

SSI Data Procedures

Chapter C: Data Production

Chapter C

I Introduction

This chapter defines the processes to be adopted for the production of Data for new SSI schemes or for changes to commissioned schemes.

This document also gives guidance in applying those requirements using the SSI Design Workstation (DWS). All DWS operations shall be in accordance with the latest issue of GS/SI8300. Alternative data preparation tools may be utilised subject to safety approval being granted by Railtrack for their use.

2 Data Production

Data production requires as a minimum that the following source documents are available and have been checked as correct:

- Scheme Plan
- Numbering Plan (if provided)
- Control Tables
- Location Plan
- Panel Multiplex Allocation Schedules (if applicable)
- Data Link Network Plan
- ARS Sub-Areas (if applicable)
- Signal Group Replacement Control Areas

Where data is being changed then either the above documents or data checking error logs or data testing fault logs shall specify what the data changes are to achieve.

TFM schedules shall be prepared in accordance with the latest issue of the SSI Applications Manual (specifically SSI8500D, SSI8003-30 and SSI8003-40) and entered into the DWS or equivalent.

Data production shall then proceed in accordance with the above scheme specific documents and the latest issue of the SSI Applications Manual (in particular, SSI8003). It should be noted that SSI8003-55 shall be complied with in relation to layout and presentation of data by using the data templates of the DWS or other compliant means. Sub-route/overlap plans shall be produced/changed either before or with the FLG file production/changes. Map search plans shall be produced/changed in conjunction with MAP file production/changes.

Where the data is being changed, it shall be established, using the previous CISR where available, what mandatory retrospective action is required due to the re-issue of parts of SSI8003 since the previous Version/Sub-version of data was prepared. Consideration shall also be given to upgrading the CI equipment to the latest modification state (see SSI8150 Chapter E). (The above may significantly affect the resources required for the work.)

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Where the data includes a new application of SSI, for example, a novel data structure, the application must be endorsed by SSISPG before the new data is approved.

The prepared data/data changes shall be entered into the DWS or equivalent and displays prepared/changed and databases updated. If using the DWS, after loading or transferring the previous version of data for changing, Pathfinder/Menufinder A136 must be run before data changes commence.

A check shall be made on the data received from the Data Custodian, that the information recorded on the disk labels and associated correspondence matches that held on the latest CISR stored on the disk.

Any non-cleared items in Data Check Error Logs and Testing Fault Logs shall be responded to and the data changed where appropriate.

As part of the production check, i.e. the checks the Data Producer does on his work, the DWS or other approved data compiler(s) shall be run and the data corrected until the compilers report no errors.

The data shall be downloaded into the DWS or other approved simulation system and all relevant buttons and switches operated, routes set and trackside display controls shown operational, with the data corrected and recompiled as required.

On completion of data production:

- A serial number shall be allocated for a new CISR (see Section 2.2).
- The title blocks shall be completed for new data files and the Last Change Records shall be updated for all data files which include new or changed data (see Section 2.3).
- The compiler(s) shall be re-run, changing the Version/Sub-version Numbers as specified in Section 2.4. Any errors in the data reported by the compilers shall be corrected and the compilers re-run, repeating the process until no errors are reported by the compilers. If using the DWS, Table 4.5 in Part 4 of GS/SI8300 shall be consulted to identify which of the five compilers have to be re-run on the data because of the changed data files.
- The interlocking data shall be decompiled and this must result in no errors. If errors are found that cannot be corrected, then the authority responsible for issuing the compiler shall be consulted before the data is passed on for checking or testing.
- A new CISR record shall then be added to the system, the CISR serial number entered and previous CISR information entered

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or copied across and the necessary pre-CISR-printing information in CISR Parts 4 to 8 as specified in Section 2.5 shall be amended. The information shall be checked for correctness, then the process to create CISR Parts 1 and 3 shall be run. The system shall then prevent any further amendment of the CISR.

- Two sets of floppy disk master back-ups of the data shall be separately created (on the DWS, Interlocking ".dbase" and ".data" and scheme "common.dbase" directories as a minimum; the common.dbase directory shall be backed up on a separate disk). Each disk shall not have been used previously, and shall be write protected and labelled with the following information:
 - directory names
 - CISR serial number
 - data preparation tools /system used (e.g. Intergraph DWS)
 - Producer's signed initials
 - Date master back-ups made
 - "Master 1" or "Master 2"

The Data Manager shall ensure that adequate and secure records are kept.

