associated protocol converter;

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- DRW berths and associated fringe boxes;
- elements of alien TD maps.

The **INFORM** statement is used to select which subsystems are to be sent the contents of TD berths on initialisation (during a "snapshot") and when the berths change state. The **INFORM** statement is optional.

The **ETBFOR** statement is used to cause the GWS to tell other subsystems about changes in the contents of Early Transmission (ET) berths. The **ETBFOR** statement is only relevent to PCS. All berths which ECS needs to know about must be mentioned only in the **INFORM** statement. The **ETBFOR** statement is optional.

The **DRWFOR** statement is used to cause the GWS to tell other subsystems about changes in the contents of Description Received Warning (DRW) berths. The **DRWFOR** statement is optional.

The **TDMAP** statement may additionally be used to cause the GWS to send TD map updates to elements of alien TD maps on the changing of the contents of TD berths.

4.1.4 LINKS section

The format of this section is as follows :-

```
LINKS   {
        LinkType : Subsystem
        INFORM SubsystemList            { LinkList }
        TDMAP  TDMapList                { LinkList }
}
```

Where :-

LinkList	A list of the logical names of subsystems, as entered in the CPF, or the keyword ALL
LinkType	A number in the range 1 to 5 as described below
Subsystem	The logical name of a subsystem, as entered in the CPF
SubsystemList	A list of the logical names of subsystems, as entered in the CPF
TDMapList	A list of TD map names

The **LINKS** section is used to declare the remote links whose status will be monitored by the GWS. The type of each link is entered as a numeric value dependent on the type of the subsystem which it is associated with as shown below :-

1 - TD link type;
2 - SDS link type;
3 - SSI link type;
4 - TD map link type;
5 - ET berth link type.

Two kinds of action can be entered for any remote link :-

- change of state to be sent to other subsystem;
- update element of an alien TD map.

The **INFORM** statement is used to instruct the GWS to tell other subsystems about changes in the state of remote links.

The **TDMAP** statement may additionally be used to cause the GWS to send TD map updates to elements of alien TD maps, on changes in the state of remote links.

4.1.5 SUBSYSTEMS section

The format of this section is as follows :-

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SUBSYSTEMS {

Subsystem	**SOURCE SourceFlag**	**NDS NDSTask**	
LINKS		**{ SubsystemList }**	
INFORM	**SubsystemList**	**{ SubsystemList }**	
TDMAP TDMapList		**{ SubsystemList }**	

}

Where :-

NDSTask A number, by default the number 121 if the subsystem is on the signalling network or 101 otherwise

SourceFlag A number, by default the number 1 if the subsystem is an interlocking, a display subsystem or an automatic routesetting subsystem or 0 otherwise

Subsystem The logical name of a subsystem, as entered in the CPF

SubsystemList A list of the logical names of subsystems, as entered in the CPF

TDMapList A list of TD map names

The **SUBSYSTEMS** section is used to declare the subsystems whose status the GWS is required to monitor. A list of remote link names can be associated with a subsystem and is used to indicate if the status of the remote link is dependent on the status of the associated subsystem.

For customised subsystems there are two optional fields which allow the GWS data source flag and NDS task number to be set to a value other than the default setting. These fields should not be entered without reference to GWS Specifications.

Two kinds of action can be entered for any subsystem status :-

- change of state to be sent to other subsystem;
- update element of an alien TD map.

The **INFORM** statement is used to cause the GWS to tell other subsystems about changes in subsystem status.

The **TDMAP** statement is used to cause the GWS to send TD map updates to elements of alien TD maps, on changing in subsystem status.

4.1.6 PLANS section

The format of this section is as follows :-

PLANS {

INFORM SubsystemList

}

Where :-

SubsystemList A list of the logical names of subsystems, as entered in the CPF

The **PLANS** section is used to cause the GWS to tell other subsystems about changes in contingency plans. The contingency plans referred to are ARS contingency plans which are introduced in response to certain types of failure or train service modification.

4.1.7 OTHERS section

The format of this section is as follows :-

OTHERS {

String = String

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