Non Half Hourly Data Aggregation (NHHDA) Technical Specification

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Non Half Hourly Data Aggregation (NHHDA)

Technical Specification

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Approved by (Cognizant)	:	Project Manager

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1 Introduction

1.1 Purpose

This document [NTSPEC] is the Technical Specification of the NHHDA system.

1.2 Scope

This document forms part of the deliverable output from the physical design stage.

1.3 Structure of Document

This document is based on the structure for a Technical Specification defined in [PDTSPD].

1.4 Amendment History

Version	Details
0.100	First draft, minus sections affected by LCR030.
0.900	Issued for internal review
0.990	Addresses comments raised from Internal Review. Issued to the Pool for APP.
0.991	Inclusion of sections affected by LCR030. Submitted for internal review.
0.992	Addresses comments raised from Internal Review. Issued to the Pool for APP.
0.993	Addresses Pool APP comments dated 2/4/97.
0.994	Addresses comments from Logica Technical Manager review.
1.000	Definitive release
1.001	Updated to reflect design changes made during development.
1.200	Updated to reflect the following: Clarifications: CLAR077; CLAR078; CLAR079; CLAR080; CLAR081; CLAR082; CLAR084; CLAR085; CLAR087; CLAR088; CLAR092; CLAR093; CLAR096; CLAR101; CLAR103; CLAR109; CLAR110; CLAR112; CLAR114 Pool defects: 10; 17; 23; 24; 27; 43; 55; 107; 113; 128; 163; 195; 197; 201; 396; 501; 502; 549; 551; 654; 753; 802; 817; 819; 875; 881; 919; 1005; 1055; 1057; 1099 Change requests LCR055 Factory Acceptance Test observation reports: R0.2/7; R0.2/16; R0.2/24; R0.2/34; R0.2/37; R0.2/41; R0.2/49; R0.2/54; R0.2/55; R0.2/67; R0.2/73; R0.2/74; R0.2/77; R0.2/78; R0.2/79; R0.2/81; R0.2/102; R0.2/109; R0.2/124; R0.2/152; R0.2/153; R0.2/160; R0.2/161; R0.2/177; R0.2/180; R0.2/205; R0.2/206; R0.2/227; R0.2/230; R0.2/233; R0.2/245; R0.2/246; R0.2/247; R0.2/248; R0.2/249; R0.2/

Version	Details
	254; R0.2/263; R0.2/270; R0.2/271; R0.2/272; R0.2/273; R0.2/274; R0.3/2 Performance Test observation reports: 21; 2/2 Logica internal observation reports: 212; 249; 275; 291; 297; 316; 327; 336; 344; 345; 361; 366; 378; 380; 381; 382; 385; 400; 407; 409; 423; 456; 457; 463; 478; 585; 610; 717; 751; 919; 2088
2.000	Addressed review comments and Pool defects 404, 1184 and 1230
2.001	Defect 818 (OR 2226/CR94/LCR24) update SECO domain values OR 1546 participant & role in L0037 should be null CLAR113 instruction report INR record definition CLAR113 (OR2384) additional data separators OR 2248 archive rules incomplete OR 2262 ndb_ms_*_dets flag descriptions inaccurate OR2292 remove references to Oracle clusters; update detail in NCD processing LCR75 (CR455, OR2351) Refresh processing unit of work changed to metering system LCR80 (CR422, OR2353) Dispute settlement code LCR82 (CR492, OR2369) performance changes OR2344 – instruction validation OR2370 – removal of columns from ndb_metering_sys Defect 1485 (OR2380) instruction validation Defect 1472 (OR2382) instruction validation OR2398 – manage instruction files form spelling checked and corrected throughout
2.100	OR2434 (Pool defect 1500) Data Collector Appointment appointments are calendar date not settlement date based OR2448 (Pool defects 1427, 1430, 1434, 1435, 1436, 1437, 1438, 1429, 1440, 1442, 1444, 1507) Manage Refresh – fields moved & sorting changed. OR2444 (LCR092 CR487) Researched Average EAC now called Default EAC in documentation only OR2455 spmatrix data is *not* deleted at end of aggregation processing Pool Defect 1359
2.500	Incorporating Internal Review Comments. Draft issue for external review consistent with software release R1.2 CR468 (index changes for performance) Pool defect 817 – changes to cdb_system_parameter values Pool defect 1464 – aggregation exception log ‘to’ corrected
3.000	Address Pool comments consistent with release 1.3

Version	Details
	Authorised Version
3.990	OR2837 – Fix and merge design documentation NHHDA Release 4.0.0 changes: SIR R419 / LCR021/3 – Consistency of Supplier Reporting Requirements from Data Aggregation SIR R576 / LCR106 – ISR Agent Calendar/Timetable SIR R654 / LCR114 – NHHDA Document/Software Inconsistency NHHDA Release 5.0.0 changes (including LCR148): SIR R529 / LCR094/3 – Exception handling for Full PRS Refresh SIR R709 / LCR103/2 – Metering System Data in PRS and NHHDC SIR R391 / LCR105 – Operational Improvements to NHHDA SIR R692 / LCR107 – Data Aggregation – Zero AA while de-energised SIR R715 / LCR109 – Automatic Loading of MDD SIR R716 / LCR110 – VSCPCs in GSP Groups SIR R575 / LCR112 – Instruction Processing – Apply Logic SIR R991 / LCR116 – NHHDA Aggregation Robustness SIR R295 / LCR124/2 – Predictable Outputs from NHHDA SIR R1528 / LCR127/2 – NHHDA Manage Failed Instructions Operability SIR R716 / LCR146 – Amend Instruction Failure Reason Code SIR R991 / LCR148 – Amend A12 Aggregation Exception Code Issued to the Pool for review
3.991	LCR146 Instruction Failure Reason Code NNA message changed. OR2873 (Pool defect 168) Remove non-existent warning messages for MDD changes.
3.992	OR2886 (Pool Defect 217) Add record into MS History file. OR2893 Added ‘Z’ consumption type for aggregation audit log. OR2901 Added AFYC Effective To Date to SSC and Associated Items Report. OR2906 Added L0042001 filetype to FTOT domain in cdb_ref_values Incorporating Pool review comments Moved Description, Form Structure, Action on…Form Query/Button Display/Button Print in Section ‘Select Reports’ from CTSPEC to NTSPEC Amended ‘A12 – Exception Details’ in line with

Version	Details
	LCR148 OR2898 – New exception added for MDD complete set file load. OR2711/LCR081 – Discrepancy between DTC / Technical Specification and Software for D0095001 Issued to Pool for Review
3.999	Incorporating Pool Review comments Issued to Pool for review
3.999a	Incorporating Pool Review comments Incorporating changes for Pool reference: 329SCL01
4.000	Authorised Version. URS Baseline updated in line with CCN095.
4.001	OR2953 – Addition of MDD Load Window OR2894 – Files are processed when there are additional fields
4.002	LCR149/2 – Empty Supplier Purchase Matrices change
4.003	LCR152/3 – Altering Check Data Collector processing.
4.004	Incorporating Pool Review comments Issued to Pool for review
4.005	Incorporating Pool Review comments
4.006	LCR157 – Inclusion Of AFYCs in NHHDA Aggregation Robustness.
4.007	Incorporating Pool Review comments.
4.990	Issued to Pool for review.
5.000	Authorised version
5.001	Incorporating OR2971 – correction of meanings of instruction state reason error codes
5.002	–LCR170/2 Upgrade to Oracle 8.1.6 Incorporating OR 3018 altering exception record sequence. Incorporating OR 3044 adding new exception code for invalid EAC/AA values in D0019s.
5.003	Incorporating Pool review comments
5.004	LCR143/2 – NHHDA Check Data Collector Operability Improvements and LCR169 – Management of Failed Instructions by NHHDA
5.005	Incorporating Pool review comments
5.006	Incorporating additional Pool review comment
5.007	Amended in line with further Logical Design changes for LCR169 – Management of Failed Instructions by NHHDA. Incorporated change for OR3082 - Instruction Status Reasons are only selected for inclusion in the file to be returned to the originator if their Aggregator Action State is set to a value.
5.008	Incorporating Pool review comments

Version	Details
5.009	Incorporating Pool review comments, OR3118 – Updating the copyright notice
5.010	Change to Office 2000
5.011	Changes relating to ELEXON superseding The Electricity Pool
6.000	Made definitive
6.001	Updated for OR 2961, OR3106, OR3203, OR3208, OR3166, OR3213, OR3214 Updated document references and copyright notice Updated designer 2000 to designer 6i
6.990	Version for ELEXON review
6.991	Updated for OR3214
6.992	Incorporating ELEXON review comments Updated for OR3226
6.993	Incorporating ELEXON review comments
6.994	Incorporating ELEXON review comments
7.000	Authorised version.
7.001	Update document template
7.002	Changes for P62
7.003	Updated following comments from internal review
7.004	Changes for LCR207
7.005	Updated with comments from internal review
7.006	Updated following review of P62 code
7.007	Changes for LCR207/2
7.008	Updated for OR3283
7.009	Updated for OR3309
7.010	Changes for LCR215/3 Updated for OR3310
7.011	Updated for OR3312 Updated for OR3314 Updated for OR3259
7.012	Updated for OR3311
7.990	Update for OR3327 Version for ELEXON review
7.991	Updated from ELEXON review
7.992	Updated further comments from ELEXON
8.000	Authorised version
8.001	Updated for P81
8.002	Updated following internal review.
8.003	Updated from ELEXON's review
9.000	Made definitive
9.001	Updated LCR225 – Upgrade of NHHDA and EAC/AA software applications to Oracle 9i
9.990	Version for ELEXON review

Version	Details
9.991	Applied ELEXON review comments
10.000	Authorised version
10.001	Updated for LCR218 BETTA and OR3413
10.990	Issued to ELEXON for review
10.991	Applied ELEXON review comments
11.000	Authorised version
12.000	Updating document references
12.001	Updating with LCR220
12.002	Updated after internal review
12.003	Applied ELEXON review comments
12.004	Additional changes for LCR220
12.005	Updated for CP1001, CP1006 and CP1016. Issued to ELEXON for review.
12.006	Further updates post review workshop on 13 Oct.
12.007	Additional amendments. Issued to ELEXON for review.
12.008	Added further amendments. Issued to ELEXON for review.
12.009	Include updated screenshots for enhanced screens.
12.010	Final updates added. Issued to ELEXON.
13.000	Authorised version.
13.001	Include updates from section 3.1.2 November 04 Release Errata7P9.0.doc
13.990	Updated for February 06 Release DCRs: CP933– Management of System Security CP965– Superfluous reporting of D0095 E08-E14 exceptions combined with an E01 exception CP1047 – Warning message to highlight when no Grid Supply Point (GSP) Groups are selected for a Non Half-Hourly Data Aggregation run CP1089 – Inappropriate “dual reporting” of E03/E04 exceptions on the Non Half Hourly Data Aggregation Report (D0095)
14.000	Authorised version.
14.990	Updated for November 06 Release DCRs: CP1117 upgrade of NHHDA to Oracle 10g
14.991	Updated to re-introduce print button details
14.992	Updated from internal review
15.000	Authorised version
15.990	Updated for February 08 Release DCRs: OR3659 HD064195 Removal of Ad Hoc Reports Menu Option OR3716 HD063951 Archiving of Instruction Data OR3728 HD064249 “Source” misspelt on Reports Instruction screen
15.991	Incorporating internal review comments.

Version	Details
16.000	Authorised version
16.990	Updated for February 09 Release DCRs: CP1205 – D0095 reporting of immaterial superfluous consumption; CP1206 – D0095 reporting of immaterial supplier inconsistencies; CP1207- D0095 reporting in respect of past NHHDCs; P222 – Provision of EAC Data to Distributors.
17.000	Authorised version
17.010	Updated document classification
17.011	Include corrections about calculation of the AA percentages displayed on Browse Aggregation Files; INC000000273656.
17.012	Address review comments.
18.000	Definitive version.
18.1	—November 11 Release: P253
18.2	P253: Updated with Elexon Review comments
18.5	Updated review comments for November 11 Release: P253
19.0	P253 Final version
20.0	CP1383 - Updated for Tech Upgrade (Oracle DB upgrade from 10.2.0.3 to 11.2.0.3 and OAS upgrade from 10.1.2.2 to 11.1.1.6)
20.1	Updated for CP1408 implementation to include the boundary value validation for EAC and AA values
20.2	Incorporated the ELEXON's review comment

1.5 Summary of Changes

Changes as indicated in the amendment history.

1.6 Changes Forecast

Agreed Change Requests will be incorporated.

1.7 References

Mnemonic	Information	Details
[CTSPEC]	Title: Author:	Common Subsystems Technical Specification Cognizant Technology Solutions
[DIS]	Title: Author:	SVA Data Catalogue Volume 1: Data interfaces Cognizant Technology Solutions
[NHHDAURS]	Title: Author:	NHHDA User Requirements Specification ELEXON
[NCONMOD]	Title: Author:	NHHDA Conceptual Process Model Cognizant Technology Solutions
[NFUNDEF]	Title: Author:	NHHDA Function Definition and User Catalogue Cognizant Technology Solutions

Mnemonic	Information	Details
[NTSPEC]	Title: Author:	This document Cognizant Technology Solutions
[NLDATA]	Title: Author:	NHHDA Logical Data Design Cognizant Technology Solutions
[LDESPD]	Title: Author:	Physical Design Technical Specification Product Description Cognizant Technology Solutions
[TSYSARC]	Title: Author:	Technical System Architecture Cognizant Technology Solutions

1.8 Abbreviations

AA	Annualised Advance
BETTA	British Electricity Transmission and Trading Arrangements
COTS	Commercial off the Shelf
DC	Data Collector
DCP	DC Performance (Report)
EAC	Estimate of Annual Consumption
FTP	File Transfer Protocol
ISRA	Initial Settlement and Reconciliation Agency
LDSO	Licensed Distribution System Operator
NHHDA	Non Half Hourly Data Aggregator
POSIX	IEEE Portable Operating System Interface for Computing Environments
PRS	PES Registration Service
SPM	Supplier Purchase Matrix
URS	User Requirement Specification, e.g.: [NHHDAURS]

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2 High level design specification

2.1 System Overview

The NHHDA system is responsible for carrying out aggregations of actual readings and predicted usage for metering systems. The aggregated results are sent to ISR Agents.

There are two main batch processing activities:

- Instruction Processing receives and validates files of instructions from PRS Agents and Data Collectors
- Aggregation produces the SPM output files and sends them to the ISR Agents.

Apart from these files, all data will be stored in an Oracle database and reports generated as required.

In addition, a batch process is provided to check the consistency of the Data Collector data against the PRS data. This allows for delays in data being received from the two sources.

The NHHDA system also provides an Oracle Application Server Forms Services user interface. This is used to change market domain data in the database, and schedule runs of the batch processes described above. The user interface also provides various options for reporting on data held on the NHHDA database.

2.2 System Architecture

The NHHDA system conforms to the System Architecture which is specified in Section 2.2 of [CTSPEC]. In summary, this comprises:

Server Tier Hosted on a server with a POSIX compliant Operating System, with an Oracle 11g database, and applications written in C and Shell scripts**.**

Middle Tier Either hosted on the same physical server as the Server Tier or else a separate physical server which may be running the same Sun Solaris as the Server Tier or else Microsoft Windows. The Middle Tier runs two components of Oracle Application Server Forms Services: the Forms Listener Servlet and the Forms Runtime Process.

Client Tier A PC running the Client component of Oracle Application Server Forms Services (but this is downloaded automatically from the Middle Tier to the client and does not need to be installed). The Operating System and Web Browser may be any that are supported by Oracle for use with Oracle Application Server.

The number of active clients is assumed to be in the order of 5-10. The software will only limit the number of clients according to the licensing restrictions of the COTS products.

All communications with external systems are via file transfer. NHHDA reads and writes files in specified directories. The Common processes described in [CTSPEC] will be used for reception and transmission of files.

Note that where the term "server" is used in this document, this is always referring to the Server Tier unless the phrase "Oracle Application Server" is specifically used. Similarly the term "NHHDA System" always refers to the components of NHHDA which run on the Server Tier.

2.3 System structure

The system structure for NHHDA is shown in the diagram below:

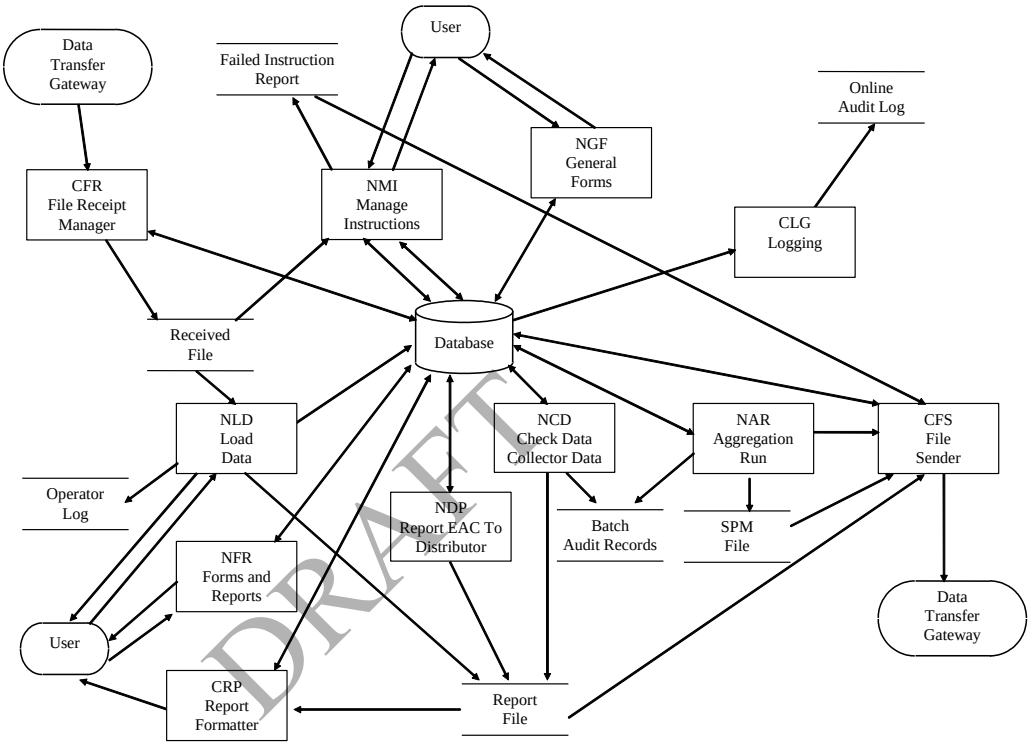


Figure 1: NHHDA System Overview

Each of the subsystems which make up the NHHDA system is shown as a rectangle. They are all given three letter abbreviations. Those beginning with 'N' are NHHDA specific; those beginning with 'C' are common and specified in [CTSPEC].

In addition to the subsystems shown, there are a number of underlying processes and libraries which provide services to the main subsystems. These are:

- CSL Server Library;
- CPH Process Harness;
- CFM Form Templates;
- CSC Scheduler.

The principal data flows and files are shown to set the subsystems into context.

2.4 Subsystem Descriptions

2.4.1 NAR Aggregation Run

This subsystem aggregates the EACs and AAs for each meter in the system with similar configurations. This will be done for a number of settlement dates simultaneously. The results will be written to files, which can subsequently be sent to ISR Agents.

The subsystem will also provide functionality to re-send aggregation result files on request. This will be initiated from an Oracle Form, as described in the User Interface section.

2.4.2 NCD Check Data Collector Data

The NCD subsystem performs checks on the metering system data stored in the database. This involves checks for consistency between data supplied by Data Collectors and PRS Agents, and checks on the EAC/AA data supplied by (potentially multiple) Data Collectors.

The results of this processing will be written to files, which will be automatically sent to the Supplier currently responsible for the meters which have incorrect data.

2.4.3 NMI Manage Instruction

The NMI Instruction Management Subsystem is responsible for validating and applying instruction files which have been received from Data Collectors and PRS Agents. A series of forms allow the Data Aggregator User to view instruction information, attempt reprocessing of failed instructions, return failed instructions to their Originator and to control the application of Refresh instructions from PRS Agents.

2.4.4 NLD Load Data

The Load Data File (NLD) subsystem enables the data contained in (data) files which have been recognised by the File Receipt (CFR) subsystem to be loaded into the database in batch. It also enables the user to modify and report on the Aggregation Run Schedule.

2.4.5 NGF General Forms

User interface forms. All forms are in English.

2.4.6 NFR Forms and Reports

Reports and supporting forms to generate them. All reports are in English.

2.4.7 NUA User Administration

The NUA subsystem allows System Manager users to list, add, edit and delete Oracle user accounts, and assign the users to the various user roles that are defined for NHHDA.

2.4.8 NDP Report On EAC Data To Distributors

The subsystem enables EAC consumption data along with metering system data to be reported to Distributors. The Metering Systems selected are those registered with the Distributor on the specified report date; which will be no more than a few days before the current day.

The results of this processing will be written to files, which can then be manually sent to Distributors.

2.5 Main Control flows

The main control flows for the NHHDA system are:

- File Arrival. The CFR subsystem will detect the arrival of files in the appropriate directories, allocate unique identifiers for the files and record on the database their presence.
- CSC Initiation. The common CSC Scheduler subsystem runs continuously on the system, and triggers other subsystems at times specified in the corresponding database table.
- User Actions. The user will request file processing and report generation to take place.

In addition, the following Oracle alerts may be generated:

- CSC_TERMINATE_ALERT;
- CSC_UPDATE_ALERT;
- CFS_EXPORT_ALERT.

These are described in [CTSPEC].

2.6 User Interface overview

2.6.1 PC Based Client

The forms software consists of an Oracle Applications Server Forms Services application plus a web browser. The user will invoke the application from the web browser (or directly using a Windows shortcut), and will be asked to log in using a username and password.

The application uses this information to tailor the displayed menu bar according to that user's role, as defined in the database.

The look and feel of the interface is defined by the CFM Form Template subsystem in [CTSPEC].

2.6.2 Reports

The NHHDA subsystems produce the following reports:

- Extracts from DC data exceptions;
- Extracts from Supplier Purchase Matrix files;
- Extracts from Aggregation exceptions;
- Extracts from Market Domain Data Load exceptions;
- Load Timetable exceptions;
- Failed instructions;
- Average Fraction of Yearly Consumption;
- Data Aggregation Run Schedule;
- GSP Groups;

- Distributors and Associated Items;
- Metering System and Associated Items;
- Metering System History, EACs and AAs;
- SSC and Associated Items;
- Profiles Class and Associated Items;
- DC Performance Report;
- EAC To Distributor Exceptions.