- Each set of disks shall be stored separately. Any interim floppy disk back-ups made since the previous master back-up shall be erased at this point.
- A print of the CISR shall be obtained. This shall then become the master print of the CISR. Post-printing information shall be added to this master print as specified in Section 2.5.

Note: All CISRs created for a Central Interlocking must be held as part of the data for that Interlocking on a cumulative basis, and thus will be included in any back-ups made of that data.

Note: A CISR must be created, following the above procedures as far as possible, to record any interim version of data that is to be issued before data production is completed. See Section 2.1 for further information on when a new CISR is to be created.

The data and database information that has been prepared, or changed, will now be ready for the Independent Data Check (see Section 3).

2.1 When is a CISR to be created?

Whenever a Data Producer prepares new source data or changes existing source data for a CI, a new CISR shall be created for that CI. This shall occur for any source data changes. Thus, this will include changes initiated by:

- Resignalling as specified by scheme plan, Control Tables and other scheme specific source documents. This includes stageworks.

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- Any subsequent changes to the above, if not incorporated before the first check.
- Changes in non scheme specific documents such as Codes of Practice and the SSI Applications Manual.
- Errors found during the Independent check.
- Errors found during pre-site testing on the system simulation.
- Errors found during on-site testing.
- Applying or removing temporary data changes for test purposes.

A CISR shall be completed to record the data concerned if partially completed data is issued for checking or other purposes. The data may include just TFM schedules, issued for location design, or identity files, issued for IECC purposes or PMUX allocation, etc., the associated CISR then not proceeding beyond the data production and checking stages. Another reason for early issue is to allow data checking to commence on partially completed source data, or on source data where further changes are pending. Thus each succeeding version of data must have a new CISR created.

As the CISR records programs in the target hardware which operate on the data in object code form, then a new CISR will be required when a new issue of these programs is installed to ensure that program/data compatibility checks are done, even if no data changes are involved.

2.2 Numbering of CISRs

The Records Custodian is responsible for the allocation of CISRs (see RT/E/S/11201 Appendix B). All initial CISR numbers shall be requested from the Records Custodian. The Design Office is then responsible for all internal increments to the CISR number until the final commissioning CISR is returned to the Records Custodian.

Each CISR shall have a unique serial number. This number shall consist of the last two digits of the year, the Control Centre Identity Number, the interlocking number and a serial number for that interlocking (i.e. "001" initially, incremented for each subsequent CISR) separated by dashes. A typical example would be 97-0005-07-001 (the first CISR for interlocking 07 of Control Centre ID 0005, generated in 1997). It is essential that the serial number for each interlocking progressively increments, without gaps in the series.

Note that two CIs shall not be given the same interlocking number if any of the following conditions applies:

- they are on the same Internal Datalink;

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- they use the same Control Centre Identity Number for Long Line Link transmission;
- their Trackside Data Links are in close proximity (see SSI8500 Chapter D Section 8.2 (c));
- they are in the same scheme directory on the DWS;
- they are connected to the same TT; or
- they are connected to the same IECC.

For stageworks a CISR serial number shall be used as above, but additionally a letter shall be allocated to each stage for use in the serial number, e.g. 97-0005-07-A01 etc.

CISR numbers must not be changed once the CISR bearing that number has been created.

Where parallel versions of data exist, such as stagework data derived from the data of the final scheme, then where subsequent data changes affect both versions then new CISRs must be created for both to control and record the changes.

2.3 Title Blocks and Last Change Records

Each identity file and geographic data file shall have a standard title block incorporated at the beginning of the file. The standard title block should be added automatically whenever a new interlocking is created or a scheme copied. It includes Control Centre and scheme name, Interlocking mnemonic and title of data concerned. Details of the Design Office preparing the data shall be added.

At the end of each Identity file and geographic data file a Last Change Record (LCR) shall be maintained. When the data is initially prepared and each time the associated data is changed, an entry shall be made, referring to the intended CISR serial number, giving the necessary details of the changes and adding the Data Producer's name and date. These shall be cumulative. Entries will not be required in files unaffected by the data changes.