These are all produced in a standard machine-readable format. This can subsequently be processed by the CRP Report Formatter subsystem to produce human-readable versions. The CRP processing is controlled by report format definitions held in the database.

All reports will be generated on the server. Human readable versions will be displayed to the user using the client interface, and will conform to the templates described below.

A standard report template is provided. This is described in Section 10.2.

2.6.3 Server

The server will allow the standard POSIX functions to be used for system management and searching audit logs. Access to these functions will be controlled by the COTS Operating System functions provided with the server.

2.7 Database Overview

2.7.1 Overall Database Structure

NHHDA holds data in a local file store and in an Oracle database.

The local file store holds:

- Instruction Files and Data Files received by NHHDA from other systems;
- Data Files generated by NHHDA to send to other systems;
- Report Files generated by NHHDA.

All Files are archived to tape after use.

The Oracle database is populated and updated with data received in the incoming Data and Instruction Files. Most of the data is time-based, in that it only applies to Data Aggregation Runs for a certain range of Settlement Dates. This data is retained in the system until all the Data Aggregation Runs to which it relates have been completed and then archived and deleted from the database. The period of retention of data is a configurable parameter.

The Oracle database is also used to hold one temporary table, the Supplier Purchase Matrix, as it is being built up in a Data Aggregation Run. Once the run is complete, the matrix is written to an outgoing Data File, and this database table is deleted without being archived.

All archived data is retained on tape for a significant period (as advised by ELEXON on behalf of the Settlement process and further extended due to other external business considerations) and it may be restored during this time. Oracle data is restored to a separate restored data database, not the live system database

The split of files across physical discs will depend on the number of discs available at each NHHDA Installation.

2.7.2 Oracle Database: Major Design Decisions

This section summarises areas where the physical database design has diverged from the logical design to improve performance. It includes the discussion of the use of table partitioning.

Details on all tables are given in Chapter 4, except for those tables which are used by those subsystems which are common to NHHDA and ISRA; these are defined in [CTSPEC].

2.7.2.1 Merging of Logical Entities

In most cases, there is a 1:1 correspondence between entities in the logical design and database tables in the physical design. However some tables have been merged together to improve performance by reducing the number of database reads. Summary information on what has been done is given in this section. Details of the tables are given in Chapter 4.

In particular, this affects the link entities between Metering System and other entities. In the logical design, each of these link entities has its own Effective From Settlement Date, which gives the Settlement Date from which the data in the link entity is effective. The link entities may be split into two groups: one in which Metering System is linked with data obtained from the PRS Agent and one in which Metering System is linked with data obtained from a Data Collector. For each of these groups, all the entities in the group have been combined into one database table. The table has one Effective From Settlement Date; each time the value of one of the data items in the table changes, a new row of the table is generated. Each row contains a flag for each data item to indicate whether it changes on this Settlement Date.

Also two entities which had the same primary key have been merged: Estimated Annual Consumption (DC) and Meter Advance Consumption (DC). Further there is no physical requirement to store their common master entity Settlement Register (DC) as a table, so the merged table has the foreign keys of Settlement Register (DC).

The logical table Valid Measurement Profile Class has not been implemented in the physical database as there is no direct reference to it - the two tables (ndb_spmatrix and ndb_av_frac_y_cons) have parents of ndb_measure_reqs and ndb_vsscpcs which have the same effect.

The following table summarises which entities have been merged:

Logical Entity	Database Table

Logical Entity	Database Table
Metering System Energisation Status Metering System GSP Group Metering System Line Loss Factor Class Metering System Measurement Class Metering System Profile Class Settlement Configuration	ndb_ms_prs_dets
Metering System Energisation Status (DC) Metering System GSP Group (DC) Metering System Measurement Class (DC) Metering System Profile Class (DC) Registration (DC) Settlement Configuration (DC)	ndb_ms_dc_dets
Estimated Annual Consumption (DC) Meter Advance Consumption (DC) Settlement Register (DC)	ndb_register_cons

2.7.2.2 Lists of Valid Values

As is common practice in physical database design, lists of valid values of various columns are all combined into one table, to avoid the proliferation of small tables. Each set of values is called a domain. Two tables are defined to hold the information: cdb_ref_domains holds a record for each domain and cdb_ref_values holds a record for each value. A domain is defined for each column which has an inclusive fixed set of valid values, for example Instruction Status.

Most of the domains were not defined as entities in the logical design. However, the following entities were and have been absorbed into cdb_ref_domains/cdb_ref_values:

- Energisation Status;
- Instruction Type;
- Measurement Class;
- Market Participant Role.

2.7.2.3 Other Tables with no Equivalent Entity

Additional Tables are required to support the physical implementation of the system, for example to control the scheduling of batch runs and the generation of reports. These are listed in chapter 4 and defined in [CTSPEC].

Also the table ndb_ms_exceptions, which holds information on exceptions recorded against Metering Systems, has no equivalent logical entity. It is defined to improve the efficiency of the Check Data Collector subsystem.

2.7.2.4 Extra Columns added to Improve Performance

In some cases, de-normalisation to improve performance has taken the form of maintaining extra columns in tables, duplicating data which could have been obtained anyway, but in a less efficient way.

2.7.2.5 Use of Oracle Clusters

Oracle Clusters are not used in NHHDA.

2.7.2.6 Use of Partitions and Views

For very big tables, searches on the table become inefficient, even when the table is indexed. The largest tables in NHHDA are the eight tables holding details of Metering Systems. NHHDA must be designed to handle up to 10,000,000 Metering Systems, which would mean an estimated 188,000,000 database records in ndb_register_cons.

To improve the performance for cases like this, the design splits such tables into several parts, with a view of the union of these tables. Thus ndb_metering_sys is split into ndb_metering_sys_1, ndb_metering_sys_2, etc., but it is still possible for a function to do a select specifying the view name ndb_metering_sys (without the suffix), and Oracle searches each of the underlying tables. Within the NHHDA application this is called partitioning. All eight tables holding details of Metering Systems are partitioned.

To determine in which partition a metering system is placed, a database package is invoked passing in the Metering System Id and returning a partition number. The function simply adds together all the digits of the Metering System Id, divides by the number of partitions and returns the remainder +1 to give partition numbers in the range 1 to number of partitions.

NHHDA is designed so that the number of partitions is configurable. Each installation of NHHDA will have an appropriate number of partitions for the number of Metering Systems in the database. If the number of partitions is changed, the placement of existing metering systems will be wrong.

2.7.2.7 Distribution of Tables over Tablespaces and Discs

The assignment of tables to tablespaces, and tablespaces to discs, is not specified in this document as the latter may vary for each installation of NHHDA depending on the target hardware and the size of the system at that installation.

For the partitioned tables, each partition is assigned to its own tablespace. This will improve the performance of concurrent access to the eight tables in the Data Aggregation Run subsystem. Index and Data are separated into different tablespaces; ndb_instructions and ndb_instruction_status_reason tables have their own pair of tablespaces as they are high volume and benefit from the isolation.

2.8 Fallback, Backup and Recovery

The backup policy will ensure that a copy of the database and all external input and output files on the system have been written on backup media after each working day. This forms a complete record of the system state.

The CLG Logging subsystem will be activated before backing up, to dump the database audit records to a file. This file and all other audit and log files will also be backed up, to record the day's actions. These files will be deleted after being backed up.

The backup will be used as the archive and the audit record, and each day's full backup will be held for a specified period (typically seven years) from the date when the backup was done. The individual archive policy for each database table is detailed in Section 4.

The software versions used on the system will be recorded as part of the backup mechanism. The software will be backed up as part of a special complete backup, to be performed after installation or modification of the software.

The backup media will allow the system to be restored to a duplicate system, for disaster recovery at a second site or for auditing purposes.

Within the applications, the facilities provided by the Oracle database to roll back transactions will be used to handle failures. Each subsystem provides details of the rollback and recovery strategy to be employed in the case of controlled and uncontrolled system shutdowns.

2.9 Error Handling

The common approach for error handling described in [CTSPEC] is applied to the NHHDA system. Specific details are given in the individual subsystem sections of this document.

2.10 Security

The use of the NHHDA system is controlled to ensure that only authorised users are granted access to the system. The general principles for controlling access are described in [CTSPEC].

On the server, password-protected accounts and file protection will be used to ensure that users can only run functions which their role allows.

On the clients, the Oracle database will contain grant privileges associated with each database account, to control function access by user role.

The activities allowed for each role are described in [NFUNDEF], and further detailed in Section 4.

2.11 Operational design

The main daily activities on the system are:

- user access;
- backup;
- batch processing.

The batch processes to load data, manage instructions, aggregate data and check data will cause conflicting accesses to the database tables, and must run separately. They will also conflict with on-line accesses through the Forms interface. Hence they are scheduled to run outside the user access period. A simple executable will be used to add entries on the schedule queue. This will be invoked on a daily basis by placing entries in crontab.

The common CSC Scheduler queuing subsystem will be used to ensure that conflicting subsystems do not run simultaneously.

The operational schedule is defined in terms of acceptable running order; the timetable for the runs can be manipulated to change the initiation times. The provisional daily order of processing is:

- NGF, NFR, NMI (on-line processing) - working hours only;
- CLG Unload Audit;
- Database shutdown, and start-up in restricted mode;
- NLD Load Data;
- NMI Manage Instructions (batch processing only);
- NAR Aggregation Run (if runs requested);
- NCD Check DC Data
- Database shutdown, backup and start-up in normal mode;
- Archive data deletion (if required);

The NCD processing will be scheduled to run every night, in order to update the stored exceptions table. It will additionally generate output files every two weeks on average, typically at weekends or during nights with few Aggregation runs scheduled.

The deletion of expired, archived data need not be run on a daily basis, but is shown to indicate where it should be done if required.

The Oracle database may also require maintenance. This will typically be done at weekends.

This schedule ensures that aggregation is always done with the latest data. It also ensures that the critical activities for the settlement timetable (instruction processing, data loading and aggregation) are completed first.

2.12 Startup and shutdown

The following programs are supplied to start and stop the server processes and to submit jobs to the activity queues

2.12.1 nhhda_start

This script starts the server background processes:

- cscd - scheduler subsystem
- clgd - logging subsystem
- cfrd - file receipt subsystem
- cfsd - file send subsystem

The script assumes that the database is already running.

2.12.2 nhhda_stop

This script shuts down the server background processes. In addition to the subsystems explicitly started by nhhda_start, any processes running under the control of the scheduler are also stopped.

2.12.3 nhh_submit.exe

This program is used to submit activities. Its usage is as follows:

```
nhh_submit.exe [-v|-s|-w] job-type [@when] [-flag [-flag] ...]
    [job-type [@when] [-flag]] ...
```

[] indicates optional parameters

- nhh_submit.exe program parameters

  ```
  -v =  verbose
  -s =  silent
  -w =  wait
  ```

  In verbose mode, a confirmation message is output indicating the activity id of the submitted activity, the activity type and the scheduled run time.

  In silent mode, no output is produced.

  In wait mode the program waits for the activity to complete and exits with the activity exit status if this is non-zero

  The default mode is silent.

  Example message:

  ```
  Activity (ID 9446) Instruction Loading/Processing
  scheduled to start at 19-NOV-1997 09:41
  ```

- Job type

  ```
  a = Aggregation
  c = Check Data Collector Data
  i = Instruction Loading/Processing
  d = Data Loading
  x = Archive
  u = Unload audit data
  ```

  Further details on the processing carried out by these activities may be found in sections

  - 5 (NAR Aggregation Run Subsystem Specification),
  - 6 (NCD Check Data Collector Data Subsystem Specification),
  - 7 (NMI Manage Instructions Subsystem Specification),
  - 8 (NLD Load Data Subsystem Specification),
  - 4.5 (Archive),
  - 4.4 (Audit Logs)

- Run time

  ```
  @when
  ```

  Optional specification of time when job is to be run. This parameter must have 4 digits, and takes the form HHMM.

  - If the current time of day is before HHMM then the scheduled time is calculated as Today 00:00 + HH hours + MM minutes.
  - If the current time of day is after HHMM then the scheduled time is calculated as Tomorrow 00:00 + HH hours + MM minutes

If no time is specified, the scheduled time is system time.

- Parameters - optional

  `-flag`
  The value flag (without the '-') will be passed as a parameter to the activity.

  If the activity expects a parameter starting with '-' then use two:

  `--flag`
  All activities will run without any parameters being passed.

  Aggregation accepts the following parameters:

  - run date

    This specifies which runs are to be started. It is ignored if the recovery mode is not START.

    `NOW`
    Use the current system date as the run date - any runs scheduled for today or earlier which have a status of 'Released' will be attempted.

    This is the default if no parameters are specified.

    `TONIGHT`
    If the current system time is before midday, use the current system date as the run date.

    If the current system time is after midday, use the current system date +_1 as the run date.

    Any runs scheduled for tonight or earlier which have a status of 'Released' will be attempted.

    This option allows aggregation to be scheduled to run in the evening without having to consider whether the actual run time is before or after midnight - If today is day 1 and the activity starts before midnight, the run date is tomorrow i.e. day 2 and all runs due on or before day 2 are included; if the activity starts after midnight the current day is now day 2, and the run date is today - i.e. day 2 again.

    `YYYYMMDD`
    All runs scheduled on or before DD/MM/YYYY are included. This option may be used, for example, in exception conditions where only yesterday's runs are required.

  - recovery mode

    `START`
    Carry out ABORT processing and then start new runs according to the run date.

    This is the default if no recovery mode is specified.

    `RESTART`
    Identify any aggregation runs with a status of 'Running'. Remove any incomplete data / files created by previous

aggregation processing and start processing them from the beginning

CONTINUE
Identify any aggregation runs with a status of 'Running'. Identify which phase of processing did not complete. Remove any data / files created by the current phase and start processing them from that phase

ABORT
Identify any aggregation runs with a status of 'Running'. Remove any incomplete data / files created by previous aggregation processing. Update the status of all such runs to 'Failed'.

Data Loading accepts the following parameters:

- Reprocess Data Aggregation and Settlements Timetable File

  REPROCESS_DAST
  Reprocess the last DAST data file successfully processed by NHHDA before processing any newly received DAST files.

- Validate and Apply MDD

  APPLY_MDD
  This parameter will load the Market Domain Data Complete Set File and Apply the changes to the database, if and only if, no Medium or High Level Exceptions have been raised (refer to function definition N0036 [NFUNDEF] section 'Validate and Apply').

  By default the Load will be run in 'Validate Only' mode (refer to function definition N0036 [NFUNDEF] section 'Validate Only').

- Reprocess Market Domain Data Complete Set

  REPROCESS_MDD
  This parameter will reprocess the last Market Domain Data Complete Set File where the status of the file is 'Processed'. Unless the 'APPLY_MDD' (Validate and Apply) is also specified, the reprocessing of the file will be processed in default 'Validate Only' mode.

3 Interface specification

3.1 External interfaces

3.1.1 General

The external interface to the NHHDA System is file and user driven. The contents of external files follow the general File formats given in the Common Subsystem Technical Specification [CTSPEC]. In addition there will be operator, error and audit log files. The detailed format of these is described in [CTSPEC]. The detailed format of Instruction and Data Files is described in this section. Each externally distributed NHHDA report is listed in this section, cross-referenced to the appropriate subsystem and to its machine-readable and human-readable report specifications.

If the file received contains extra fields, appended to the end of a record and those fields are not documented in the following section, NHHDA will ignore the additional fields during processing.

The following external files are handled by the NHHDA System:

File Type	File Description	Processed by Subsystem
D0286001	Data Aggregation and Settlements Timetable File	NLD
D0269002	Market Domain Data Complete Set	NLD
D0019001	Data Collector Instructions	NMI
D0209001	PRS Instructions	NMI

The following external files are created by the NHHDA System:

File Type	Report Title	Generated by Subsystem
D0095001	Data Collector Exceptions	NCD
D0041001	Supplier Purchase Matrix File	NAR
D0023001	Failed Instructions	NMI
P0147001	Monthly D0095 Report	NFR
P0222001	EAC To Distributor Data	NDP

The repeating structure of each file is shown using Backus-Naur Form as described in [CTSPEC].

The format decimal (n,d) means n digits of which d appear after the decimal point.

3.1.2 Data Aggregation and Settlements Timetable File

3.1.2.1 File Specification

The file may contain a number of record types intended for other organisations. These should be ignored. The only record types which are of interest to NHHDA are the following:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= D0286001
3	From Role Code	text(1)	= U
4	From Participant Id	text(4)	Id of the Pool Market Domain Data Agent originating file
5	To Role Code	text(1)	= B
6	To Participant Id	text(4)	Id of NHHDA receiving file
7	Creation Time	date/time	Time of file generation

TTH - Timetable Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= TTH
2	First Payment Date	date	first Payment Date covered by the timetable
3	Last Payment Date	date	last Payment Date covered by the timetable

PST - Pool Settlement Timetable Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= PST
2	Settlement Code	text(2)	mandatory
3	Settlement Date	date	mandatory
4	Payment Date	date	mandatory
5	ISR Notification Deadline Date	date	mandatory
6	Planned Data Aggregation Run Date	date	mandatory
7	Planned SSR Run Date	date	optional

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
3	Checksum	integer(10)	

Repeating structure of File:

```
Data Aggregation and Settlements Timetable ::= ZHD TTH {PST}
ZPT
```

Sorting:

The records in the file are sorted by:

1. Payment Date (ascending).
2. Settlement Date (ascending).

3.1.2.2 Frequency/Volume

A typical Data Aggregation and Settlements Timetable data file will contain at least one and up to five (but usually not more than four) PST records for each Settlement Date with an associated Payment Date within the Payment Date range specified by the TTH record. This range will usually be one year in duration. There will normally be 1825 (5 * 365) PST records in each DAST data file. If the period covered by a DAST data file is more or less than one year, the number of PST records will vary accordingly.

3.1.2.3 Failure/Recovery Mechanisms

The processing of the whole file is a success unit. This is described in the NLD Load Data Subsystem Specification.

3.1.3 Pool Market Domain Data File

3.1.3.1 File Specification

The Market Domain Data Complete Set file will contain a number of record types intended for other organisations. The only record types which are of interest to NHHDA are the following:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= D0269002
3	From Role Code	text(1)	= G
4	From Participant Id	text(4)	Id of the Pool Market Domain Data Agent originating file
5	To Role Code	text(1)	= B
6	To Participant Id	text(4)	Id of NHHDA receiving file
7	Creation Time	date/time	Time of file generation

MDD - Market Domain Data Version Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= MDD
2	MDD Version Number	integer(8)	mandatory
3	MDD Publication Date	date	mandatory

THP - Threshold Parameter Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= THP
2	Threshold Parameter	integer(4)	mandatory
3	Effective From Settlement Date {TPAR}	date	mandatory

MAP - Market Participant Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= MAP
2	Market Participant Id	text(4)	mandatory
3	Market Participant Name	text(40)	mandatory
4	BSC Trading Party ID	text(4)	**ignored**

MPR - Market Participant Roles Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= MPR

MPR - Market Participant Roles Details			
2	Market Participant Role Code	text(1)	mandatory
3	Effective From Date {MPR}	date	mandatory
4	Effective to Date {MPR}	date	optional
5	Distributor Business ID	integer(2)	optional If Role Code is equal to Distributor then Distributor Business ID is required.
6	Postcode	text(10)	**ignored**

GSG - GSP Group Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= GSG
2	GSP Group ID	text(2)	mandatory
3	GSP Group Name	text(30)	mandatory

GGD - GSP/Distributor Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= GGD
2	Distributor ID	text(4)	mandatory
3	Market Participant Role Code	text(1)	mandatory
4	Effective From Date {MPR}	date	mandatory
5	Effective From Settlement Date {GGD}	date	mandatory
6	Effective To Settlement Date {GGD}	date	optional

PAA - PRS Agent Appointment Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= PAA
2	PRS Agent ID	text(4)	mandatory
3	Market Participant Role Code	text(1)	mandatory
4	Effective From Date {MPR}	date	mandatory
5	Effective From Date {PAA}	date	mandatory
6	Effective To Date {PAA}	date	optional

IAA - ISR Agent Appointment Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= IAA
2	ISR Agent ID	text(4)	mandatory
3	Market Participant Role Code	text(1)	mandatory
4	Effective From Date {MPR}	date	mandatory
5	Effective From Date {IAA}	date	mandatory
6	Effective To Date {IAA}	date	optional

LLF - Line Loss Factor Class Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= LLF
2	Distributor ID	text(4)	mandatory
3	Market Participant Role Code	text(1)	mandatory
4	Effective From Date {MPR}	date	mandatory
5	Line Loss Factor Class ID	integer(3)	mandatory
6	Line Loss Factor Class Description	text(30)	mandatory
7	MS Specific LLF Class Indicator	text(1)	Site Specific LLFCs are to be excluded (**ignored**)from the load. **Only load types A and C.** **A-General LLF Class Import** **C-General LLF Class Export**
8	Effective From Settlement Date {LLFC}	date	mandatory
9	Effective To Settlement Date {LLFC}	date	optional

PFC - Profile Class Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= PFC
2	Profile Class ID	integer(2)	mandatory
3	Profile Class Description	text(50)	mandatory
4	Switched Load Profile Class Indicator	boolean(1)	**ignored**

PFC - Profile Class Details			
5	Effective From Settlement Date {PCLA}	date	mandatory
6	Effective To Settlement Date {PCLA}	date	optional

TPD - Time Pattern Regime Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= TPD
2	GMT Indicator	text(1)	**ignored**
3	Time Pattern Regime ID	text(5)	mandatory
4	Tele-Switch / Clock Indicator	text(1)	**ignored**

SCI - Standard Settlement Configuration Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= SCI
2	Standard Settlement Configuration Id	text(4)	mandatory
3	Standard Settlement Configuration Description	text(50)	mandatory
4	Effective From Settlement Date {SSC}	date	mandatory
5	Effective To Settlement Date {SSC}	date	optional

TPR - Measurement Requirement			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= TPR
2	Time Pattern Regime Id	text(5)	mandatory

VSD - Valid Settlement Configuration Profile Class Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= VSD
2	Profile Class Id	integer(2)	mandatory
3	Effective From Settlement Date {VSCPC}	date	mandatory
4	Effective To Settlement Date {VSCPC}	date	optional

ASD - Average Fraction of Yearly Consumption Set Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ASD
2	GSP Group Id	text(2)	mandatory
3	Effective From Settlement Date {AFOYCS}	date	mandatory
4	Effective To Settlement Date {AFOYCS}	date	optional

AFD - Average Fraction of Yearly Consumption Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= AFD
2	Average Fraction of Yearly Consumption	decimal (7,6)	mandatory
3	Time Pattern Regime Id	text(5)	mandatory shows which TPR record is parent

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= **ZPT**
2	Record count	integer(10)	mandatory Number of records in the file, including headers and footer.
3	Checksum	integer(10)	mandatory

Repeating structure of File:

```
MDD File        ::=  ZHD MDD_set ZPT
MDD_set         ::=  MDD {THP}{MAP_set} {GSP_set} {LLF} {PFC}
                     {TPD}{SSC_set}
MAP_set         ::=  MAP {MPR}
GSP_set         ::=  GSG {GGD} {PAA} {IAA}
SSC_set         ::=  SCI {TPR} {VSD {ASD {AFD}}}

Note that for each SSC, each Measurement Requirement TPR
value will be contained in the corresponding AFYC set in the
AFD record.
```

Sorting:

There are no restrictions on the ordering of records in this file.

There should be no duplicate data items in the file. All such data items will be either ignored or trapped by error handling (Please refer to relevant data

item in Function Definition N0036 [NFUNDEF] for details on the handling of duplicate data).

3.1.3.2 Frequency/Volume

One file every two weeks. Based on average volumes of the logical entities, there will be:

Record Type	Number of Records
MDD	1
THP	2
MAP	150
MPR	262
GSG	14
GGD	28
PAA	28
IAA	28
LLF	2049
PFC	8
TPD	947
SCI	655
TPR	1037
VSD	1640
ASD	1704
AFD	3069
total	11622

3.1.3.3 Failure/Recovery Mechanisms

Each Market Domain Data Complete Set File is processed as a single success unit.

3.1.4 Supplier Purchase Matrix File

3.1.4.1 File Specification

There will be one File Header, which will contain:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= D0041001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA sending file
5	To Role Code	text(1)	= G or X
6	To Participant Id	text(4)	Id of ISR Agent or Supplier receiving file
7	Creation Time	date/time	Time of file generation

There will be one Data File Additional Header, which will contain:

ZPD - Data File Additional Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPD
2	Settlement Date	date	mandatory
3	Settlement Code	text(2)	mandatory
4	Run Type Code	text(2)	= D
5	Run Number	integer(7)	current version for Settlement Date, Settlement Code and GSP Group, starting at 1, multiplied by 1,000,000 and added to the internal Data Aggregation Run Number from which the file was produced
6	GSP Group	text(2)	mandatory

The Data Section of the file will contain the following record types:

SUP - Supplier Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= SUP
2	Supplier Id	text(4)	mandatory

SPM - Supplier Purchase Matrix Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= SPM
2	Profile Class Id	integer(2)	mandatory
3	Distributor Id	text(4)	mandatory
4	Line Loss Factor Class Id	integer(3)	mandatory
5	Standard Settlement Configuration Id	text(4)	mandatory
6	Time Pattern Regime Id	text(5)	mandatory
7	SPM Default EAC MSID Count	integer(8)	mandatory
8	SPM Default Unmetered MSID Count	integer(8)	mandatory
9	SPM Total AA MSID Count	integer(8)	mandatory
10	SPM Total Annualised Advance	decimal (14,4)	mandatory MWh
11	SPM Total EAC	decimal (14,4)	mandatory MWh
12	SPM Total EAC MSID Count	integer(8)	mandatory
13	SPM Total Unmetered Consumption	decimal (14,4)	mandatory MWh
14	SPM Total Unmetered MSID Count	integer(8)	mandatory

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	

Repeating structure of File:

```
Supplier Purchase Matrix     ::= ZHD ZPD { SUP SPM {SPM}} ZPT
```

Sorting:

The records in the file are sorted by:

1. Supplier Id
2. Distributor Id
3. Line Loss Factor Class Id
4. Standard Settlement Configuration Id
5. Time Pattern Regime Id
6. Profile Class Id.

3.1.4.2 Frequency/Volume

Assuming an average of 8 Aggregation Runs per day, 10,000 SPM records per run (based on sizes for ndb_spmatrix table), 15 GSP Groups and 5 active Suppliers per GSP Group:

For ISR Agents:

1 file per GSP Group

overall volume: 8 * 10,000 records = approx. 9 MB

number of files per working day: up to 8 * 15 = 120

For Suppliers:

1 file per active Supplier per GSP Group

overall volume: 8 * 10,000 records = approx. 9 MB

number of files per working day: up to 8 * 15 * 5 = 600

For all:

6 files per GSP Group

overall volume: ~9MB + ~9MB = ~18MB

number of files per working day: up to 120 + 600 = 720

3.1.4.3 Failure/Recovery Mechanisms

This is described in the Aggregation Run Subsystem Specification.

3.1.5 Data Collector Instructions

3.1.5.1 File Specification

The following record types appear in Data Collector instruction files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= D0019001
3	From Role Code	text(1)	= D
4	From Participant Id	text(4)	Id of the Data Collector sending file
5	To Role Code	text(1)	= B
6	To Participant Id	text(4)	Id of NHHDA receiving file
7	Creation Time	date/time	Time of file generation

ZPI - Instruction File Additional Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPI
2	File Sequence Number	integer(6)	

ZIN - Instruction Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZIN
2	Instruction Number	integer(12)	Instruction Sequence Numbers never wrap!
3	Type Code	text(4)	EAC/AA & MS Details
4	Metering System Id	integer(13)	
5	Market Role	text(1)	null
6	Participant Id	text(4)	null

ISD - Significant Date			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ISD
2	Significant Date	date	

AAH - Annualised Advance Set Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= AAH
2	Effective From Settlement Date	date	
3	Effective To Settlement Date	date	

AAD - Annualised Advance Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= AAD
2	Time Pattern Regime Id	text(5)	
3	Annualised Advance	decimal (14,1)	kWh

EAH - Estimated Annual Consumption Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EAH
2	Effective From Settlement Date	date	

EAD - Estimated Annual Consumption Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EAD
2	Time Pattern Regime Id	text(5)	
3	Estimated Annual Consumption	decimal (14,1)	kWh

REG - Registration Details (DC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= REG
2	Effective From Settlement Date	date	
3	Supplier Id	text(4)	

PSC - Profile Class/Standard Settlement Configuration			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= PSC
2	Effective From Settlement Date	date	
3	Profile Class Id	integer(2)	
4	Standard Settlement Configuration Id	text(4)	

IMC - Measurement Class (DC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= IMC
2	Effective From Settlement Date	date	
3	Measurement Class Id	text(1)	

GSP - GSP Group (DC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= GSP
2	Effective From Settlement Date	date	
3	GSP Group Id	text(2)	

IES - Energisation Status (DC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= IES
2	Effective From Settlement Date	date	
3	Energisation Status Id	text(1)	

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	

Repeating structure of File:

```
Data Collector File     ::= ZHD ZPI DC_instructions ZPT
DC_instructions         ::= EAC&AA_Set {EAC&AA_Set}
EAC&AA_Set              ::= ZIN ISD {AA_set} {EAC_set} MS_set
AA_set                  ::= AAH AAD {AAD}
EAC_set                 ::= EAH EAD {EAD}
MS_set                  ::= {REG} {PSC} {IMC} {GSP} {IES}
```

Sorting:

There are no restrictions on the order of Metering System Ids in the file.

3.1.5.2 Frequency/Volume

One file per day for each Data Collector that is appointed to a Metering System that the Data Aggregator is also appointed to (each Metering System appears in an average of 4 files per year).

3.1.5.3 Failure/Recovery Mechanisms

The processing of the instruction is a success unit. This is described in the NMI Manage Instructions Subsystem Specification.

3.1.6 PRS Instructions

3.1.6.1 File Specification

The following record types appear in PRS Agent instruction files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= D0209001
3	From Role Code	text(1)	= P
4	From Participant Id	text(4)	Id of the PRS Agent originating file
5	To Role Code	text(1)	= B
6	To Participant Id	text(4)	Id of NHHDA receiving file
7	Creation Time	date/time	Time of file generation

ZPI - Instruction File Additional Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= **ZPI**
2	File Sequence Number	integer(6)	

ZIN - Instruction Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZIN
2	Instruction Number	integer(12)	Instruction Sequence Numbers never wrap!
3	Type Code	text(4)	
4	Metering System Id	integer(13)	null if PRS Refresh
5	Market Role	text(1)	null unless PRS Refresh
6	Participant Id	text(4)	null unless PRS Refresh

ISD - Significant Date			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ISD
2	Significant Date	date	

MSH - Metering System Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= MSH
2	Metering System Id	integer(13)	

SUP - Supplier Registration			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= SUP
2	Effective From Settlement Date	date	
3	Supplier Id	text(4)	

DAA - Data Aggregator Appointment			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= DAA
2	Registration Id	date	Effective From Settlement Date of Registration
3	Effective from Settlement Date	date	
4	Effective to Settlement Date	date	optional

DCA - Data Collector Appointment			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= DCA
2	Registration Id	date	Effective From Date of Registration
3	Effective From Settlement Date	date	
4	Data Collector Id	text(4)	

PSS - Profile Class/Standard Settlement Configuration			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= PSS
2	Registration Id	date	Effective From Settlement Date of Registration
3	Effective From Settlement Date	date	
4	Profile Class Id	integer(2)	
5	Standard Settlement Configuration Id	text(4)	

MCL - Measurement Class			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= MCL
2	Registration Id	date	Effective From Settlement Date of Registration
3	Effective From Settlement Date	date	
4	Measurement Class Id	text(1)	

EST - Energisation Status			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EST
2	Registration Id	date	Effective From Settlement Date of Registration
3	Effective From Settlement Date	date	
4	Energisation Status Id	text(1)	

LLF - Line Loss Factor Class			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= LLF
2	Effective From Settlement Date	date	
3	Distributor Id	text(4)	
4	LLF Class Id	integer(3)	

GGP - GSP Group			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= GGP
2	Effective From Settlement Date	date	
3	GSP Group Id	text(2)	

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	

Repeating structure of File:

```
PRS Agent File::= ZHD ZPI Body ZPT
Body           ::= Refresh | Non_refresh
Refresh        ::= ZIN ISD { MSH DA_Appt }
Non_refresh    ::= ZIN ISD NR_Inst {Non_refresh}
NR_Inst        ::= DA_Appt | DC_Appt | Prof_SSC | Measure |
                   Energ | GSP_group | Line_Loss
DA_Appt        ::= {SUP} {DAA} {DCA} {PSS} {MCL}
                   {EST} {LLF} {GGP}
DC_Appt        ::= {DCA}
Prof_SSC       ::= {PSS}
Measure        ::= {MCL}
Energ          ::= {EST}
GSP_group      ::= {GGP}
Line_Loss      ::= {LLF}
```

Sorting:

There are no restrictions on the order of Metering System Ids in the file.

3.1.6.2 Frequency/Volume

One file per PRS Agent per day for each GSP Group in which the NHHDA is operating. Each file may contain anything up to one Instruction per Metering System covered by the PRS Agent (each Metering System appears in an average of 2 files per year).

3.1.6.3 Failure/Recovery Mechanisms

The processing of the instruction is a success unit. This is described in the NMI Manage Instructions Subsystem Specification.

3.1.7 Failed Instructions

The following record types appear in Failed Instruction files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= D0023001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA generating file
5	To Role Code	text(1)	= D (Data Collector) or = P (PRS Agent)
6	To Participant Id	text(4)	Id of Data Collector or PRS Agent receiving file
7	Creation Time	date/time	Time of file generation

MSH - Metering System Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= MSH
2	Metering System Id	integer(13)	
3	Significant Date	date	earliest Significant Date of the set of failed instructions included for the Metering System

INH - Instruction Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= INH
2	Instruction Sequence Number	integer(12)	

INR - Instruction Reasons for Failure			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= INR
2	Failure Reason Code	text(3)	=N followed by reason code (INSR domain)
3	Failure Reason Additional Data	text(80)	as defined in 4.3.20 Table ndb_instruction_status_reason; data items are separated by semicolons

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	

Repeating structure of File:

```
Error File     ::= ZHD Failure_Set ZPT
Failure_Set    ::= MSH Instr_Set {Failure_Set}
Instr_Set      ::= INH {INR} {Instr_Set}
```

Sorting:

1. Metering System Id.
2. Significant Date
3. Instruction Sequence Number
4. Reason Sequence Number

Note: while Instr_Set are output in Significant Date order, Significant Date is not output within the INH or INR records.

3.1.8 Data Collector Exceptions

3.1.8.1 File Specification

The following record types appear in Data Collector Exception files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= D0095001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA sending file
5	To Role Code	text(1)	= X
6	To Participant Id	text(4)	Id of Supplier receiving file
7	Creation Time	date/time	Time of file generation

EXH - Exception Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EXH
2	Supplier Id	text(4)	mandatory
3	Data Collector Id	text(4)	mandatory
4	From Settlement Date	date	mandatory
5	To Settlement Date	date	mandatory
6	Count of Metering Systems with at least 1	integer(7)	mandatory

EXH - Exception Header			
	exception of type E01		
7	Count of Metering Systems with at least 1 exception of type E02	integer(7)	mandatory
8	Count of Metering Systems with at least 1 exception of type E03	integer(7)	mandatory
9	Count of Metering Systems with at least 1 exception of type E04	integer(7)	mandatory
10	Count of Metering Systems with at least 1 exception of type E05	integer(7)	mandatory
11	Count of Metering Systems with at least 1 exception of type E06	integer(7)	mandatory
12	Count of Metering Systems with at least 1 exception of type E07	integer(7)	mandatory
13	Count of Metering Systems with at least 1 exception of type E08	integer(7)	mandatory
14	Count of Metering Systems with at least 1 exception of type E09	integer(7)	mandatory
15	Count of Metering Systems with at least 1 exception of type E10	integer(7)	mandatory
16	Count of Metering Systems with at least 1 exception of type E11	integer(7)	mandatory
17	Count of Metering Systems with at least 1 exception of type E12	integer(7)	mandatory
18	Count of Metering Systems with at least 1 exception of type E13	integer(7)	mandatory
19	Count of Metering Systems with at least 1 exception of type E14	integer(7)	mandatory
20	Count of Metering Systems with at least one exception	integer(7)	mandatory

EXP - PRS Agent Identifier			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EXP
2	PRS Agent Id	text(4)	mandatory

EXM - Metering System Identifier			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EXM
2	Metering System Id	integer(13)	mandatory

E01 - Exception Details (no EAC or AA for appointed DC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E01
2	Registration Effective From Settlement Date	date	mandatory
3	Data Aggregator Appointment Effective From Settlement Date	date	mandatory

E02 - Exception Details (missing subsequent consumption data)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E02
2	Registration Effective From Settlement Date	date	mandatory
3	Data Aggregator Appointment Effective From Settlement Date	date	mandatory
4	First settlement date with no data	date	mandatory

E03 - Exception Details (AA with no DAA appointment)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E03
2	AA Effective From Settlement Date	date	mandatory

E04 - Exception Details (EAC with no DAA appointment)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E04
2	EAC Effective From Settlement Date	date	mandatory

E05 - Exception Details (non-zero AA when de-energised)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E05
2	AA Effective From Settlement Date	date	mandatory

E06 - Exception Details (missing preceding consumption data)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E06
2	First settlement date with no data	date	mandatory

E07 - Exception Details (overlapping MAPs)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E07
2	Effective From Settlement Date for AA from specified Data Collector	date	mandatory
3	Other Data Collector Id	text(4)	mandatory
4	Effective From Settlement Date for AA from other Data Collector	date	mandatory

E08 - Exception Details (Supplier incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E08
2	Supplier Id (DC)	text(4)	mandatory
3	Effective From Settlement Date of Last PRS Data	date	mandatory
4	Effective From Settlement Date of Last Data Collector Data	date	mandatory

E09 - Exception Details (Measurement Class incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E09
2	Measurement Class Id (PRS)	text(1)	mandatory
3	Measurement Class Id (DC)	text(1)	mandatory
4	Effective From Settlement Date of Last PRS Data	date	mandatory
5	Effective From Settlement Date of Last DC Data	date	mandatory

E10 - Exception Details (GSP Group incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E10
2	GSP Group Id (PRS)	text(2)	mandatory
3	GSP Group Id (DC)	text(2)	mandatory
4	Effective From Settlement Date of Last PRS Data	date	mandatory
5	Effective From Settlement Date of Last DC Data	date	mandatory

E11 - Exception Details (Profile Class incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E11
2	Profile Class Id (PRS)	integer(2)	mandatory
3	Profile Class Id (DC)	integer(2)	mandatory
4	Effective From Settlement Date of Last PRS Data	date	mandatory
5	Effective From Settlement Date of Last DC Data	date	mandatory

E12 - Exception Details (Energisation Status incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E12
2	Energisation Status (PRS)	text(1)	mandatory
3	Energisation Status (DC)	text(1)	mandatory
4	Effective From Settlement Date of Last PRS Data	date	mandatory
5	Effective From Settlement Date of Last DC Data	date	mandatory

E13 - Exception Details (Standard Sett Config incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E13
2	SSC Id (PRS)	text(4)	mandatory
3	SSC Id (DC)	text(4)	mandatory
4	Effective From Settlement Date of Last PRS Data	date	mandatory
5	Effective From Settlement Date of Last DC Data	date	mandatory

E14 - Exception Details (no Registration)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= E14
2	Supplier Id (PRS)	text(4)	mandatory
3	Effective From Settlement Date of Last PRS Data	date	mandatory
4	Effective From Settlement Date of Last Data Collector Data	date	mandatory

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	mandatory

Repeating structure of File:

```
Data Collector Exceptions    ::= ZHD EXH {PRS_Set} ZPT
PRS_Set                      ::= EXP Meter_Set
Meter_Set                    ::= EXM Ex_Record { Ex_Record }
Ex_Record                    ::= E01 | E02 | E03 | E04 |
                                 E05 | E06 | E07 | E08 |
                                 E09 | E10 | E11 | E12 |
                                 E13 | E14
```

Sorting:

The records in the file are sorted by:

1. PRS Agent Id
2. Metering System Id
3. Exception Type
4. Alphanumerically

3.1.8.2 Frequency/Volume

3000 files per NCD run (50 Suppliers * 60 Data Collectors, as stated in [NFUNDEF]). One run every fortnight.

Number of Records: 3,000,000 E<n> in total split across 3000 files (based on one metering system , average 3M metering systems).

Overall volume: 3,000,000 records, average record size 40 bytes gives approximately 120 Mb

3.1.8.3 Failure/Recovery Mechanisms

This is described in the Check DC Data Subsystem Specification.

3.1.8.4 Exception Details

Exceptions are raised on a per DA appointment. This means under certain circumstances contiguous exceptions may be evident in the database. Exceptions are only stored in this manner and this fragmented format is removed for reporting. This is different to the creation of multiple exceptions.

Also, data needs to be present for both DC and PRS views, for a discrepancy to produce an exception.

E01

E01s should be generated when:

The PRS appointed NHHDC is not sending AAs and EACs to the PRS appointed NHHDA.

In other words:

This exception is raised when there is no AA or EAC at all.

The E01 is sent to the supplier (according to PRS) that was appointed during the period of the E01 exception. The E01 is only raised for the currently appointed Data Collector (according to the PRS) for the Supplier Registration within which the E01 exception occurs; this will be the last DC appointment not after the date when the check for exceptions is performed. (See also Note 1)

E02

E02s should be generated when:

The PRS appointed NHHDC is not sending AAs and EACs to the PRS appointed NHHDA.

In other words:

This exception is raised when there is an AA but where there is a period after the latest AA that does not have an AA or an EAC.

The E02 is sent to the supplier (according to PRS) that was appointed during the period of the E02 exception. The E02 is only raised for the currently appointed Data Collector (according to the PRS) for the Supplier Registration within which the E02 exception occurs; this will be the last DC appointment not after the date when the check for exceptions is performed. (See also Note 1)

E03

E03s should be generated when

AAs are being received from a DC that has not been appointed, or

if AAs are being received when the DA has not been appointed.

In other words:

This exception is raised when the DC that sent the AA details has not been appointed according to PRS.

This exception is raised when there is an AA that does not overlap with an NHHDA appointment, which, for the purpose of this exception includes the day before the appointment too.

The E03 is sent to the supplier according to the DC that sent the AA details.

E04

E04s should be generated when

EACs are being received from a DC that has not been appointed, or

if EACs are being received when the DA has not been appointed.

In other words:

This exception is raised when the DC that sent the EAC details has not been appointed according to PRS.

This exception is raised when there is an EAC that does not overlap with a NHHDA appointment, which, for the purpose of this exception includes the day after the appointment too.

The E04 is sent to the supplier according to the DC that sent the EAC details.

E05

E05s should be generated when

A metering system has an unexpected non zero AA.

In other words:

This exception is raised when a metering system has a non zero AA whilst it is de-energised (according to NHHDC).

The E05 is sent to the supplier, according to the PRS, at the time of the exception.

E06

E06s should be generated when

The PRS appointed DC has not sent an AA in the past

In other words:

This exception is raised when there is an AA but where there is a period before this AA that does not have an AA.

The E06 is sent to the supplier (according to PRS) that was appointed during the period of the E06 exception. The E06 is only raised for the currently appointed Data Collector (according to the PRS) for the Supplier Registration within which the E06 exception occurs; this will be the last DC appointment not after the date when the check for exceptions is performed. (See also Note 1)

E07

E07s should be generated when

Overlapping AAs are received from two NHHDC's.

In other words:

An E07 should be produced when a change of DC has failed to work correctly, resulting in overlapping AA consumption data.

The E07 is sent to the supplier, according to PRS, at the time of the exception.

E08

E08s should be generated when

PRS or DC hold an incorrect record of the metering systems Supplier during a period overlapping a DAA.

In other words:

An E08 should be produced if the DC (which PRS considers appointed) and PRS agent have a different view of who the Supplier is for a particular date which falls within a DAA. In order for the E08 exception to be produced, both the PRS and DC Supplier details must be present, and consumption data (EACs or AAs) must have been received from the DC in the period of the exception.

The E08 is sent to the supplier (according to PRS) who was appointed

during the period of the E08 exception. It is worth noting that an E14 is always produced when an E08 is produced (however an E14 is sent to the supplier according to the DC).

E09

E09s should be generated when

PRS or DC hold an incorrect record of the metering systems measurement class.

In other words:

An E09 should be produced if the DC (which PRS considers appointed) and PRS agent have a different view of what the measurement class is for a particular date, and consumption data (EACs or AAs) has been received from the DC in the period of the exception.