For databases an associated word processor file ("modification record") is provided and similar information to the above may be included in these files whenever the associated database has data added, changed or deleted. Additionally in the TFM schedules, the CISR serial number shall be added to the Reference field for each altered TFM. Where the scheme based databases (CI, IDL Telegrams and IDL Requests) are changed then the LCRs shall additionally have to list all Interlockings involved in particular changes and the last CISR serial number for each that the data was changed for.

There is no need for "Checked by" in the title block or LCR, as an inherent part of data version control is that the Data Checker does not alter computer held files. There is also no need for "Prepared by" in the title block, as these are catered for by the CISR.

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Picture files shall contain Control Centre name, Interlocking mnemonic, title of file, last-changed-for CISR serial number and the date it was last changed, on the top line in the left hand corner of the picture.

2.4 Version and Sub-version Numbers

Each of the five types of data in object code form (Interlocking, Panel Processor, Diagnostics, Simulator and Interface Processor) has an independent Version and Sub-version Number to identify which version it is. These numbers shall initially be set to zero. Following the commissioning of a version of object code the Version Number shall be incremented when the associated compiler next has to be run (immediately prior to CISR creation) following further source data changes, i.e. when object code changes commence in the process leading up to the commissioning of the next version of data.

To provide version control in between Version Number changes during the checking and testing of changed data, each time a compiler is run immediately prior to CISR creation and thus the object code concerned changed, the Sub-version Number shall be incremented. The Sub-version Number shall be reset to zero each time the Version Number is incremented.

The Version and Sub-version Numbers selected by the Data Producer are then embedded into the object code at the time of compilation from source data.

Once a version of Interlocking data has been installed in MMs, then, if this data is subsequently changed before it is commissioned, the Version Number of this data must be incremented before the data is commissioned.

2.5 Entry of CISR information by Data Producer

CISRs shall contain the information shown below. See Figure C1 for an example of a CISR as printed, before any post-printing entries.

Part I: Title Block

Pre-Printing: The first time the CISR is created for a given CI, the Control Centre (or Signal Box) name and Control Centre Identity Number are entered (see SSI8500D Section 8.5). A new CISR serial number shall be entered each time a new CISR is created. The system should already have all other pre-printing information that it requires, i.e. the scheme name as used on the system, the CI name (mnemonic form) and identity number, the range of CI identity numbers, the date/time of CISR creation and the serial number of the previously created CISR.

Post-Printing: The Data Producer's signed initials shall be added to the Producer box to indicate that the information in this section is correct.

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Part 2: Progress Record

Pre-Printing: A standard blank is provided as all information is added post-printing.

Post-Printing: In the first section, the reason for the new CISR shall be added so that it is immediately apparent why the data has been changed and what stage in the data process has been reached. Typical entries will be signalling changes, plus first time data preparation/changes or error correction following first data check or error correction following second DWS test, etc. If the data preparation/changes are incomplete then this shall be stated. The Data Producer's signed initials and the current date shall be added. In the second section, the Data Producer's signed initials and current date shall be added to indicate that the listed items have been complied with.

Part 3: Version Details and Production/Checking Record

Pre-Printing: The system already has all pre-printing information that it requires.

Post-Printing: The Data Producer's signed initials shall be added to the Producer box, for each item that has been changed, to indicate that the information in that item is correct. For unchanged items N/C shall be added.

Part 4: Non Scheme Specific Source Documents

Pre-Printing: Details of the Issues of the SSI Applications Manual Contents document (or individual issues of SSI8003, SSI8500, SSI8505) and the Signalling Design Handbook used in the preparation of the current version of data shall be entered.

Post-Printing: The Data Producer's signed initials shall be added to the Producer box to indicate that data has been prepared/changed and producer check done in accordance with the issues of the documents listed.

Part 5: Scheme Specific Source Documents

It is expected that where any of these items consist of a large number of pages then a summary sheet forming part of the item and listing all pages and their issues will be provided. The issue of this sheet can then in turn be referred to in the CISR, instead of having to include a long list of individual pages and their issues.

Pre-Printing: The numbers and issues of the documents listed shall be entered. "Other documents" shall summarise lists of error logs raised during data checking and lists of fault logs raised during