The E09 is sent to the supplier, according to PRS, at the time of the exception.

E10

E10s should be generated when

PRS or DC hold an incorrect record of the metering systems GSP Group.

In other words:

An E10 should be produced if the DC (which PRS considers appointed) and PRS agent have a different view of what the GSP Group is for a particular

date, and consumption data (EACs or AAs) has been received from the DC in the period of the exception.

The E10 is sent to the supplier, according to PRS, at the time of the exception.

E11

E11s should be generated when

PRS or DC hold an incorrect record of the metering systems Profile Class.

In other words:

An E11 should be produced if the DC (which PRS considers appointed) and PRS agent have a different view of what the Profile Class is for a particular date, and consumption data (EACs or AAs) has been received from the DC in the period of the exception.

The E11 is sent to the supplier, according to PRS, at the time of the exception.

E12

E12s should be generated when

PRS or DC hold an incorrect record of the metering systems Energisation Status.

In other words:

An E12 should be produced if the DC (which PRS considers appointed) and PRS agent have a different view of what the Energisation Status is for a particular date, and consumption data (EACs or AAs) has been received from the DC in the period of the exception.

The E12 is sent to the supplier, according to PRS, at the time of the exception.

E13

E13s should be generated when

PRS or DC hold an incorrect record of the metering systems Standard Settlement Configuration.

In other words:

An E13 should be produced if the DC (which PRS considers appointed) and PRS agent have a different view of what the Standard Settlement Configuration is for a particular date, and consumption data (EACs or AAs) has been received from the DC in the period of the exception.

The E13 is sent to the supplier, according to PRS, at the time of the exception.

E14

E14s should be generated when

PRS or DC hold an incorrect record of the metering systems Supplier.

In other words:

An E14 should be produced if the DC and PRS agent have a different view of who the Supplier is for a particular date, and consumption data (EACs or AAs) has been received from the DC in the period of the exception. The E14 is only raised for the period where it overlaps the PRS Supplier Registration and either :-

- The DC has supplied an AA effective within that Registration

OR/

- The DC has supplied an EAC starting within that Registration but ignoring the first day of the Registration.

This check applies to all DCs, not just the DC who PRS considers the appointed DC.

The E14 is sent to the supplier (according to DC) who was appointed during the period of the E14 exception. In order for the E14 exception to be produced, both the PRS and DC Supplier details must be present.

Note 1:

E01, E02 and E06 exceptions will need to be re-assessed when the most recent DC changes and hence NMI (Instruction Processing) will need to reset the earliest unchecked settlement date [EUSD] to the earlier of the PRS Supplier registration start date or the DC appointment start date when change of DC occurs.

3.1.9 Monthly D0095 Report

This is part of the NFR Form and Reports Subsystem and is detailed in section 10.16. It is included here as it will be distributed to external participants.

3.1.10 EAC To Distributor Data

3.1.10.1 File Specification

The following record types appear in the files reporting EAC Data To Distributors:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= P0222001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of the NHHDA sending file
5	To Role Code	text(1)	= R
6	To Participant Id	text(4)	Id of LDSO receiving file
7	Creation Time	date/time	Time of file generation

DEH – Distributor EAC Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= DEH
2	Settlement Date	Date	Mandatory

MSD – Metering System Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= MSD
2	Metering System Id	integer(13)	Mandatory
3	Energisation Status	text(1)	
4	GSP Group Id	text(2)	
5	Distributor Participant Id	text(4)	
6	Line Loss Factor Class ID	integer(3)	
7	Profile Class Id	integer(2)	
8	Standard Settlement Configuration Id	text(4)	
9	EAC Default Flag	text(1)	Y if this is a Default EAC N if this is an EAC received from the Data Collector Blank if value could not be specified

EAD - Estimated Annual Consumption Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EAD
2	Time Pattern Regime Id	text(5)	Mandatory
3	Estimated Annual Consumption	decimal (14,1)	kWh Blank if value could not be specified

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	

Repeating structure of File:

```
EAC Data To Distributors File    ::= ZHD DEH MS_details ZPT
MS_details                       ::= MSD_Set {MSD_Set}
MSD_Set                          ::= MSD {EAD_Set}
EAD_set                          ::= EAD {EAD}
```

Sorting:

There are no restrictions on the order of Metering System Ids in the file.

3.1.10.2 Frequency/Volume

N/A

3.1.10.3 Failure/Recovery Mechanisms

This is described in the Report EAC Data To Distributors Subsystem Specification.

3.2 Internal interfaces

3.2.1 General

There are no interfaces between subsystems which are not via the database.

Report layouts are specified in a Section 10.

4 Database specification

4.1 General

This chapter describes the physical NHHDA database. Sections discuss:

- Operating System Files
- The Oracle Database
- Audit Logs
- Archive
- Database Sizing

4.2 Operating System Files

The file store within the system consists of both files received from external sources and files produced by the NHHDA system. The details of these files are given in the NHHDA External Interfaces section.

There are three types of file managed by the system:

- Instruction Files
- Data Files
- Report Files

All these files are recorded in the Oracle database (using cdb_file_reference and associated tables). Thus each file can be referenced by a unique file identifier (file_id).

The physical file stores are represented as rows in the cdb_file_directory table. For each physical store, this table contains a unique id and its associated directory name. The header information from the file is also stored in the common tables but the detailed information is not.

See [CTSPEC] section 4.2 for more information on file management.

Instruction Files:

Source	Destination	File Type	Volume	Frequency
Data Collector	NHHDA	Metering System EAC/AA Instructions	<3 MB	Every working day
PRS Agent	NHHDA	Registration Instructions	<200 Kb	Every working day

Data Files:

Source	Destination	File Type	Volume	Frequency
ISR Agent	NHHDA	Market Domain Data Complete Set	3 MB	< 1 every 2 weeks
Pool (also known as the Market Domain Data Agent)	NHHDA	Data Aggregation and Settlement Timetable File	<100 Kb	1 per year
NHHDA	ISR Agent	Supplier Purchase Matrix	1 MB	1 file per GSP group per run
NHHDA	Supplier	Supplier Purchase Matrix	<200Kb	1 file per GSP group per run
NHHDA	Supplier	Exception Report Data	120 Mb (total for all suppliers)	1 per Supplier every 2 weeks
NHHDA	Data Collector	Returned Failed Instructions	3Mb	1 per Data Collector every 2 weeks
NHHDA	PRS Agent	Returned Failed Instructions	1.5Mb	1 per PRS every 2 weeks
NHHDA	NHHDA	Monthly D0095 Report	<250Kb	1 per month

The Monthly D0095 Report will be send manually to external participant(s).

4.3 The Oracle Database

4.3.1 General

The following subsections describe the NHHDA Oracle database.

Additional information is produced as reports generated from the Oracle tool Designer 6i:

- Appendix A - Physical data model diagram
- Appendix B - User Roles
- Appendix C - Table, Column, Key, Index details

Detailed information on database objects common to ISRA and NHHDA is given in [CTSPEC].

NHHDA specific table names are prefixed ndb_ and the common table names are prefixed cdb_.

Each table is given a four character alias and the primary key, foreign key and index names are made up of this followed by a suffix. For primary keys the suffix is _pk and for foreign keys the suffix is _fk1, _fk2, etc. Indices associated with the foreign keys have an additional suffix _i.

The figures for estimated number of rows given for each table are derived from the Average Occurrences figures given in [NLDATA] for the corresponding entities, except where stated.

Apart from the primary key constraints and foreign key constraints, the only check constraint identified at present is that on the partition_id column of the partitioned tables. This constraint is detailed in section 4.3.6.

The only stored procedures and functions identified at present are for the partitioned tables. These are detailed in section 4.3.6. Additional stored program units will be detailed along with the functions they are used to implement.

The only triggers identified are for auditing (see section 4.4) and to prevent data updates while the database lock is set (see section 4.3.4.4) .

4.3.2 Physical Data Model Diagram

The Physical Data Model Diagram is in Appendix A.

For tables with columns whose valid values are held in cdb_ref_values, no relationships to cdb_ref_values are shown. The common cdb_ tables are not shown, except where they are masters linked to ndb_ tables by a master-detail relationship.

4.3.3 Oracle to C Datatype Mapping

When using host variables in a Pro*C program the mapping of Oracle datatypes to C datatypes should be performed as shown in [CTSPEC]. However in the case of METERING_SYSTEM_ID an exception is made. This data item represents a structured identifier for a Metering System and is 13 digits long thus making it too long to fit into a long int C variable. Since the number it represents is an identifier and will have no arithmetic performed upon it, it is sensible to use a char C variable to store it.

4.3.4 Use of common Database Tables

In addition to the ndb_ tables, the NHHDA database contains all the cdb_ tables defined in [CTSPEC]. The file nhh_domains.h and the package nhh_domains contain definitions to avoid hard coding of variable values. The following reference data will be loaded into the database as part of the database install script; a further script enables the reference fields (e.g.: descriptions) to be modified for these records.

4.3.4.1 NHHDA use of cdb_report_type:

The cdb_report_type will have the following rows for the NLD subsystem:

File type	Report Name
'L0009001'	'Load Timetable Exceptions'
'L0011001'	'GSP Groups and Ass Items'
'L0012001'	'Standard Settlement Config'
'L0013001'	'Ave Frac Yearly Consumption'
'L0014001'	'Distributors'
'L0015001'	'MS and Associated Items'
'L0016001'	'Instructions'
'L0017001'	'Data Aggregation Run'
'L0020001'	'Profile Class'
'L0032001'	'Supplier Purchase Matrix'
'L0033001'	'Data Collector Exception Log'
'L0034001'	'Aggregation Exception Log'
'L0040001'	Load Market Domain Data Complete Set Exceptions'
'L0042001'	'Refresh Instruction Failures'
'L0043001'	'DC Performance Report'
'L0044001'	'MS History, EACs and AAs'
'P0147001'	'Monthly D0095 Report'
'L0053001'	'EAC To Distributor Exceptions'

4.3.4.2 NHHDA use of cdb_default_directory:

The cdb_default_directory will have the following rows for the NLD subsystem:

File type	File status
'L0000001' (error)	"received"
All files generated by NHHDA:	"new"
'L0009001' (PST load exceptions) 'D0041001' (SPM) 'D0095001' (DC Exceptions) 'L0037001' (Aggregation Exceptions) 'L0038001' (Aggregation Run Log) 'D0023001' (Failed Instructions) 'L0040001' (MDD Load Exceptions)	"completed"

File type	File status
'L0043001' (DC Performance Report) 'P0147001' (Monthly D0095 Report) 'L0044001' (MS History, EACs and AAs) report files (each file type which appears in above table)	
'L0039001' (Refresh intermediate file)	"new"
All files received by NHHDA:	"received"
'D0286001' (DAST file)	"running"
'D0269002' (MDD Complete Set file)	"rejected"
'D0019001' (DC Instructions) 'D0209001' (PRS Instructions)	"completed"
All files	"archive" "default"

4.3.4.3 NHHDA use of cdb_ref_domains / cdb_ref_values:

domain_code	domain_name
ARCD	Archive Directory Path
ENST	Energisation Status
EXDC	Exception Type (Check Data Collector Data)
EXTP	Exception Type (Aggregation)
FSTS	File Status
FTIN	File Type In (Incoming file types)
FTOT	File Type Out (Generated file types)
INSR	Instruction Status Reason
INST	Instruction Status
INTP	Instruction Type
INRP	Instruction Reprocess State
INRS	Instruction Status Resolution State
MAPR	Market Role
MECL	Measurement Class
RNST	Run Status
SECO	Settlement Code
NDPD	Directory Path For EAC To Distributor Report

The following domain values are defined for NHHDA, in addition to those given in [CTSPEC]:

Archive Directory Path (ARCD) Domain

value_from	Description
/pcstore/Users/nbatch/runtime/files/archive	Archive Directory Path

Note this is not a true domain - it is used to hold the path where archived files are moved (archive adds values of the form 999/ where 999 is a unique number for the current archive run. If the value_from ends with '/' then the

number becomes a subdirectory in its own right, if not the subdirectories would be of the form archive999).

Energisation Status (ENST) Domain

value_from	Description
E	Energised
D	De-energised

Exception Type (EXDC) Domain

value_from	Description
E01	No EAC or AA for appointed DC
E02	Missing subsequent consumption data
E03	AA with no DAA appointment
E04	EAC with no DAA appointment
E05	Non-zero AA when de-energised
E06	Missing preceding consumption data
E07	Overlapping MAPs
E08	Supplier incorrect
E09	Measurement Class incorrect
E10	GSP Group incorrect
E11	Profile Class incorrect
E12	Energisation Status incorrect
E13	Standard Settlement Configuration incorrect
E14	No Registration

Exception Type (EXTP) Domain

value_from	Description
A01	No EAC or AA for Metering System
A02	No PRS Data Provided
A03	Non-zero AA when de-energised
A04	Multiple Meter Advance Periods
A05	Supplier incorrect
A06	Measurement Class incorrect
A07	GSP Group incorrect
A08	Profile Class incorrect
A09	Energisation Status incorrect
A10	Standard Settlement Configuration incorrect
A11	AA for Unmetered Metering System
A12	Metering System Excluded (due to missing data)
A13	Missing AFYC

value_from	Description
A14	Missing Default EAC

File Status (FSTS) Domain

value_from	Description
0	Default
1	New
2	Deleted
3	Received
4	Completed
5	Sent
101	Running
102	Rejected
103	Archived
104	Loaded
105	Processed
106	Corrupt
107	Skipped

Notes

Report/Export files start with a status of New, and have their status updated to Completed when they have been written to successfully. The status of each Export file is subsequently updated to "Sent" by CFS after successfully transferring a copy of the file to the gateway.

Data files which are imported start with a status of Received, have their status updated to Running when load processing starts and have their status updated to Processed when they have been loaded successfully.

Values over 100 are NHHDA specific, others are copied from [CTSPEC].

File Type In (FTIN) Domain

value_from	Description
D0019001	DC Instruction File
D0209001	PRS Instruction File
D0286001	Data Aggregation and Settlement Timetable File
D0269002	Market Domain Data Complete Set
L0000001	Corrupt / Unknown File

File Type Out (FTOT) Domain

value_from	Description
D0023001	Failed Instructions File
L0009001	Load Timetable Exceptions

value_from	Description
D0041001	Supplier Purchase Matrix Data File
D0095001	Data Collector Exceptions
L0037001	Aggregation Exception Log
L0038001	Aggregation Run Log
L0032001	Supplier Purchase Matrix (Report)
L0043001	DC Performance (Report)
L0033001	Check Data Collector Exception Log (Report)
L0034001	Aggregation Exception Log (Report)
L0011001	GSP Groups (Report)
L0012001	Standard Settlement Configurations (Report)
L0013001	Average Fraction of Yearly Consumption (Report)
L0014001	Distributors and Associated Items (Report)
L0015001	Metering Systems and Associated Items (Report)
L0016001	Instructions (Report)
L0042001	Refresh Instruction Failures (Report)
L0017001	Data Aggregation Run Schedule (Report)
L0044001	Metering System History, EACs and AAs (Report)
L0020001	Profile Classes (Report)
L0001001	Audit Log
L0003001	Formatted Report
L0004001	Operator Log
L0005001	Error Log
L0040001	Load Market Domain Data Exception Log
P0147001	Monthly D0095 Summary (Report)
L0051001	EAC To Distrib Intermediate Data
L0052001	EAC To Distrib Intermediate Exceptions
L0053001	EAC To Distributor Exceptions
P0222001	EAC To Distributor Data (Report)

Instruction Status Reason (INSR) Domain

value_from	Description
0A	Refresh accepted with validation errors
0B	Instruction type is not valid for source
0D	Manual discard
0F	Automatic discard due to failure
0I	Invalid Instruction
0S	Instruction has been superseded
0T	Refresh Totals
0W	Wrong distributor
2C	>1 DC Appt on or before Sig Date
2E	>1 ES on or before Sig Date

value_from	Description
2G	>1 GSP Group on or before Sig Date
2L	>1 LLFC on or before Sig Date
2M	>1 MC on or before Sig Date
2P	>1 PC/SSC on or before Sig Date
2R	>1 Registration on or before Sig Date
2Y	>1 EAC on or before Sig Date
99	99 or more failure reasons
AA	DA Appt end after Registration end
AE	ES Start after Registration End
AM	MC Start after Registration End
AP	PC/SSC Start after Registration End
CA	DA Appt already ends before Sig Date
CE	ES change during MAP
CM	MC change during MAP
CR	Registration change during MAP
CS	SSC change during MAP
DC	Duplicate DC Appt Start
DE	Duplicate ES Start
DG	Duplicate GSP Group Start
DL	Duplicate Line Loss Factor Start
DM	Duplicate MC Start
DP	Duplicate PC/SSC Start
DR	Duplicate Registration Start
DY	Duplicate EAC Start
EA	DA Appt End before Sig Date
EB	DA Appt Start before Registration Start
EC	DC Appt Start before Registration Start
EE	ES Start before Registration Start
EM	MC Start before Registration Start
EP	PC/SSC Start before Registration Start
EX	AA End before Sig Date
FE	No ES for 1st consumption
FG	No GSP Group for 1st consumption
FM	No MC for 1st consumption
FP	No PC/SSC for 1st consumption
FR	No Registration for 1st consumption
IA	Invalid PC, SSC & GSP Group for AFYC
IC	DC ID not found on dB
IE	Invalid ES
IG	GSP Group ID not found on dB
IL	Distributor/LLFC not found on dB
IM	Invalid MC

value_from	Description
IP	PC ID not found on dB
IR	Supplier ID not found on dB
IS	SSC ID not found on dB
IV	EAC/AA value outside permitted range
MA	DAA before Sig Date not latest on dB
MC	DC Appt before Sig Date not latest on dB
ME	ES before Sig Date not latest on dB
MG	GSP Group before Sig Date not latest on dB
ML	LLFC before Sig Date not latest on dB
MM	MC before Sig Date not latest on dB
MP	PC/SSC before Sig Date not latest on dB
MR	Registration before Sig Date not latest on dB
MX	AA before Sig Date not latest on dB
MY	EAC before Sig Date not latest zon dB
NE	ES not overlapping DA Appt
NG	GSP Group not overlapping a DA Appt
NL	Line Loss Factor not overlapping DA Appt
NM	MC not overlapping a DA Appt
NP	PC/SSC not overlapping DA Appt
NR	No DAA for Registration in instruction
OA	Overlapping DA Appts
OX	Overlapping MAPs
RA	DA Appt references unknown Registration
RC	DC Appt references unknown Registration
RE	ES references unknown Registration
RM	MC references unknown Registration
RP	PC/SSC references unknown Registration
SC	No DC Appt for 1st DAA in Registration
SE	No ES for 1st DA Appt in Registration
SG	No GSP Group before 1st DA Appt
SL	No LLFC before 1st DA Appt
SM	No MC for 1st DA Appt in Registration
SP	No PC/SSC for 1st DAA in Registration
TV	AA with duplicate Time Pattern Regime
TW	EAC with duplicate Time Pattern Regime
TX	AA missing for Measurement Req(s)
TY	EAC missing for Measurement Req(s)
UX	AA where Time Pattern Regime not in SSC
UY	EAC where Time Pattern Regime not in SSC
VG	GSP not appointed to Dist Business
VP	PC/SSC combination not on dB
VZ	PRS Agent not appointed in this GSP Group

value_from	Description
XA	DA Appt Start after End
XX	AA Start after End
ZA	DAA on dB missing from instruction
ZC	DC Appt missing from instruction,
ZE	ES missing from instruction
ZG	GSP Group missing from instruction
ZL	LLFC missing from instruction
ZM	MC missing from instruction
ZP	C/SSC missing from instruction
ZR	Registration missing from instruction
ZX	MAP on dB missing from instruction

The above codes are used in the tables ndb_instruction_status_reason and ndb_refr_instr_failure_reason to record the reason(s) an instruction is in a particular state. The Description field appears on the Manage Failed Instruction and Manage Refresh Instruction Failures forms and in the Report Instructions and Report Refresh Instruction Failures reports. In addition, most reasons are accompanied by additional data which details the problem. For each reason, a description of what the error means and what additional data is supplied may be found in section 4.3.20. Note that in external interfaces, the above codes are prefixed by 'N'.

Instruction Status (INST) Domain

value_from	Description
U	Unprocessed
F	Failed
S	Superseded
A	Applied
D	Discarded
V	Invalid

The status 'Invalid' is used for a Refresh instruction with the status 'Validation Errors' - i.e.. this has been applied but for which one or more updates were not carried out due to validation rules.

Instruction Type (INTP) Domain

value_from	Description
NH01	Data Aggregator Appointment Details
NH02	Data Collector Appointment Details
NH03	Profile Class/SSC in Registration Details
NH04	Measurement Class in Registration Details
NH05	Energisation Status in Registration Details
NH06	GSP Group Details
NH07	Line Loss Factor Class Details
NH08	PRS Refresh

value_from	Description
NH09	EAC/AA & MS Details

Instruction Reprocess (INRP) Domain

value_from	Description
R	Reprocess
X	Cannot be reprocessed

Instruction Status Resolution (INRS) Domain

value_from	Description
Y	Resolvable
R	Resolved
N	Not resolvable

Market Roles (MAPR) Domain

Only those roles referenced by NHHDA are included in this list.

value_from	Description
B	Non-HH Data Aggregator
D	Non-HH Data Collector
G	ISR Agent
P	PRS Agent
R	Distributor
U	Market Domain Data Agent
X	Supplier
Z	Pool

Measurement Class (MECL) Domain

value_from	Description
A	Non half hourly metered
B	Non half hourly unmetered
C	Half hourly metered
D	Half hourly unmetered

Run Status (RNST) Domain

value_from	Description
P	Provisional
A	Approved
R	Released
U	Running
F	Failed
S	Successful
D	Provisional Default

Settlement Code (SECO) Domain

value_from	Description
II	Interim Information
SF	Initial Settlement
R1	First Reconciliation
R2	Second Reconciliation
R3	Third Reconciliation
RF	Final Reconciliation
DR	Dispute
DF	Final Dispute

Directory Path For EAC To Distributor Report (NDPD) Domain

value_from	Description
/pcstore/Users/nbatch/runtime/files	Directory Path For EAC To Distributor Report

Note this is not a true domain - it is used to hold the path where the EAC To Distributor Report will be moved when the file has been completed.

4.3.4.4 NHHDA use of cdb_system_parameter:

The following rows have been identified for NHHDA, in addition to those given in [CTSPEC]:

param_type	param_type2	description	maintain_ui	valid values
NDB	DBN	Days before Notification	Y	Number
NDB	VCD	Valid Calendar Days for Run	Y	Number
NDB	URF	Use Run Date from File	Y	TRUE, FALSE
ARP	DBS	Schedule based dB data period	Y	Number
ARP	DBA	Activity based dB data period	Y	Number
ARP	DAG	SPM dB table period	Y	Number
ARP	DBF	File reference period	Y	Number
ARP	FDC	DCP retention period	Y	Number
ARP	FSP	SPM retention period	Y	Number
ARP	FCE	CDCD exception period	Y	Number
ARP	FCS	Monthly D0095 retention period	Y	Number
ARP	FAU	Audit log retention period	Y	Number
ARP	FOP	Operator log period	Y	Number
ARP	FER	Error log period	Y	Number
ARP	FUR	User report period	Y	Number
ARP	FEX	Exception period	Y	Number

ARP	FIN	Instruction file period	Y	Number
ARP	FIS	Instr data retention pd	Y	Number
ARP	FUK	unknown/corrupt file period	Y	Number
ARP	FFI	Failed instruction list period	Y	Number
ARP	FID	Data file period	Y	Number
ARD	DBS	Schedule based dB data date	N	(date)
ARD	DBA	Activity based dB data date	N	(date)
ARD	DAG	SPM dB table date	N	(date)
ARD	DBF	File reference date	N	(date)
ARD	FCS	Monthly D0095 retention period	N	(date)
ARD	FSP	SPM retention date	N	(date)
ARD	FCE	CDCD exception date	N	(date)
ARD	FAU	Audit log retention date	N	(date)
ARD	FOP	Operator log date	N	(date)
ARD	FER	Error log date	N	(date)
ARD	FUR	User report date	N	(date)
ARD	FEX	Exception date	N	(date)
ARD	FIN	Instruction file date	N	(date)
ARD	FIS	Instr data retention date	N	(date)
ARD	FUK	unknown/corrupt file date	N	(date)
ARD	FFI	Failed instruction list date	N	(date)
ARD	FID	Data file date	N	(date)
ARD	FDC	DCP retention date	N	(date)
MDP	MDA	MDD Advance Load Period	Y	Number
NAR	LCK	database update lock	N	(LOCKED, UNLOCKED)
NAR	LOG	aggregation audit log	Y	ENABLED, DISABLED
NAR	AAV	Aggregate All Valid GSP Groups	Y	TRUE, FALSE
NDP	PDL	Previous days request limit	N	Number
NDP	ADI	NDP archive directory id	N	Number
NMI	EUB	EAC upper boundary value	Y	Number
NMI	ELB	EAC lower boundary value	Y	Number

NMI	AUB	AA upper boundary value	Y	Number
NMI	ALB	AA lower boundary value	Y	Number

AAV - When set to TRUE, during Aggregation, all Valid GSP Groups will be considered and the schedule adjusted accordingly at the end of Aggregation when it is known which GSP Groups contained valid Metering Systems. Dispute Runs are treated differently: even if AAV is set to TRUE, only the GSP Groups specified by the user in the Schedule Aggregation Run form will be considered; however if the user specifies no GSP Groups and AAV is set to TRUE, then all GSP Groups will be considered for a dispute run.

ARD - The last date used for this parameter type by archive.

ARP - The number of days for which data should be retained on the database.

DBN - The number of days before the notification date when the aggregation run should be scheduled, if URF set to TRUE.

NDP - The PDL parameter is used for validation by the form that initiates the NDP sub-system. The ADI parameter holds the directory id that will be used by the NDP sub-system to mark report files as archived, Note cdb_default_directory cannot be used to hold this value as archiving updates the directory id after each run.

LCK - Lock set by NAR Aggregation at the start of processing to prevent database changes until after a backup has been taken. When set, the lock prevents:

- Instruction Processing
- Data Loading
- Archive
- Updates to Average Fractions of Yearly Consumption
- GSP Group - Profile Class Researched Default EAC
- Threshold Parameters

A utility is provided to permit the Data Aggregator to reset the lock once a backup has been taken:

```
nhh_unlock.exe tape_label
```

If tape_label is not specified, this is asked for. The database lock is cleared and the identity of the tape as specified is reported to the operator log.

MDP - The number of days after current date for which relevant Market Domain Data should be added to the database.

URF - If set to "YES", NLD uses the Planned Aggregation Run Date from Data Aggregation and Settlement Timetable files when scheduling runs. If set to "NO", NLD calculates the run date using the logic described in 8.5.6.

VCD - The maximum number of days before the notification date when the aggregation run can be scheduled without being given a default run date and a Data Aggregation Run status of 'Provisional Default', if URF set to TRUE.

Note that the parameter CSC/CLG is specified in [CTSPEC] as having a default value of 30, for NHHDA, the default value is 20.

4.3.4.5 NHHDA use of cdb_activity_type

The following rows have been identified for NHHDA:

activity_type	queue	image_name	activity description
NARCH	EXCLUSIVE	<path>/archive.exe	archiving
NARCDB	NARCDB	<path>/arc_dbs.exe	archiving thread
NLDCTL	EXCLUSIVE	<path>/nld.exe	load data files
NCD_CD	EXCLUSIVE	<path>/ncd_pc.exe	check data collector data - top level
NCD_CE	NCD_CE	<path>/ncd_ce.exe	check data collector data - calculate exceptions
NCD_GO	NCD_GO	<path>/ncd_go.exe	check data collector data - generate output
NMICTL	EXCLUSIVE	<path>/nmi.exe	instruction processing - top level
NMIARR	NMIARR	<path>/nmi.exe	instruction file arrival
NMIAPP	NMIAPP	<path>/nmi.exe	instruction processing - apply
NMIRET	NMIRET	<path>/nmi.exe	return failed instructions
NMIMIF	NMIMIF	<path>/nmi.exe	update file status - invoked by manage instruction files
NMIRFR	EXCLUSIVE	<path>/nmi.exe	refresh instructions
NMIRFT	NMIRFT	<path>/nmi.exe	refresh processing thread (invoked for a single partition by refresh activity)
NAR_AG	EXCLUSIVE	<path>/nar_pc.exe	aggregation - top level
NAR_CI	NAR_CI	<path>/nar_ci.exe	aggregation - calculate increments
NAR_AD	NAR_AD	<path>/nar_ad.exe	aggregation - add & calculate defaults
NAR_GO	NAR_GO	<path>/nar_go.exe	aggregation - generate output
NFR12	NREPORT	<path>/naf.exe	report average fractions of yearly consumption

NFR13	NREPORT	<path>/dars.exe	report data aggregation run schedule
NFR15	NREPORT	<path>/gsp_grp.exe	report GSP groups
NFR16	NREPORT	<path>/instruc.exe	report instructions
NFR17	NREPORT	<path>/distrib.exe	report distributors and associated items
NFR18	NREPORT	<path>/msai.exe	report metering system and associated items
NFR21	NREPORT	<path>/pro_cls.exe	report profile class and associated items
NFR22	NREPORT	<path>/sscai.exe	report standard settlement configuration and associated items
NFR24	NREPORT	<path>/supplier_pm.exe	report extract from supplier purchase matrix
NFR25	NREPORT	<path>/dc_except.exe	report extract from data collector exceptions
NFR26	NREPORT	<path>/agg_except.exe	report extract from aggregation exceptions
NFR27	NREPORT	<path>/rfirept.exe	report Refresh Instruction failures
NFR28	NREPORT	<path>/ms_hist_eac_aa.exe	report metering system history, EACs and AAs.
NFR29	NREPORT	<path>/dc_summ_except.exe	Monthly D0095 Report
CRPFMT	CRPFMT	<path>/crpfmt	Invoked from Select Reports form to convert machine readable files into human readable reports
DMPAUD	EXCLUSIVE	<path>/dump_audit	clg dump audit (extracts database audit tables into files & delete from database)
NDP_PC	EXCLUSIVE	<path>/ndp_pc.exe	Report EAC data to distributor - top level
NDP_CI	NDP_CI	<path>/ndp_ci.exe	Report EAC data to distributor - calculate increments

4.3.5 Oracle Parameters and Optimisation

The parameters listed below are identified as necessary for NHHDA to work correctly. Other parameters can be set to tune the Oracle instance or run it in a certain way.

Parameter	Value	Comment
compatible	9.2.0 or higher	minimum Oracle release number NHHDA requires
log_archive_dest	<directory>	must be set to a directory spec - actual value unimportant
log_archive_start	true	enables archive logging
log_checkpoint_interval	larger than redo log size	ensures that checkpoints do not happen between log switches
log_checkpoint_timeout	0	ensures that checkpoints do not happen between log switches
partition_view_enabled	true	allows partition views
processes	200 or above	number of concurrent processes that can run against database
row_locking	always	enables row-level locking

4.3.6 The Partitioned Tables

4.3.6.1 Tables

Due to the need for fast and possibly parallel access to metering information by the Data Aggregation process, all tables that contain the METERING_SYSTEM_ID column have been set up as partitions.

These are:

NDB_METERING_SYS,

NDB_REGISTRATIONS,

NDB_DATA_AGG_APPS,

NDB_DC_APPS,

NDB_REGISTER_CONS,

NDB_MS_DC_DETS,

NDB_MS_PRS_DETS,

NDB_MS_EXCEPTIONS

This means that instead of one physical table for each of these tables there are now several tables and a unifying view for each. This allows the data to be physically spread across many disks in a highly controlled manner.

To a great extent reading data from a partition view is no different from reading data from any normal table except that in this case a partition id is provided to enable application code to determine which of the underlying tables the row lies in. A database function will be provided which will return the partition id given the METERING_SYSTEM_ID and this may be used in queries.

Performing data manipulation operations on one of the partition views cannot be done directly on the view itself but instead will have to done on the appropriate underlying table.

4.3.6.2 Using the Partition View Database Procedures

4.3.6.2.1 Names

There is one generic package containing all database procedures and functions generic to all partition views. This is called partition_generic and contains the f_get_partition function.

4.3.6.2.2 Oracle*Forms

There are no Oracle*Forms which display the partitioned tables.

4.3.6.2.3 PL/SQL and SQL*Plus

Queries - in any query, the partition_id should be determined by using the f_get_partition_id function as below:

```
part_id := partition_generic.f_get_partition_id(variable);
SELECT    *
FROM      ndb_metering_sys a
WHERE     a.metering_sys_id = variable
AND  a.partition_id = part_id;
```

Insert, update, delete and lock operations should use the appropriate procedure rather than issue their own statements.

4.3.6.2.4 Pro*C

Pro*C programs use the appropriate stored procedures/functions as above so that any changes in the algorithm for determining partition will be seen by all.

4.3.7 User Access Rights

Each User Role listed in [NFUNDEF] is set up as an Oracle Role. The access rights are granted to each role for each table. Sub-roles, e.g. ‘Read All Tables’ are used to simplify the maintenance of the role to table mapping. The breakdown of roles and table access rights is given in Appendix B.

4.3.8 Table ndb_av_frac_y_cons

Logical Entity: Average Fraction of Yearly Consumption.

Each row specifies the average fraction of consumption which is attributed to a particular combination of Measurement Requirement, Profile Class and GSP Group.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

eff_from_sett_date - The first Settlement Date for which an Average Fraction of Yearly Consumption is effective.

eff_to_sett_date - The last Settlement Date for which an Average Fraction of Yearly Consumption is effective.

gsp_group_id - The nationally unique identifier of a GSP Group.

std_sett_config_id - The nationally unique identifier of a Standard Settlement Configuration.

profile_class_id - The nationally unique identifier of a Profile Class.

t_p_regime_id - The nationally unique identifier of a Time Pattern Regime.

Estimated Number of Rows - 198,000.

4.3.9 Table ndb_check_dc_data_runs

Logical Entity: No equivalent logical entity.

Each row is the record of a Check Data Collector run. This table is necessary to support the implementation of the Check Data Collector function: when the user enters a request for a Check Data Collection report, a row is created in this table. The table is read by an overnight batch process which sets off the Check Data Collector runs.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

sup_participant_id - The Market Participant Id of the Supplier for the Check Data Collector Run.

dc_participant_id - The Market Participant Id of the Data Collector for the Check Data Collector Run.

prs_ag_particpant_id - The Market Participant Id of the PRS Agent for the Check Data Collector Run.

from_sett_date - The first date in the range of Settlement Dates for this Check Data Collector Run.

to_sett_date - The last date in the range of Settlement Dates for this Check Data Collector Run.

Estimated Number of Rows - The product of the numbers of Suppliers, Data Collectors and PRS Agents. 58 * 100 * 15 = 87000.

4.3.10 View ndb_data_agg_apps

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entity: Data Aggregator Appointment.

Each row is a record of the appointment of the NHHDA Data Aggregator to a Registration.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

sup_eff_fr_sett_dt - The first settlement date of the period for which the Registration of the supplier to the Metering System is effective.

metering_system_id - The nationally unique id of a Metering System.

eff_from_sett_date - The first settlement date of the period for which the Data Aggregator Appointment to the Registration is effective.

eff_to_sett_date - The last settlement date of the period for which the Data Aggregator Appointment to the Registration is effective.

Estimated Number of Rows - 6,940,000.

4.3.11 Table ndb_data_agg_runs

Logical Entity: Data Aggregation Run.

Each row is the record of an aggregation run or request.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

data_agg_run_no - The unique number automatically allocated to a data aggregation run

settlement_code - The code which identifies an Interim Information, Initial Settlement or Reconciliation according to the Pool's settlement timetable. The cdb_ref_values table holds a valid set of Settlement Codes for the 'SECO' (Settlement Code) domain.

settlement_date - The date on which energy was originally supplied for which the settlement is being made.

data_agg_run_date - the date and time when the Data Aggregation Run completed or date schedules if not yet run.

data_agg_run_stat - The current status of the run. The cdb_ref_values table holds a valid set of Run Statuses for the 'RNST' (Run Status) domain.

Estimated Number of Rows - 4,560.

4.3.12 View ndb_dc_apps

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entity: Data Collector Appointment.

Each row is a record of the appointment of a Data Collector to a Registration.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

sup_eff_fr_sett_dt - The first settlement date of the period for which the Registration of the supplier to the Metering System is effective.

metering_system_id - The nationally unique id of a Metering System.

eff_from_date - The first date of the period for which the Data Collector Appointment to the Registration is effective. Note this is a *calendar date* not a *settlement date.*

dc_participant_id - The Market Participant Id of the Data Collector.

Estimated Number of Rows - 6,940,000.

4.3.13 Table ndb_exception_data

Logical Entity: no direct equivalent logical entity..

Each row contains an exception type and a count of the number of Metering System Ids with that exception type. An exception type of 'TOT' represents a row containing a count of metering systems where there is at least one exception.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

Supp_id - The Supplier Id that has caused the exception.

Dc_id - The Data Collector Id where data causes the exception.

From_sett_date - The first settlement date of the period for which the exception applies.

To_sett_date - The last settlement date of the period for which the exception applies.

Except_type - The type of the exception. The cdb_ref_values table holds a valid set of Exception Types between E01 and E14 for the 'EXTP' (Exception Type) domain. An additional exception type of 'TOT' will be used to record the total count of metering systems with at least one exception for this combination of supp_id, dc_id and settlement dates.

File_creation_date - The date of the data collector data exceptions file.

Msid_count - The actual number of Metering Systems for this exception type, this settlement date range, supplier and data collector. For exception type of 'TOT', this value represents the number of metering systems with at least one exception.

Estimated Number of Rows – t.b.a.

4.3.14 Table ndb_gspg_pc_av_eac

Logical Entity: GSP Group Profile Class Researched Default EAC.

Each row defines the average Estimated Annual Consumption for a GSP Group / Profile Class combination.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first Settlement Date for which the Researched Default EAC is effective.

gsp_group_id - The unique id of a GSP Group.

profile_class_id - The nationally unique identifier of a Profile Class.

researched_av_eac - The Researched Default Estimated Annual Consumption for the GSP Group / Profile Class combination (this is referred to as average EAC in various places for historical reasons - CR487).

Estimated Number Of Rows - 740.

4.3.15 Table ndb_gsp_groups

Logical Entity: GSP Group.

Each row defines a group of one or more Grid Supply Points which together serve all or part of a distribution system.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

gsp_group_id - The nationally unique id of a GSP Group.

Estimated Number Of Rows - 15.

4.3.16 Table ndb_gsp_groups_dis

Logical Entity: GSP Group Distributor.

Each row defines which Distributor owns and operates the distribution system supplied via a GSP Group, and the associated PRS Agent.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first settlement date for which the Distributor is appointed to the distribution system supplied via the GSP Group

eff_to_sett_date - The last settlement date for which the Distributor is appointed to the distribution system supplied via the GSP Group

gsp_group_id - The unique id of a GSP Group.

dis_participant_id - The unique Market Participant Id of the Distributor.

prs_participant_id – The Market Participant Id of the associated PRS Agent (this is the same value as the distributor Id).

Estimated Number Of Rows - 20 (allows for small number of updates).

4.3.17 Table ndb_gsp_groups_run

Logical Entity: GSP Group in Aggregation Run.

Each row defines a GSP Group which is included in a Data Aggregation Run.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

gsp_group_id - The unique id of a GSP Group.

data_agg_run_no - The unique number automatically allocated to a data aggregation run

Estimated Number Of Rows - 68400.

4.3.18 Table ndb_agg_gsp_temp

Logical Entity: None - holds number of Metering Systems for a given GSP Group/Run for each partition so that nar_pc can sum to determine the total for each run.

Each row records the number of Metering Systems within a Run for a GSP Group and Partition.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

gsp_group_id - The unique id of a GSP Group.

data_agg_run_no - The unique number automatically allocated to a data aggregation run

partition_id - The number of the partition the Metering Systems come from

msid_count - The actual number of Metering Systems considered in the run

Estimated Number Of Rows - 900 * number of partitions.

4.3.19 Table ndb_instructions

Logical Entity: Instruction.

Each row holds information on an Instruction contained in an Instruction File which NHHDA has received. It does not hold the instruction itself.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

instr_seq_no - The sequence number of the instruction.

file_id - Unique id of the file, allocated by the File Receipt Manager (described in [CTSPEC]).

partition_id - When the instruction is for a Metering System, the partition in which that Metering System's data is stored; for refresh instructions has no meaning.

instr_stat - The status of the instruction. The cdb_ref_values table holds a valid set of Instruction Statuses for the 'INST' (Instruction Status) domain.

metering_system_id - The nationally unique id of a Metering System that this instruction is for.

instruction_offset- The offset of the instruction within the instruction file, for use by fseek.

instr_type - The type of the instruction. The cdb_ref_values table holds a valid set of Instruction Types for the 'INTP' (Instruction Type) domain.

dist_participant_id - For a Refresh Instruction, the Participant id of distributor that this refresh instruction relates to; otherwise the Participant id of the distributor associated with this Metering System determined by using the first two digits of the metering system id to match the Distributor Short Code.

significant_date - The date on which the first of the changes made by this instruction process occurs.

reprocess_flag - Signifies if the instruction is to be reprocessed (see INRP domain)

resend_request_flag - Indicates if instruction should be included in a failed instruction report.

resend_request_date - Date that instruction was included in a failed instruction report.

Resent_file_id – The latest file id containing the failed instruction.

estimated Number Of Rows - 3,160,000 (to cater for the exceptional case where the PRS Agent sends an instruction for every Metering System).

4.3.20 Table ndb_instruction_status_reason

Logical Entity: includes "Refresh Summary Details"

Contains 1 or more failure reasons for an instruction.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

reason_seq_no - The sequence of the failure for this instruction.

instr_stat_reason - The reason for the instruction having the status that it does. The cdb_ref_values table holds a valid set of Instruction Status Reasons for the “INSR” (Instruction Status Reason) domain.

instr_stat_reason_data - Data related to reason for instruction status.

Data_agg_action_state - Status of action on failure by data aggregator.

Estimated Number of Rows = 948000 (= 10% of instructions have 1 failure and 10% have 2 failures)

The following table explains the meaning of each error code, and the additional data which will be supplied.

Code	Description	Meaning	Additional Data
0A	Refresh accepted with validation errors	User has manually set the instruction to Applied (using the Manage Instruction Files form)	username
0B	Instruction type is not valid for source	Instruction type is not valid for source	
0D	Manual discard	User has manually set the instruction to discard (using the Manage Instruction Files form)	username
0F	Automatic discard due to failure	Application of refresh failed - system has set instruction to discard	
0I	Invalid Instruction	Instruction contents are invalid. Additional data identifies where the problem is e.g. DAA 1 2 means there is a problem with the second field in the first DAA record in the instruction	record type; record count of record type; field number
0S	Instruction has been superseded	Instruction has been superseded	Participant Id from superseding instruction ; Instruction Sequence No of superseding instruction
0T	Refresh Totals	Apply of a refresh has been attempted. This reason contains a summary of what happened. There is an entry for each partition plus a total for the whole refresh	partition_id ('Total' for total); number Metering Systems for partition in refresh; number of Metering Systems for partition not updated due to validation errors; number of Metering Systems in partition on database but not in instruction;

Code	Description	Meaning	Additional Data
			number of Metering Systems in partition on database but not in instruction which are not updated due to validation rules
0W	Wrong distributor	Metering system is not a member of distribution business	Distributor short code - for metering systems not owned by specified distributor Distributor id – for metering systems where the distributor in the LLFC record is incorrect
2C	>1 DC Appt before Sig Date	More than one Data Collector Appointment in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
2E	>1 ES before Sig Date	More than one Energisation Status in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
2G	>1 GSP Group before Sig Date	More than one GSP Group in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
2L	>1 LLFC before Sig Date	More than one Line Loss Factor Class in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
2M	>1 MC before Sig Date	More than one Measurement Class in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
2P	>1 PC/SSC before Sig Date	More than one Profile Class/Standard Settlement Configuration set in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
2R	>1 Registration before Sig Date	More than one Registration in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
2Y	>1 EAC before Sig Date	More than one Estimated Annual Consumption in the instruction has a Start Date on or before the Significant Date	Start Date (first item before Significant Date); Start Date (second item before Significant Date)
99	99 or more failure reasons	99 or more failure reasons encountered - not all reasons recorded (this is logged in place of the 99th reason, no further reasons are logged)	
AA	DA Appt end after Registration end	Data Aggregator Appointment End Date is after Registration	Registration Start Date; DAA Start Date

Code	Description	Meaning	Additional Data
		End Date (i.e. after the next Registration starts)	
AE	ES Start after Registration End	Energisation Status clause Start Date is after Registration End Date (i.e. after the next Registration starts)	Registration Start Date; ES Start Date
AM	MC Start after Registration End	Measurement Class clause Start Date is after Registration End Date (i.e. after the next Registration starts)	Registration Start Date; MC Start Date
AP	PC/SSC Start after Registration End	Profile Class/Standard Settlement Configuration clause Start Date is after Registration End Date (i.e. after the next Registration starts)	Registration Start Date; PC/SSC Start Date
CA	DA Appt already ends before Sig Date	Data Aggregator Appointment with Effective From Settlement Date before Significant Date is on the database but database has Effective To Settlement Date before Significant Date	DAA Start Date; DAA End Date (database)
CE	ES change during MAP	Instruction contains a change to Energisation Status within a Meter Advance period	ES Start Date; MAP Start Date
CM	MC change during MAP	Instruction contains a change to Measurement Class within a Meter Advance period	MC Start Date; MAP Start Date
CR	Registration change during MAP	Instruction contains a change to Registration detected within a Meter Advance period	Registration Start Date; MAP Start Date
CS	SSC change during MAP	Instruction contains a change to Standard Settlement Configuration detected within a Meter Advance period	SSC Start Date; MAP Start Date
DC	Duplicate DC Appt Start	Duplicate Data Collector Appointment Start Date in instruction	Start Date
DE	Duplicate ES Start	Duplicate Energisation Status Start Date in instruction	Start Date
DG	Duplicate GSP Group Start	Duplicate GSP Group Start Date in instruction	Start Date
DL	Duplicate Line Loss Factor Start	Duplicate Line Loss Factor Start Date in instruction	Start Date
DM	Duplicate MC Start	Duplicate Measurement Class Start Date in instruction	Start Date
DP	Duplicate PC/SSC Start	Duplicate Profile Class/Standard Settlement Configuration Start Date in instruction	Start Date
DR	Duplicate Registration Start	Duplicate Registration Start Date in instruction	Start Date
DY	Duplicate EAC Start	Duplicate Estimated Annual Consumption Start Date in instruction	Start Date

Code	Description	Meaning	Additional Data
EA	DA Appt End before Sig Date	Data Aggregator Appointment End Date in the instruction is before significant date	Start Date
EB	DA Appt Start before Registration Start	Data Aggregator Appointment Start Date is before Registration Start Date	Registration Start Date; DAA Start Date
EC	DC Appt Start before Registration Start	Data Collector Appointment Start Date is before Registration Start Date	Registration Start Date; DCA Start Date
EE	ES Start before Registration Start	Energisation Status Start Date is before Registration Start Date	Registration Start Date; ES Start Date
EM	MC Start before Registration Start	Measurement Class Start Date is before Registration Start Date	Registration Start Date; MC Start Date
EP	PC/SSC Start before Registration Start	Profile Class/Standard Settlement Configuration Start Date is before Registration Start Date	Registration Start Date; PC/SSC Start Date
EX	AA End before Sig Date	Annual Advance End Date in the instruction is before significant date	Start Date
FE	No ES for 1st consumption	This instruction will leave no Energisation Status effective at the start of the earliest consumption	Earliest MAP/EAC Start Date
FG	No GSP Group for 1st consumption	This instruction will leave no GSP Group ID effective at the start of the earliest consumption	Earliest MAP/EAC Start Date
FM	No MC for 1st consumption	This instruction will leave no Measurement Class effective at the start of the earliest consumption	Earliest MAP/EAC Start Date
FP	No PC/SSC for 1st consumption	This instruction will leave no Profile/SSC effective at the start of the earliest consumption	Earliest MAP/EAC Start Date
FR	No Registration for 1st consumption	This instruction will leave no Registration effective at the start of the earliest consumption	Earliest MAP/EAC Start Date
IA	Invalid PC, SSC & GSP Group for AFYC	Values of the GSP Group, PC and SSC in the instruction will not have corresponding AFYC values for all of the settlement days possible within the DAA.	GSP Group; Profile Class Id; SSC; Start Date of period not covered; End Date of period not covered.
IC	DC ID not found on dB	Data Collector ID in the instruction does not exist on database	DC ID; Start Date
IE	Invalid ES	Invalid Energisation Status in instruction	ES ID; Start Date
IG	GSP Group ID not found on dB	GSP Group ID in the instruction does not exist on database	GSP Group ID; Start Date
IL	Distributor/LLFC not found on dB	Distributor ID/Line Loss Class ID in the instruction does not exist on database	Distributor Id; LLF Class ID; Start Date

Code	Description	Meaning	Additional Data
IM	Invalid MC	Invalid Measurement Class in the instruction	MC ID; Start Date
IP	PC ID not found on dB	Profile Class ID in the instruction does not exist on database	Profile Class ID; Start Date
IR	Supplier ID not found on dB	Supplier ID in the instruction does not exist on database	Supplier ID; Start Date
IS	SSC ID not found on dB	Standard Settlement Configuration ID in the instruction does not exist on database	SSC ID; Start Date
IV	EAC/AA value outside permitted range	The EAC~~/AA~~ value in the file is outside the EAC boundary values defined in the system parameter table or the AA value in the file is outside the AA boundary values defined in the system parameter table ~~greater than the permitted 12.1 characters~~.	TPR ID; EAC/AA value; EAC/AA Start Date; AA End Date (if available)
MA	DAA before Sig Date not latest on dB	Data Aggregation Appointment with Effective From Settlement Date before Significant Date is not already in the database	Registration Start Date; DAA Start Date
MC	DC Appt before Sig Date not latest on dB	Data Collector Appointment with Effective From Settlement Date before Significant Date is not on the database and the Registration has a Data Aggregator Appointment before the significant date	DC ID; Start Date
ME	ES before Sig Date not latest on dB	Energisation Status with Effective From Settlement Date before Significant Date affects a DAA (PRS instruction) or AA/EAC (DC instruction) which is before the significant date and is not on the database	ES ID; Start Date
MG	GSP Group before Sig Date not latest on dB	GSP Group with Effective From Settlement Date before Significant Date affects a DAA (PRS instruction) or AA/EAC (DC instruction) which is before the significant date and is not on the database	GSP Group ID; Start Date
ML	LLFC before Sig Date not latest on dB	Line Loss Factor Class with Effective From Settlement Date before Significant Date affects a DAA (PRS instruction) or AA/EAC (DC instruction) which is before the significant date and is not on the database	Distributor Id; LLF Class ID; Start Date
MM	MC before Sig Date not latest on dB	Measurement Class with Effective From Settlement Date before Significant Date affects a DAA (PRS instruction) or	MC ID; Start Date

Code	Description	Meaning	Additional Data
		AA/EAC (DC instruction) which is before the significant date and is not on the database	
MP	PC/SSC before Sig Date not latest on dB	Profile Class/Standard Settlement Configuration with Effective From Settlement Date before Significant Date affects a DAA (PRS instruction) or AA/EAC (DC instruction) which is before the significant date and is not on the database	PC Id; SSC Id; Start Date
MR	Registration before Sig Date not latest on dB	Registration with Effective From Settlement Date before Significant Date affects a DAA (PRS instruction) or AA/EAC (DC instruction) which is before the significant date and is not on the database	Start Date
MX	AA before Sig Date not latest on dB	Annualised Advance in instruction has Effective From Settlement Date before Significant Date but there is no corresponding (identical) set of records on the database	Start Date
MY	EAC before Sig Date not latest on dB	Estimated Annualised Consumption in instruction has Effective From Settlement Date before Significant Date but there is no corresponding (identical) set of records on the database	Start Date
NE	ES not overlapping DA Appt	Energisation Status change is not required as it does not overlap any Data Aggregation Appointments	Start Date
NG	GSP Group not overlapping a DA Appt	GSP Group change is not required as it does not overlap any Data Aggregation Appointments	Start Date
NL	Line Loss Factor not overlapping DA Appt	Line Loss Factor change is not required as it does not overlap any Data Aggregation Appointments	Start Date
NM	MC not overlapping a DA Appt	Measurement Class change is not required as it does not overlap any Data Aggregation Appointments	Start Date
NP	PC/SSC not overlapping DA Appt	Profile Class/Standard Settlement Configuration change is not required as it does not overlap any Data Aggregation Appointments	Start Date
NR	No DAA for Registration in instruction	Registration does not have an associated Data Aggregator Appointment in the present instruction	Start Date

Code	Description	Meaning	Additional Data
OA	Overlapping DA Appts	The instruction contains overlapping Data Aggregator Appointments	Start Date (first item); Start Date (second item)
OX	Overlapping MAPs	The instruction contains overlapping Meter Advance Periods	Start Date (first item); Start Date (second item)
RA	DA Appt references unknown Registration	Registration referenced by Data Aggregator Appointment in the instruction does not exist on the database and is not created by this instruction	Registration Start Date; DAA Start Date
RC	DC Appt references unknown Registration	Registration referenced by Data Collector Appointment in the instruction does not exist on the database and is not created by this instruction	Registration Start Date; DCA Start Date
RE	ES references unknown Registration	Registration referenced by Energisation Status in the instruction does not exist on the database and is not created by this instruction	Registration Start Date; ES Start Date
RM	MC references unknown Registration	Registration referenced by Measurement Class in the instruction does not exist on the database and is not created by this instruction	Registration Start Date; MC Start Date
RP	PC/SSC references unknown Registration	Registration referenced by Profile Class/Standard Settlement Configuration in the instruction does not exist on the database and is not created by this instruction	Registration Start Date; PC/SSC Start Date
SC	No DC Appt for 1st DAA in Registration	This instruction will leave no Data Collector Appointment for this Registration effective at the start of the first Data Aggregator Appointment for the Registration	Registration Start Date
SE	No ES for 1st DA Appt in Registration	This instruction will leave no Energisation Status effective at the start of the Data Aggregator Appointment	Registration Start Date; DAA Start
SG	No GSP Group before 1st DA Appt	This instruction will leave no GSP Group effective at the start of the Data Aggregator Appointment	DAA Start Date
SL	No LLFC before 1st DA Appt	This instruction will leave no Line Loss Factor effective at the start of the Data Aggregator Appointment	DAA Start Date
SM	No MC for 1st DA Appt in Registration	This instruction will leave no Measurement Class effective at the start of the Data Aggregator Appointment	Registration Start Date; DAA Start
SP	No PC/SSC for 1st DAA in Registration	This instruction will leave no Profile Class/Standard Settlement	Registration Start Date;

Code	Description	Meaning	Additional Data
		Configuration effective at the start of the Data Aggregator Appointment	DAA Start
TV	AA with duplicate Time Pattern Regime	This instruction contains an Annualised Advance set which has more than one consumption figure for the same Time Pattern Regime Id	MAP Start Date; Duplicated TPR
TW	EAC with duplicate Time Pattern Regime	This instruction contains an Estimated Annualised Consumption set which has more than one consumption figure for the same Time Pattern Regime Id	EAC Start Date; Duplicated TPR
TX	AA missing for Measurement Req(s)	This instruction contains an Annualised Advance set where data is missing for one or more Measurement Requirements of the Standard Settlement Configuration	MAP Start Date
TY	EAC missing for Measurement Req(s)	This instruction contains an Estimated Annualised Consumption set where data is missing for one or more Measurement Requirements of the Standard Settlement Configuration	EAC Start Date
UX	AA where Time Pattern Regime not in SSC	This instruction contains an Annualised Advance set which contains consumption for a Time Pattern Regime Id which is not a Measurement Requirement for the Standard Settlement Configuration	MAP Start Date; Illegal TPR
UY	EAC where Time Pattern Regime not in SSC	This instruction contains an Estimated Annual Consumption set which contains consumption for a Time Pattern Regime Id which is not a Measurement Requirement for the Standard Settlement Configuration	EAC Start Date; Illegal TPR
VG	GSP not appointed to Dist Business	GSP group does not have an appointment to the Distribution Business for Metering System on the Effective From Settlement Date.	GSP Group ID; Start Date
VP	PC/SSC combination not on dB	Profile Class/Standard Settlement Configuration combination does not exist on the database	Profile Class ID; SSC Id
VZ	PRS Agent not appointed in this GSP Group	Instruction source (PRS Agent) not appointed to Distribution Business as determined from the first two digits of the Metering System Id.	Dist ID
XA	DA Appt Start after End	The instruction contains a Data Aggregator Appointment which	Start Date

Code	Description	Meaning	Additional Data
		has a Start Date later than the End Date	
XX	AA Start after End	The instruction contains an Annual Advance set which has a Start Date later than the End Date	Start Date
ZA	DAA on dB missing from instruction	A Data Aggregation Appointment exists in the database which is active on the Significant date but is not in the instruction (for Refresh, this is informational message)	Start Date
ZC	DC Appt missing from instruction,	There is no Data Collector Appointment in the instruction for the earliest Date on or after the Significant Date for which there is also a Data Aggregator Appointment	Date for which Data Collector Appointment required; Registration Start Date
ZE	ES missing from instruction	There is no Energisation Status in the instruction for the earliest Date on or after the Significant Date for which there is also a Data Aggregator Appointment / consumption	Date for which Energisation Status required
ZG	GSP Group missing from instruction	There is no GSP Group in the instruction for the earliest Date on or after the Significant Date for which there is also a Data Aggregator Appointment / consumption	Date for which GSP Group required
ZL	LLFC missing from instruction	There is no Line Loss Factor Class in the instruction for the earliest Date on or after the Significant Date for which there is also a Data Aggregator Appointment / consumption	Date for which Line Loss Factor Class required
ZM	MC missing from instruction	There is no Measurement Class in the instruction for the earliest Date on or after the Significant Date for which there is also a Data Aggregator Appointment / consumption	Date for which Measurement Class required
ZP	PC/SSC missing from instruction	There is no Profile Class/SSC in the instruction for the earliest Date on or after the Significant Date for which there is also a Data Aggregator Appointment / consumption	Date for which PC/SSC required
ZR	Registration missing from instruction	There is no Registration in the instruction for the earliest Date on or after the Significant Date for which there is also a Data Aggregator Appointment / consumption	Date for which Registration required
ZX	MAP on dB missing from instruction	A Meter Advance Period exists on the database which is active on	Start Date

Code	Description	Meaning	Additional Data
		the Significant Date but is not in the instruction	

Note that in external interfaces, the above codes are prefixed by 'N'.

Additional Data is separated by semicolons.

4.3.21 Table ndb_isr_agent_apps

Logical Entity: ISR Agent Appointment.

Each row details the appointment of an ISR Agent to a GSP Group.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_date - The first date of the period for which the PRS Agent is appointed to the GSP Group.

gsp_group_id - The unique id of a GSP Group.

eff_to_date - The last date of the period for which the PRS Agent is appointed to the GSP Group.

isr_participant_id - The Market Participant Id of the ISR Agent.

Estimated Number of Rows - 46.

4.3.22 Table ndb_llf_classes

Logical Entity: Line Loss Factor Class.

Each row defines a Line Loss Factor Class, its description, and the identity of the distributor who defined the class.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

llf_class_id - The id of a Line Loss Factor Class within a Distributor's system.

dis_participant_id - The Market Participant Id of the Distributor.

llf_class_desc - The description of the Line Loss Factor Class.

Estimated Number Of Rows - 720.

4.3.23 Table ndb_measure_reqs

Logical Entity: Measurement Requirement.

Each row defines a valid combination of Standard Settlement Configuration Id and Time Pattern Regime Id.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

std_sett_config_id - The nationally unique id of a Standard Settlement Configuration..

t_p_regime_id - The nationally unique id of a Time Pattern Regime.

Estimated Number of Rows - 2104.

4.3.24 View ndb_metering_sys

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entity: Metering System.

Each row defines a Metering System, i.e.: a commercial item subject to electricity supply trade.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

earliest_unchecked_sett_date - the earliest settlement date for this metering system for which the exception check has not been run. The Instruction Processing Subsystem sets it to the earliest date affected by a new instruction (if that date is earlier than the current value in the column). The Check Data Collector Subsystem sets it to null when all exception checks have been successfully completed for this subsystem.

Estimated Number Of Rows - 3,000,000.

4.3.25 View ndb_ms_dc_dets

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entities: Metering System Energisation Status (DC); Metering System GSP Group (DC); Metering System Measurement Class (DC); Metering System Profile Class (DC); Registration (DC); Settlement Configuration (DC).

Each row contains information about the Metering System supplied by a Data Collector, and the settlement date from which the information is effective. A series of flags indicate which columns have different values to the values they had in the previous record (i.e.: with next most recent Effective Settlement Date) for the same Metering System.

It should be noted that prior to the Archive Date the first row of data for a particular Metering System may not always have the change flags set. This means that the 'Effective from date' and 'Change Flag' combination to indicate an Effective From Settlement Date of a data item, cannot be relied upon if it is the first record in the database table and its Effective from Date is prior to the Archive Date.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first settlement date of the period for which this information is effective.

metering_system_id - The nationally unique id of a Metering System.

dc_participant_id - The Market Participant Id of the Data Collector supplying the information in this row.

energisation_stat - the Energisation Status of the Metering System. The cdb_ref_values table holds a valid set of Measurement Classes for the 'ENST' (Energisation Status) domain.

gsp_group_id - The nationally unique identifier of the GSP Group.

measure_class_id - The identifier of the Measurement Class. The cdb_ref_values table holds a valid set of Measurement Classes for the 'MECL' (Measurement Class) domain.

profile_class_id - The nationally unique identifier of the Profile Class.

sup_participant_id - The Market Participant Id of the Supplier.

std_sett_config_id - The nationally unique identifier of the Standard Settlement Configuration.

es_changed - Set to 'Y' if energisation_stat value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

gg_changed - Set to 'Y' if gsp_group_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

mc_changed - Set to 'Y' if measure_class_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

pc_changed - Set to 'Y' if profile_class_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

sup_changed - Set to 'Y' if sup_participant_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

ssc_changed - Set to 'Y' if std_sett_config_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

Estimated Number of Rows - 15,500,000 (assumptions: for each Metering System, this information changes twice per year, and data is held on line for 25 months: 3,000,000 * (1 + 2*(25/12)) = 15,500,000).

4.3.26 View ndb_ms_exceptions

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entity: no direct equivalent logical entity.

Each row contains details of an exception which has been recorded against a Metering System. The table is provided to improve the speed with which this data can be obtained.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first settlement date of the period for which the exception applies.

eff_to_sett_date - The last settlement date of the period for which the exception applies.

metering_system_id - The nationally unique id of the Metering System to which the exception applies.

partition_id - Id of the partition this row is allocated to.

exception_type - The type of the exception. The cdb_ref_values table holds a valid set of Exception Types for the 'EXTP' (Exception Type) domain.

current_supp_id - The Supplier Id as provided by the PRS Agent for the Effective From Settlement Date.

current_dc_id - The Data Collector Id where data causes the exception.

dist_participant_id - The distributor responsible for this metering system.

exception_item_id - Additional information on the exception. Dependent on exception_type, this could be a Measurement Class Id, Profile Class Id, Standard Settlement Configuration Id or Market Participant Id.

Estimated Number of Rows - 28,000,000 (assumptions: for each Metering System, one exception for each meter reading, i.e.: four times per year, and data is held on line for 25 months: 3,000,000 * (1 + 4*(25/12)) = 28,000,000).

4.3.27 View ndb_ms_prs_dets

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entities: Metering System Energisation Status; Metering System GSP Group; Metering System Line Loss Factor Class; Metering System Measurement Class; Metering System Profile Class; Settlement Configuration.

Each row contains information about the Metering System supplied by the PRS Agent, and the settlement date from which the information is effective. A series of flags indicate which columns have different values to the values they had in the previous record (i.e.: with next most recent Effective Settlement Date) for the same Metering System.

It should be noted that prior to the Archive Date the first row of data for a particular Metering System may not always have the change flags set. This means that the 'Effective from date' and 'Change Flag' combination to indicate an Effective From Settlement Date of a data item, cannot be relied upon if it is the first record in the database table and its Effective from Date is prior to the Archive Date.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first settlement date of the period for which this information is effective.

metering_system_id - The nationally unique id of a Metering System.

energisation_stat - the Energisation Status of the Metering System. The cdb_ref_values table holds a valid set of Measurement Classes for the 'ENST' (Energisation Status) domain.

gsp_group_id - The nationally unique identifier of the GSP Group.

llf_class_id - The id of the Line Loss Factor Class within the Distributor's system.

dis_participant_id - The Market Participant Id of the Distributor.

measure_class_id - The identifier of the Measurement Class. The cdb_ref_values table holds a valid set of Measurement Classes for the 'MECL' (Measurement Class) domain.

profile_class_id - The nationally unique identifier of the Profile Class.

std_sett_config_id - The nationally unique identifier of the Standard Settlement Configuration.

es_changed - Set to 'Y' if energisation_stat value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

gg_changed - Set to 'Y' if gsp_group_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

mc_changed - Set to 'Y' if measure_class_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

pc_changed - Set to 'Y' if profile_class_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

ssc_changed - Set to 'Y' if std_sett_config_id value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

llf_changed - Set to 'Y' if llf_class_id - dis_participant_id pair value was specified in an instruction as being effective from eff_from_sett_date, otherwise null.

Estimated Number of Rows - 9,250,000 (assumptions: for each Metering System, this information changes once per year, and data is held on line for 25 months: 3,000,000 * (1 + 1*(25/12)) = 9,250,000).

4.3.28 Table ndb_nar_files

This is an internal table used for recovery of a data aggregation run. It records all files created by NAR Calculate Increments.

4.3.29 Table ndb_nar_file_location

This table defines where temporary files created by NAR Calculate Increments are to be placed. There is an entry for each partition. This mechanism is used instead of the normal cdb_default_directory mechanism in order that files may be placed on different physical disks for different partitions.

4.3.30 Table ndb_m_participants

Logical Entity: Market Participant.

Each row in the table defines an organisation that participates in the Market.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

participant_id - The nationally unique identifier for a Market Participant. The assumption at this stage is that it is a user defined id, not system generated.

participant_name - The name of the Market Participant. Note that a Market Participant has one name regardless of how many roles it has.

dist_short_code - An alternative short code used to identify a Market Participant who has the Distributor role. Forms the first two characters of Metering System Id. Null for Market Participants who are not Distributors.

last_prs_non_ref_instr_sent - obsolete.

dc_flag - Set to 'Y' if the Market Participant is a Data Collector, otherwise null.

dist_flag - Set to 'Y' if the Market Participant is a Distributor, otherwise null.

isr_ag_flag - Set to 'Y' if the Market Participant is an ISR Agent, otherwise null.

pool_fa_flag - Set to 'Y' if the Market Participant is a Pool Market Domain Data Agent, otherwise null.

prs_ag_flag - Set to 'Y' if the Market Participant is a PRS Agent, otherwise null.

supp_flag - Set to 'Y' if the Market Participant is a Supplier, otherwise null.

Estimated Number of Rows - 200.

4.3.31 Table ndb_profile_classes

Logical Entity: Profile Class

Each row defines a Profile Class. Profile Class is one of the dimensions of the Supplier Purchase Matrix. It represents an exclusive category of customers whose consumption may be approximated to a common profile.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

profile_class_id - The nationally unique identifier of the Profile Class.

profile_class_desc - The description of the Profile Class, e.g.: 'domestic, economy 7'.

Estimated number of rows: 16.

4.3.32 Table ndb_refresh_instr_failure

Logical Entity: Refresh Instruction Failure

Contains 1 or more Metering System level validation failure for PRS Refresh Instructions.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

file_id - the unique id of the file (allocated by the File Receipt Manager and described in [CTSPEC]).

instr_seq_no - the sequence number of the Refresh Instruction.

metering_system_id - the nationally unique id. of the Metering System for which the refresh failed validation.

significant_date - the date on which the first of the changes made by this Instruction occurs.

resend_request_flag - indicates if the refresh failure should be included in a failed Instruction report.

resend_request_date - latest date that the failure was included in a failed Instruction report.

4.3.33 Table ndb_refr_instr_failure_reason

Logical Entity: Refresh Instruction Failure Reason

Contains 1 or more Metering System level validation failure reasons for the PRS Refresh Instruction failures recorded in ndb_refresh_instr_failure.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments

file_id - the unique id. of the file (allocated by the File Receipt Manager and described in [CTSPEC]).

instr_seq_no - the sequence number of the Refresh Instruction.

metering_system_id - the nationally unique id. of the Metering System for which the refresh failed validation.

instr_stat_reason - the 2-character failure code for the failure reason (as described in 4.3.18).

instr_stat_data - additional data related to the failure reason.

include_flag - indicates if the failure reason should be included when reporting the failure in a failed Instruction report.

4.3.34 Table ndb_report_parameters

Logical Entity: none

Internal table used in reporting to store temporary parameters.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments:

None.

4.3.35 Table ndb_report_agg_exceptions

Logical Entity: none

Internal table used in reporting to store temporary aggregation exceptions.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments:

None.

4.3.36 View ndb_register_cons

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entities: Estimated Annual Consumption (DC); Meter Advance Consumption (DC).

Each row is a specific Data Collector's view of the Annualised Advance or Estimated Annual Consumption of one of the Settlement Registers of a Metering System.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first settlement date of the period from which the annual consumption is calculated.

metering_system_id - The nationally unique id of a Metering System.

std_sett_config_id - The nationally unique id of a Standard Settlement Configuration..

t_p_regime_id - The nationally unique id of a Time Pattern Regime.

dc_participant_id - The Market Participant Id of the Data Collector whose view of the data is held in this record.

eff_to_sett_date - For an Annualised Advance, the last settlement date of the period from which the annual consumption is calculated. For Estimated Annual Consumption is the last date on which the consumption data is effective (i.e.: the day before the next EAC supplied by the same Data Collector), set to MAX DATE if this is the latest EAC from the Data Collector.

eac - The Estimated Annual Consumption for the period given by eff_from_sett_date and eff_to_sett_date. Null if record is for an Annualised Advance.

aa - The Annualised Advance for the period given by eff_from_sett_date and eff_to_sett_date. Null if the record is for an Estimated Annual Consumption.

EAC_AA Indicator 'A' and 'E' – 'A' is used to represent the Annualised Advance for the period given and 'E' represents the Estimated Annual Consumption

Note that exactly one of eac and aa will always be null.

Estimated Number of Rows - 56,300,000 (equal to the occurrences of Meter Advance Consumption).

4.3.37 View ndb_registrations

This is a partitioned view - see section 4.3.6. This section describes the details of each partitioned table making up the view.

Logical Entity: Registration.

Each row is a record of the Registration of a Supplier to a Metering System.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first settlement date of the period for which the registration is effective.

metering_system_id - The nationally unique id of a Metering System.

sup_participant_id - The Market Participant Id of the Supplier.

Estimated Number of Rows - 4,560,000.

4.3.38 Table ndb_settlements

Logical Entity: Settlement.

Each row defines a set of Settlement Date and Settlement Code for which acalculation of the funds to be cleared between Suppliers and Generators in respect of electricity traded through the Pool on a Settlement Day. This includes Interim Information, Initial Settlement and Reconciliation.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

settlement_code - A code which identifies which of the Interim Information, Initial Settlement or Reconciliation runs for the Settlement Date this row is for. The cdb_ref_values table holds a valid set of Settlement Codes for the 'SECO' (Settlement Code) domain.

settlement_date - The date on which energy was supplied and for which Settlement is taking place.

isr_deadline_date - The date by which the ISR Agent must receive the Supplier Purchase Matrix produced for this Settlement.

payment_date - The date on which funds must be transferred.

Estimated Number Of Rows - 4560.

4.3.39 Table ndb_spmatrix

Logical Entity: Supplier Purchase Matrix.

Each row contains the Annualised Advance and Estimated Annual Consumption information for one of the cells in the five-dimensional matrix. The dimensions of the matrix are: Supplier, Line Loss Factor Class, Measurement Requirement, Profile Class and GSP Group / Aggregation Run.

The data in this table is temporary, calculated during a Data Aggregation Run. Once the run is complete, the data is written to files. It is deleted by the archive process - typically a few days after the run occurred.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

llf_class_id - The id of a Line Loss Factor Class within a Distributor's system.

dis_participant_id - The Market Participant Id of a Distributor.

sup_participant_id - The Market Participant Id of a Supplier.

std_sett_config_id - The nationally unique identifier of a Standard Settlement Configuration.

t_p_regime_id - The nationally unique identifier of a Time Pattern Regime.

profile_class_id - The nationally unique identifier of the Profile Class

gsp_group_id - The nationally unique identifier of a GSP Group.

data_agg_run_no - The unique number automatically allocated to a data aggregation run.

spm_total_eac - The sum of EACs from metered Metering Systems contributing to this cell of the Supplier Purchase Matrix.

spm_eac_ms_cnt - The number of Metering Systems contributing to spm_total_eac.

spm_def_eac_ms_cnt - The number of Metering Systems contributing to spm_total_eac.

spm_total_unm_cons - The sum of EACs from unmetered Metering Systems contributing to this cell of the Supplier Purchase Matrix.

spm_unm_ms_cnt - The number of Metering Systems contributing to spm_total_unm_cons.

spm_def_unm_ms_cnt - The number of Metering Systems contributing to spm_total_unm_cons.

spm_total_aa - The sum of AAs from all metered Metering Systems contributing to this cell of the Supplier Purchase Matrix.

spm_aa_ms_cnt - The number of Metering Systems contributing to spm_total_aa.

Estimated Number of Rows - 10,000 (assumptions: 4284 valid measurement requirement profile class * 1 line loss factor class per vmrpc * 1.5 distributors per GSP group * 1.5 suppliers per SSC i.e. 4284*1.5*1.5=9639, say 10,000).

4.3.40 Table ndb_std_sett_cfgs

Logical Entity: Standard Settlement Configuration.

Each row defines a Standard Configuration which Metering Systems may assume.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

std_sett_config_id - A nationally unique, user defined, identifier used to identify a Standard Configuration.

configuration_desc - A description of the configuration used.

Estimated Number Of Rows - 964.

4.3.41 Table ndb_threshold_pars

Logical Entity: Threshold Parameter.

Each row details a Threshold Parameter and the Settlement Date from which it is valid. The Threshold Parameter is used in the calculation of EAC values for Metering System Settlement Registers which do not have a valid EAC or AA provided by the appointed Data Collector.

If it is statistically valid to use an average of the valid EACs/AAs that have been provided, this average is used. Otherwise the GSP Group Profile Class Researched Default EAC (pro rated to take into consideration the Average Fraction of Yearly Consumption) is used.

The threshold parameter defines the number of valid EACs/AAs that must have been provided for an average to be statistically valid.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

eff_from_sett_date - The first settlement date for which the Threshold Parameter applies.

Estimated Number of Rows - 5.

4.3.42 Table ndb_t_p_regimes

Logical Entity: Time Pattern Regime.

Each row defines a valid Time Pattern Regime Id. A Time Pattern Regime defines the periods during the day when a Settlement Register is recording consumption.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

Estimated Number of Rows - 2104.

4.3.43 Table ndb_vsscpcs

Logical Entity: Valid Settlement Configuration Profile Class.

Each row defines a valid combination of Standard Settlement Configuration and Profile Class.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments :

std_sett_config_id - The nationally unique id of a Standard Settlement Configuration.

profile_class_id - The nationally unique identifier of a Profile Class.

Estimated Number of Rows - 1640.

4.3.44 Table ndb_temp_mdd_load_audit

Logical Entity: none

Internal table used in reporting to temporary mdd load audit records.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments:

None.

4.3.45 Table cdb_return_parameter

Logical Entity: none

Internal table used to maintain a count of the number of instructions resent from the nmi resend instructions process.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments:

The table holds a count of the total number of instructions resent from the Manage Failed Instructions screen. The data is temporary and is deleted by the form after it has been read.

Estimated number of rows - < 1000

4.3.46 Table cdb_resend_access

Logical Entity: none

Internal table used to contain the user roles and file types available for which the 'Resend' button may be used in the 'Browse File Extraction and Transmission Statuses' and 'Browse Aggregation Files' screens.

Table Description

The columns, keys and indices of the table are listed in Appendix C.

Comments:

The table holds the file types that the corresponding user role is allowed to send using the 'Resend' button from the 'Browse File Extraction and Transmission Statuses' and 'Browse Aggregation Files' screens.

Estimated number of rows - < 1000

4.4 Audit Logs

4.4.1 Forms interface and batch processing

Details of the format and contents of the audit logs and the mechanism used to write to them are described in [CTSPEC], sections 2.7.3, 3.1.4, 4.4 and 7.

In NHHDA, the audit log is written to for all the tables which are updated from the Forms interface, and the same audit log is written to when these tables are updated from batch data file processing. NHHDA does not write table-level audit information for all tables during instruction processing; the only batch audit information logged is for updates to ndb_instructions and ndb_instruction_status_reason.

The following table lists the audited tables and the audit codes which identify them in the audit logs:

Table Name	Audit Code
ndb_av_frac_y_cons	NAF
ndb_data_agg_runs	NDR
ndb_gsp_groups	NGG
ndb_gsp_groups_dis	NGD
ndb_gsp_groups_run	NGR
ndb_gspg_pc_av_eac	NGP
ndb_isr_agent_apps	NIA
ndb_llf_classes	NLC
ndb_m_participants	NMP
ndb_measure_reqs	NMR
ndb_profile_classes	NPC
ndb_settlements	NSE
ndb_std_sett_cfgs	NSS
ndb_threshold_pars	NTP
ndb_t_p_regimes	NTR
ndb_vsscpcs	NVS
ndb_check_dc_data_runs	NDC
ndb_instructions	NIS
ndb_instruction_status_reason	NIR
ndb_refresh_instr_failure	NRF
ndb_refr_instr_failure_reason	NRR
ndb_user_roles (View)	NUR

Note that the field order is determined from the database definition - see Appendix C.

4.4.2 MDD Load Audit

In NHHDA, the ndb_temp_mdd_load_audit log is written to for tables which are updated from from batch data file processing for the mdd load process. NHHDA does not write table-level audit information for all tables during instruction processing. The following table lists the audited tables

Table Name
ndb_av_frac_y_cons
Ndb_gsp_group
Ndb_gsp_group_dis
Ndb_isr_agent_apps
Ndb_llf_classes
Ndb_measure_reqs
Ndb_m_participants
Ndb_profile_classes
Ndb_std_sett_cfgs
Ndb_threshold_pars
Ndb_t_p_regimes
Ndb_vsspcs

A complete record will be reported on, not just individual field changes.

4.5 Archive

4.5.1 Overview

As defined in [CTSPEC], archive and restore consists of two parts:

- saving the data on long term media
- deleting the online copy of the data

The first part of this process is satisfied by keeping the backups of the Oracle database and Operating System files from just prior to the deletion process. In determining the data to be deleted, two types of data must be considered:

- data stored in the Oracle database
- data stored in Operating System files

Each can be considered separately. Firstly, for data in the Oracle database, a set of rules can be derived which will determine the interaction of the individual data items and therefore what can be deleted and what cannot even if it meets other (time based) criteria. For data stored in Operating System files the consideration is simpler and is restricted to determining if the whole file can be deleted.

4.5.2 Oracle Database Data - Time Based Criteria

The determination of archive data is primarily time based. The data can be grouped into areas each of which have their own time period for archive (called Archive groups). For each of these Archive Groups it is necessary to store both a time period and a date on which the last archive of this sort of data was performed. In this way it is possible both for the archive process to know what period to archive and for other processes to know the period of validity of the data currently in the database. Therefore to determine if any record is old enough to consider for deletion, the formula will be:

```
IF (date on record  <= (system date - archive period))
THEN
     record is deletion candidate so
     perform other checks and maybe delete record
ENDIF
```

It is intended that for each Archive Group the archive period and last archive date should be stored as system variables, with only the archive period able to be changed by the system users. The last archive date should be automatically changed by the archive process when it runs. However, if the Archive Group is not FIS or FIN and the archive period is changed such that the last run date is now later than the archive period suggests it should be, then no data deletions or updates of the last archive date can take place until the system date has 'caught up' to the change. So an overall check must be added to the start of any archive routine:

```
IF ( (system date - archive period) > last archive date))
THEN
     continue with archive routine
     .
```

```
        .
        .
        set last archive date = system date – archive period
ENDIF
```

Instruction Data (Archive Group FIS / FIN) is an exceptional case. The archive routine will always consider this group, regardless of the last archive date. This is because Instruction Data cannot be deleted until the corresponding Instruction File has been archived, and Instruction Files become available for archiving according to rules which are not purely time-based (see section 4.5.4). Thus it could be several years before an Instruction File can be archived. When archiving runs, any number of old Instruction Files may have become available for archiving for the first time. Being able to specify an archive period prior to the last run date enables the number of files to be archived to be controlled.

4.5.3 Oracle Database Data - Rule Based Criteria

As previously stated most records in the Oracle database have deletion criteria in addition to the age of the record. These correspond to a set of rules associated either with records in an individual table or with group of tables. To fully specify these rules it is simplest to list the tables that archiving will be applied to, the date column(s) that time based criteria applies to and the deletion rules that apply. In the following table the value of ARCHIVE_DATE is system date - archive period. The actual archive period is determined by a system parameter corresponding to the Archive Group (see section 4.3.4.4 Database specification) as noted in the table.

Table	Date Column(s)	Archive Group	Deletion Rule(s)
NDB_EXCEPTION_ DATA	FILE_CREATION_DATE	DBS	ARCHIVE_DATE >= FILE_CREATION_DATE.
NDB_MS_PRS_DETS	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE.
NDB_MS_DC_DETS	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE.
NDB_DATA_AGG_APPS	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE. if removing last record for this metering system then additionally remove all records from NDB_MS_PRS_DETS, NDB_REGISTRATIONS and NDB_DC_APPS for this metering system.
NDB_REGISTRATIONS	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE additionally, delete all records from NDB_DC_APPS for any deleted registration

Table	Date Column(s)	Archive Group	Deletion Rule(s)
NDB_MS_EXCEPTIONS	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE.
NDB_INSTRUCTIONS, NDB_INSTRUCTIONS-_STATUS_REASON	greatest (CREATION_TIME, RECEIVED_TIME, PROCESS_SEND_TIME) on CDB_FILE_REFERENCE table	FIS / FIN	Instruction Files: ARCHIVE_DATE (based on the FIN value) >= file date Instruction Data: NDB_INSTRUCTIONS and NDB_INSTRUCTION_STATUS_REASON rows deleted if the archive date (based on the FIS value) >= file date AND the corresponding instruction file has been archived.
NDB_REGISTER_CONS (Annualised Advances)	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE.
NDB_REGISTER_CONS (Estimated Annual Consumption)	EFF_FROM_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_FROM_SETT_DATE and *either* there is a later EAC record with ARCHIVE_DATE >= EFF_FROM_SETT_DATE from an appointed Data Collector *or* there are no NDB_DATA_AGG_APPS for the metering system with EFF_TO_SETT_DATE >= this record's EFF_FROM_SETT_DATE
			If deleting a record from NDB_REGISTER_CONS leaves a metering system with no record in NDB_REGISTER_CONS from the same data collector, all records in NDB_MS_DC_DETS for that metering system from the same data collector are also deleted
NDB_SETTLEMENTS NDB_DATA_AGG_RUNS NDB_SPMATRIX	SETTLEMENT_DATE	DBS	ARCHIVE_DATE >= SETTLEMENT_DATE also delete all child records in NDB_DATA_AGG_RUNS, NDB_GSP_GROUPS_RUN, NDB_SPMATRIX
NDB_ISR_AGENT_APPS	EFF_TO_DATE	DBS	ARCHIVE_DATE >= EFF_TO_DATE
NDB_GSP_GROUPS_DIS	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE
NDB_AV_FRAC_Y_CONS	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_TO_SETT_DATE
NDB_THRESHOLD_PARS	EFF_FROM_SETT_DATE	DBS	ARCHIVE_DATE >= EFF_FROM_SETT_DATE and this is not the latest record prior to or on the ARCHIVE_DATE.
NDB_GSPG_PC_AV_EAC	EFF_TO_SETT_DATE	DBS	ARCHIVE_DATE >=

Table	Date Column(s)	Archive Group	Deletion Rule(s)
			EFF_TO_SETT_DATE
CDB_ACTIVITY	SCHEDULE_TIME	DBA	ARCHIVE_DATE >= SCHEDULE_TIME also delete any child records in CDB_ACTIVITY_PARAMETER
CDB_FILE_REFERENCE, CDB_DATA_FILE, CDB_FILE_EXPORT, CDB_REPORT_FILE, CDB_INSTRUCTION_FILE	greatest (CREATION_TIME, RECEIVED_TIME, PROCESS_SEND_TIME) on CDB_FILE_REFERENCE table	DBF	Records in CDB_FILE_REFERENCE, CDB_DATA_FILE, CDB_FILE_EXPORT, CDB_REPORT_FILE, CDB_INSTRUCTION_FILE are not deleted before the corresponding file has been archived and taken off line.
NDB_METERING_SYS		N/A	If there are no details in NDB_MS_PRS_DETAILS, NDB_MS_DC_DETAILS, NDB_REGISTRATIONS, NDB_REGISTER_CONS or NDB_INSTRUCTIONS then delete NDB_METERING_SYSTEM and any child records in NDB_MS_EXCEPTIONS.

Note that the mechanism for deletion of NDB_METERING_SYS uses triggers on its details - whenever a detail is deleted, the trigger sets a flag to indicate that the NDB_METERING_SYS needs checking; whenever a detail is added or modified, the flag is cleared. This mechanism means that if either archive or instruction processing removes the last detail of a metering system, the archive process will then remove the metering system record itself.

4.5.4 File Data

Data stored in Operating System files is treated on a file by file basis. That is to say that an entire file is deleted in one go rather than individual data items within it. The decision to delete a file is based on data held about the file in the common Oracle database tables and is based on separate criteria for each file type. The actual archive period is determined by a system parameter corresponding to the Archive Group (see section 4.3.4.4 Database specification) as noted in the table. The archive period is specified as a number of days since the last activity on the file, i.e.: greatest (CREATION_TIME, RECEIVED_TIME, PROCESS_SEND_TIME). Note that this value yields a date-time value whereas the archive date is a date only (implied time 00:00:00). So a file with a creation date-time of 1 Dec 1997 13:10 will not be archived when the archive date is 1 Dec 1997.

File Type	Archive Group	Deletion Rule(s)
instruction file	FIN	Must have status of 'PROCESSED', 'CORRUPTED' or

File Type	Archive Group	Deletion Rule(s)
		'SKIPPED' To allow NHHDA to determine handling of the next file, do not delete the last 'processed' file from a data source. Corresponding Instruction data will not be archived before Instruction files are archived
data file	FID	To allow for reprocessing, do not delete the last file of each data file type processed by NLD.
unknown/corrupt file	FUK	
supplier purchase matrix	FSP	
failed instruction list	FFI	
check data collector data exceptions	FCE	
audit log	FAU	
operator log	FOP	
error log	FER	
user generated reports	FUR	
exception reports	FEX	
DC Performance Report	FDC	
Monthly D0095 Report	FCS	

When archived, a file is not actually deleted. It is moved to an archive directory (a new archive directory is used for each run of the archive process and an operator message issued to identify the directory at the end of the run). The operator is responsible for transferring the files onto tape. The system has to be told that this has been done using the utility "arc_path". This utility is run at the Operating System command line and has the following definition:

```
arc_path -m <mode> [-u <username>] [-p <password>]
         [-f archive_directory] [-t archive_media]
```

The utility is used to

- notify the system of the identity of the archive media (requires specification of the archive_directory and the archive_media) [mode = `media`];

```
arc_path -m media [-u <username> -p <password>]
    [-f archive_directory] [-t archive_media]
```

- notify the system that the contents of the archive directory have been deleted or removed (requires specification of the archive_directory) [mode = `offline`];

```
arc_path -m offline [-u <username> -p <password>]
    [-t archive_media]
```

```
arc_path -m media -m offline
    [-u <username> -p <password>] [-f archive_directory]
    [-t archive_media]
```

- notify the system that an archive has been restored (requires specification of the archive_directory and the archive_media). Note that the data need not be restored into the original archive_directory [mode = `online`].

```
arc_path -m online [-u <username> -p <password>]
    [-f archive_directory] [-t archive_media]
```

4.5.5 Archive Groups

It is obvious from the above that there are several different archive periods required and each should be configurable by the system operators. These are stored as system variables in the CDB_SYSTEM_PARAMETER table as listed in section 4.3.4.4 (parameter 1 - "ARP"). The archive program stores the archive_date value used in the corresponding "ARD" set of parameters.

4.6 Database Sizing

Please refer to the Installation Guide ningde Appendix –NHHDA Oracle Database Tablespaces for detailed database sizing.

Summary of sizing totals.

Sizes in Gb	Initial	End	Max
space for tables	9.17	31.69	47.51
space for indexes	12.72	43.00	43.23
Size	21.89	74.69	90.74

4.7 File Sizing

The following table shows the sizes of the files used by NHHDA. All sizes are based on [NHHDAURS]:

10,000,000 metering systems

270,000 instructions per day (based on logical design)

48,000,000 supplier purchase matrix cells

All database fields are assumed to be fully filled with data. All reports are run on a totally ad hoc basis so no volumetric information can be derived for these files.

Name	Record Length (bytes)	Number of Records per Copy	Average Number of Copies per Day	Approx. Daily Volume (Mb)
Instruction Input File	137	270,000	1	37
Instruction Audit Information	200	270,000	1	54
Aggregation Exception Log (machine format)	40	10,000,000	8	3,200
Check data collector data (machine format)	40	10,000,000	1/14	29
Supplier Purchase Matrix	119	48,000,000	8	45,000
Failed Instructions	50	27,000	1	1
Monthly D0095 Report	**100**	**1,500**	**1 per month**	**1**
Total				**48,322**

The number of Metering Systems and SPM cells is very high and in practice it is unlikely that these numbers of records will ever be reached. More realistic numbers are 3,000,000 meters, 80,000 Instructions and 10,000 SPM cells. Using these figures :

Name	Record Length (bytes)	Number of Records per Copy	Average Number of Copies per Day	Approx. Daily Volume (Mb)
Instruction Input File	137	80,000	1	11
Instruction Audit Information	200	80,000	1	16
Aggregation Exception Log (machine format)	40	3,000,000	8	960
Check data collector data (machine format)	40	3,000,000	1/14	9
Supplier Purchase Matrix	119	10,000	8	10
Failed Instructions	50	8,000	1	1
Total				**1007**

4.8 Total Sizes

	expected	maximum
Database:	21 Gb	100 Gb
Files (assume 14 days kept):	14 Gb	676 Gb
Reports (depends on volume of reporting and archive period):	1 Gb	20 Gb
TOTAL:	**36 Gb**	**796 Gb**

5 NAR Aggregation Run Subsystem Specification

5.1 Introduction

The Aggregation Run subsystem aggregates the metering system data for specified settlement days and generates files to send to ISR Agents and Suppliers.

The NAR subsystem performs the following actions:

- recovery of previous failed runs;
- activation of multiple aggregation sub-processes;
- reading of meter system data, optimised for the database partitioning;
- calculation of the consumption of a meter on a settlement day, to be charged to a supplier;
- aggregation of sets of similar meters into Supplier Purchase Matrix cells;
- generation of sets of structured files of Supplier Purchase Matrices for sending to ISR Agents and Suppliers;
- generation of DC Performance Report.

The subsystem is initiated by the CSC Scheduler process, and runs in batch mode.

The process control module recovers disk and database data from the last run, if it did not complete successfully. It then initiates processes to create the required Supplier Purchase Matrix files, in a format suitable for exporting to other Market Participants.

It is also possible to re-run the final part of the subsystem separately, to regenerate the output files from the SPM table in the database.

The facilities of the common subsystems are used for process control, file management and file export. Communication between separate executables of the subsystem is done using the common scheduling functions.

NOTE: In this section ISR Agent is determined by the BETTA Start Date for Scottish GSPs. For settlement dates before the BETTA Start Date the ISR Agent for Scottish GSPs will be that stored in the 'SPI' system parameter (i.e IAR), for settlement dates on or after the BETTA Start Date for Scottish GSPs the ISR Agent will be the same as for English and Welsh GSPs.

5.2 Subsystem Context

5.2.1 Subsystem Context Diagram

The context diagram for this subsystem is shown in Figure 2:

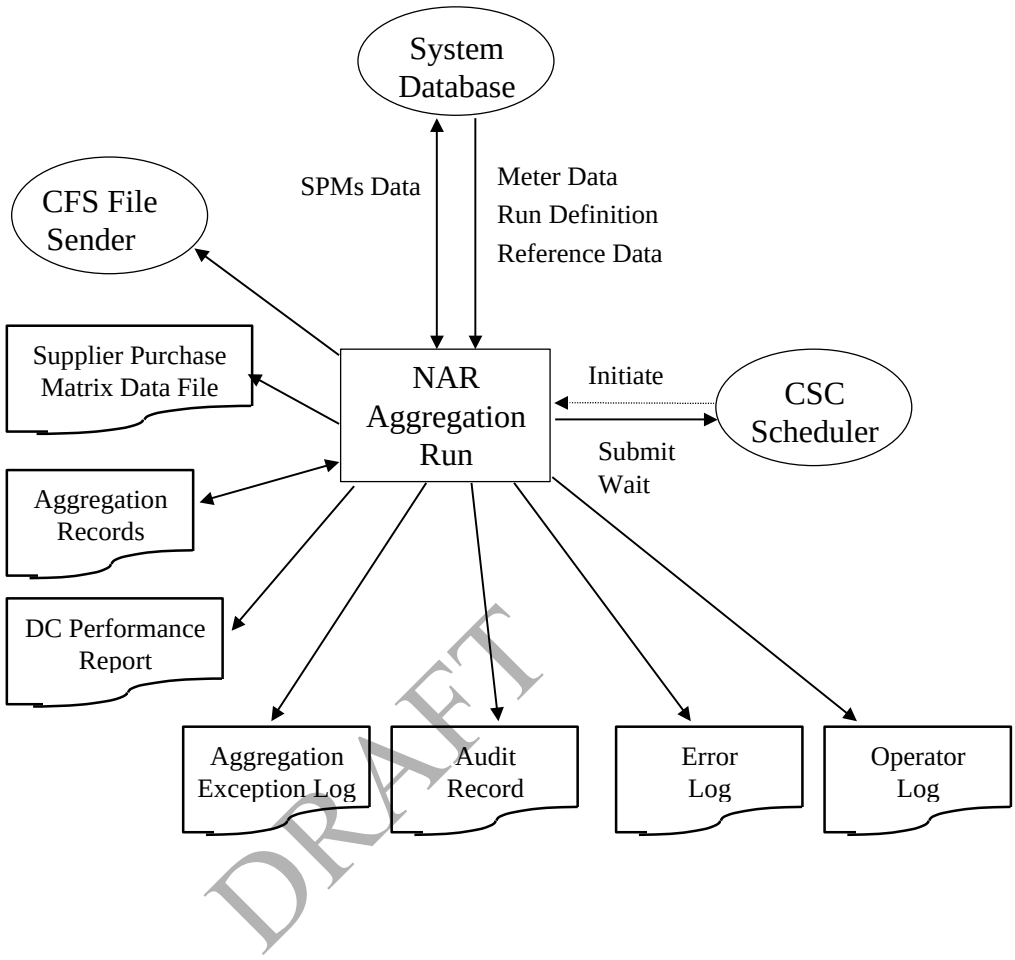


Figure 2: Context Diagram for Aggregation Run

5.2.2 Interfaces

5.2.2.1 CSC Scheduler

This process activates the Aggregation Run subsystem, according to events scheduled using the utility nhh_submit.exe. All data for the run is held in pre-defined locations in the database.

The Scheduler is responsible for ensuring that the Aggregation process does not run at the same time as other processes submitted on the Exclusive queue.

The main NAR process keeps an active entry on the Exclusive queue, while submitting multiple sub-processes to non-exclusive queues to perform the aggregation. The wait functions of CSC Scheduler are used to synchronise the stages of the processing.

5.2.2.2 CFS File Sender

The CFS.EXPORT function is called to send Supplier Purchase Matrix Data files when required.

5.2.2.3 Database

A number of database tables are accessed and written within the subsystem. The exact identities are specified in the Data Usage section of this document.

The high level data flows are as follows:

Flow Name	Direction	Description
SPM Data	Input Output	The aggregated data. It is created from the meter data, and read back to form the structured files
Run Definition	Input	The details of the GSP Groups and Settlement Dates for which Aggregation Runs are required.
Meter Data	Input	The meter appointments, details and EACs/AAs which contribute to the SPMs.
Reference Data	Input	Fixed Pool data definitions (for example, Metered |Unmetered flags). Also AFYCs and thresholds, which are not assigned to individual meters.

5.2.2.4 Output Files

The table below lists the files which are created during the NAR processing. Multiple instances of each file type may be created.

Flow Name	Direction	Description
Supplier Purchase Matrix Data File	Output	These are structured files, holding Supplier Purchase Matrices in a suitable form for sending to ISR Agents and Suppliers. One file will be created for each Supplier and the ISR Agent for each GSP group/Settlement run combination in the NAR execution. Supplier files only contain data about the Supplier to which they are sent, ISRA files contain data about all Suppliers.
Aggregation Records	Input Output	These are temporary files, used during the aggregation processing. They are deleted during the later stages of the NAR processing. The number of files created will be decided during implementation and optimisation.
Aggregation Exception Log	Output	These files hold records of predefined exceptions affecting the settlement runs, for audit purposes. One set (1 file per run) of files will be created for each 'calculate increments' process initiated by CSC - i.e. each file contains the exceptions for one run-partition combination.
Aggregation Audit Log	Output	These files hold records of the data used in the settlement runs. When enabled, each 'calculate increments' process creates an Audit log for each run; additionally each 'calculate defaults' process creates an Audit Log. For each run there is, then, an Audit Log for every partition plus an Audit Log for the default processing

Flow Name	Direction	Description
Error Log	Output	This file records unexpected processing errors encountered during NAR processing. The file will be written using CLG functions.
Operator Log	Output	This file records major events during the NAR processing, as is written using CLG functions
DC Perfornance Report	Output	This file records counts and sub-totals of EACs and AAs per suppliers for a DC.

The Aggregation Audit Logs are required for audit purposes on an occasional basis. For this purpose, a backup of the database is taken after each set of aggregation runs. The auditor may restore the backup and re-run the Aggregation Run without deleting the Aggregation Records. These records may then be viewed using standard Operation System tools. On re-run, the SPM generated is compared with that from the original run to confirm the same data has been used.

Only the Supplier Purchase Matrix Data Files are part of the external NHHDA interface (see Section 3.)

The Aggregation Exception Log is specified in the following section.

5.2.3 Aggregation Exception Log File

5.2.3.1 File Specification

The following record types appear in Aggregation Exception Log files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= L0037001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA
5	To Role Code	text(1)	null
6	To Participant Id	text(4)	null
7	Creation Time	date/time	Time of file generation

ZPD - Data File Additional Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPD
2	Settlement Date	date	Settlement Date for Aggregation Run
3	Settlement Code	text(2)	Settlement Code for Aggregation Run
4	Run Type Code	text(2)	= D (Run Type Code for Aggregation Run)
5	Run Number	integer(7)	Run identifier internal to NHHDA
6	GSP Group	text(2)	null

AXH - Aggregation Exception Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= AXH
2	Activity Identifier	integer(10)	identifier of the activity which created the file
3	Partition Identifier	integer(3)	partition aggregated by the specified activity

EXM - Metering System Identifier			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EXM
2	Metering System Id	integer(13)	mandatory (Except with exceptions A13 and A14 where this will be NULL)

A01 - Exception Details (no EAC or AA for Metering System)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A01
2	Appointed Data Collector Id	text(4)	mandatory
3	Registration Effective From Settlement Date	date	mandatory
4	Data Collector Appointment Effective From Settlement Date	date	mandatory

A02 - Exception Details (no PRS Data Provided)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A02
2	Data Collector Id	text(4)	mandatory
3	Effective From	date	mandatory

A02 - Exception Details (no PRS Data Provided)			
	Settlement Date of DC Details		

A03 - Exception Details (non-zero AA when de-energised)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A03
2	Data Collector Id	text(4)	mandatory
3	AA Effective From Settlement Date	date	mandatory

A04 - Exception Details (multiple MAP)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A04
2	Data Collector Id	text(4)	mandatory
3	Effective From Settlement Date for AA from specified Data Collector	date	mandatory

A05 - Exception Details (Supplier incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A05
2	Data Collector Id	text(4)	mandatory
3	Supplier Id (PRS)	text(4)	mandatory
4	Supplier Id (DC)	text(4)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of Data Collector Data	date	mandatory

A06 - Exception Details (Measurement Class incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A06
2	Data Collector Id	text(4)	mandatory
3	Measurement Class Id (PRS)	text(1)	mandatory
4	Measurement Class Id (DC)	text(1)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A07 - Exception Details (GSP Group incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A07
2	Data Collector Id	text(4)	mandatory
3	GSP Group Id (PRS)	text(2)	mandatory
4	GSP Group Id (DC)	text(2)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A08 - Exception Details (Profile Class incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A08
2	Data Collector Id	text(4)	mandatory
3	Profile Class Id (PRS)	integer(2)	mandatory
4	Profile Class Id (DC)	integer(2)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A09 - Exception Details (Energisation Status incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A09
2	Data Collector Id	text(4)	mandatory
3	Energisation Status (PRS)	text(1)	mandatory
4	Energisation Status (DC)	text(1)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A10 - Exception Details (Standard Sett Config incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A10
2	Data Collector Id	text(4)	mandatory
3	SSC Id (PRS)	text(4)	mandatory
4	SSC Id (DC)	text(4)	mandatory
5	Effective From Settlement Date of Last PRS Data	date	mandatory
6	Effective From Settlement Date of Last DC Data	date	mandatory

A11 - Exception Details (AA for Unmetered Metering System)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A11
2	Data Collector Id	text(4)	mandatory
3	AA Effective From Settlement Date	date	mandatory

A12 - Exception Details (Metering System Excluded)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A12
2	Metering System Id	integer(13)	The MSID of the excluded Metering System
3	Supplier	text(4)	The ID of the Supplier; will be null if no Registration record exists for Data Aggregator Appointment
4	Effective From Settlement Date of Registration	date	Will be null if no Registration record exists for Data Aggregator Appointment
5	Effective From Settlement Date (data aggregator appointment)	date	mandatory

A13 - Exception Details (Missing AFYC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A13
2	GSP Group Id	text(2)	mandatory
3	Profile Class Id	integer(2)	mandatory
4	SSC Id	text(4)	mandatory
5	Time Pattern Regime Id	text(5)	mandatory
6	Metering System Default Count	integer(7)	mandatory

A14 - Exception Details (Missing Default EAC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A14
2	GSP Group Id	text(2)	mandatory
3	Profile Class Id	integer(2)	mandatory
4	Metering System Default Count	integer(7)	mandatory

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	mandatory

Note:

The “Effective From Settlement Date of DC Data” date field of Aggregation Exceptions A05 to A09 refers to the Effective From Settlement Date of the latest Data Collector details record in the database before the Aggregation

Run Settlement Date, as does the "Effective From Settlement Date of Last DC Data" date field of Aggregation Exception A10.

The A13 and A14 exceptions will be produced in a second exception file, that maintains the same structure as detailed above. This exception file will not be produced per partition but on a per run basis.

Repeating structure of File:

```
Aggregation Exception Log    ::= ZHD ZPD AXH {Meter_Set} ZPT
Meter_Set                    ::= EXM Ex_Record { Ex_Record }
Ex_Record                    ::= A01 | A02 | A03 | A04_Set |
                                 A05 | A06 | A07 | A08 | A09 |
                                 A10 | A11 | A12 | A13 | A14

A04_Set                      ::= A04 A04 {A04}
```

Sorting:

The file is not explicitly ordered, but written as exceptions are encountered. All exceptions for a single metering system will appear within one Meter_Set, but not in any particular order. Additionally as the processing currently reads Metering System Ids in order, the file will be sorted on Metering System. Note that this ordering may not be retained following future code revisions.

5.2.3.2 Frequency/Volume

Maximum of 1500 files per NAR run (50 partitions * 30 Aggregation Runs).

Number of Records: 90M records – 3M Metering Systems * 30 Aggregation Runs, one exception per Metering System per settlement day.

Overall volume: 90,000,000 records, average record size 40 bytes gives approximately 3.6 Gb.

5.2.3.3 Failure/Recovery Mechanisms

This is described in the specification of the NAR Calculate Increments module.

5.2.4 Aggregation Audit Log File

5.2.4.1 File Specification

The following record types appear in Aggregation Audit Log files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= L0038001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA
5	To Role Code	text(1)	null
6	To Participant Id	text(4)	null
7	Creation Time	date/time	Time of file generation

ALH - Aggregation Log Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ALH
2	Activity Id	integer(10)	Id of activity creating file
3	Partition Id	integer(2)	(null for defaults section)
4	Settlement Date	date	
5	Settlement Code	text(1)	
6	Run Number	integer(7)	data aggregation run number (NHHDA internal number)
7	Threshold Parameter	integer (7)	(null for consumptions section)

ALM - Metering System			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ALM
2	Metering System Id	integer()	
3	Data Collector Id	text(4)	the Data Collector supplying the consumption used (or the one supplying an AA for an unmetered metering system even though that data is not actually used); null if no consumption available (consumption type - default)
4	Supplier Id	text(4)	
5	Profile Class Id	integer(2)	
6	Distributor Id	text(4)	
7	Line Loss Factor Class Id	integer(3)	
8	Standard Settlement Configuration Id	text(4)	
9	GSP Group Id	text(2)	
10	Measurement Class	text(1)	
11	Energisation Class	text(1)	
12	Consumption Type	text(1)	A = AA for metered E = EAC for metered U = EAC for unmetered D = default for metered V = default for unmetered N = deenergised and no AA (i.e. Metering System does NOT contribute in any way to the SPM) Z = Zero AA for deenergised metered.

ALQ - Consumption Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ALQ
2	Time Pattern Regime Id	text(5)	
3	Consumption	decimal (14,1)	kWh null if Consumption Type is default

ALE - Metering System Excluded			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ALE
2	Metering System Id	integer(13)	The MSID of the excluded Metering System

ALS - SPM Cell Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ALS
2	Supplier Id	text(4)	
3	Profile Class Id	integer(2)	
4	Distributor Id	text(4)	
5	Line Loss Factor Class Id	integer(3)	
6	Standard Settlement Configuration Id	text(4)	
7	GSP Group Id	text(2)	
8	Time Pattern Regime Id	text(5)	

ALD - Default Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ALD
2	Consumption Type	text(1)	D = default for metered V = default for unmetered
3	Number Defaults	integer(7)	Number of Metering Systems contributing to this cell for which default consumption of this type is required
4	Default Consumption	decimal (14,1)	default consumption used for this cell (kWh) This is calculated as either field 6 / field 5 or field 7 x field 8 the former is used if field 5 exceeds the threshold parameter, otherwise the latter is used.
5	Number of Metering Systems in cell	integer(7)	number of Metering Systems contributing to this cell for which default consumption of this type is NOT required
6	total actual consumption	decimal (14,1)	total consumption for all Metering Systems contributing to this cell for which default consumption of this type is NOT required (kWh) null if Number of Metering Systems in cell below threshold parameter
7	GSP group - Profile Class Researched Default EAC	decimal (14,1)	Researched Default EAC used in derivation of default consumption null if Number of Metering Systems in cell above threshold parameter
8	Average Fraction of Yearly Consumption	decimal (7,6)	proportion of Researched Default EAC used for cell null if Number of Metering Systems in cell above threshold parameter

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	mandatory

Repeating structure of File:

```
Aggregation Audit Log        ::= ZHD Audit Details ZPT
Audit Details                ::= Partition Log | Defaults Log
Partition Log                ::= ALH {ALE | (ALM {ALQ})}
Defaults Log                 ::= ALH {ALS {ALD}}
```

Sorting:

The file is not explicitly ordered, but as the processing currently reads Metering System Ids in order, the files for partitions will be sorted on Metering System. Note that this ordering may not be retained following future code revisions. There is no ordering performed by the code when deriving defaults, so the defaults log will not be ordered.

When Aggregation Audit is enabled, for each run there will be one partition log created for each partition plus one defaults log created.

5.2.5 Special Considerations

The following assumptions and principles will be used in this physical design and the subsequent implementation:

- A large proportion of meters will contribute to a small number of Supplier Purchase Matrix entries;
- Adequate performance with a large database takes precedence over fast performance with a small database. Some database tuning may be required on installation to achieve this;
- Reads and writes to slow storage media will be done in large blocks to reduce access times;
- The database tables will be partitioned evenly across the available disks;
- Any dynamic allocation of memory will be done once per aggregation run, not for each metering system;
- The database will contain exceptions as defined in the URS, at the rate of one per metering system per day (maximum);
- The records in the database will all be valid according to the checks specified for instruction processing;
- The database may not contain sufficient PRS Agent and/or Data Collector data to allow the inclusion of a Metering System in the aggregation process. If this is the case, aggregation will continue but the Metering System will be excluded and an entry appended to the aggregation audit log recording its MSID;
- The database may contain errors in the data, such as ranges of values (and not including the defined exceptions detected by the NCD subsystem). These errors will result in error log entries. The database row containing the invalid data will be ignored, and default values used where appropriate;
- In order to support audit requirements, the database is locked against update when an Aggregation Run starts. The lock is not

released until a database backup has been completed and the Data Aggregator has informed the system that the lock is to be released;

- Audit data information indicating which SPM cell was updated for each Metering System along with the source of consumption data (if appropriate) and the nature of the update is enabled by specifying a parameter to the aggregation process.
- A missing AFYC value or Default EAC value will not cause an Aggregation run to fail. A message will be sent to the operator log to highlight the presence of the exception and the number of MSIDs affected. The exception will be detailed in the Aggregation Exception Log File.

5.3 Subsystem Processing

5.3.1 Major Components

The separate modules provided by the subsystem are identified in Figure 3. All of these may be called by CSC Scheduler, although only *NAR Aggregate EACs and AAs* and *NAR Generate SPM Output* can be scheduled from the user interface.

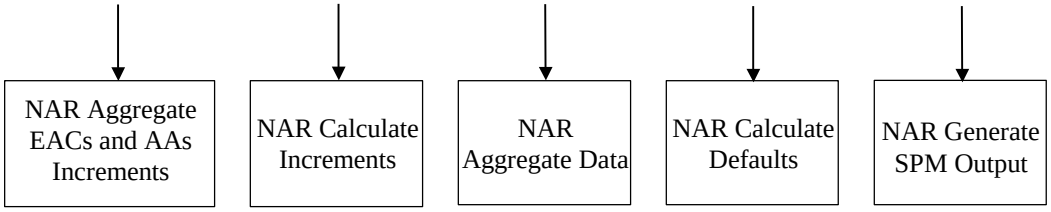


Figure 3: Subsystem Decomposition for Aggregation Run

The processing performed by each executable is described in 5.3.3.

5.3.2 Flow Control

The subsystem may run multiple instances of the same executables simultaneously. This is controlled by the top-level functions of this subsystem, using the facilities of CSC Scheduler, as shown in Figure 4.

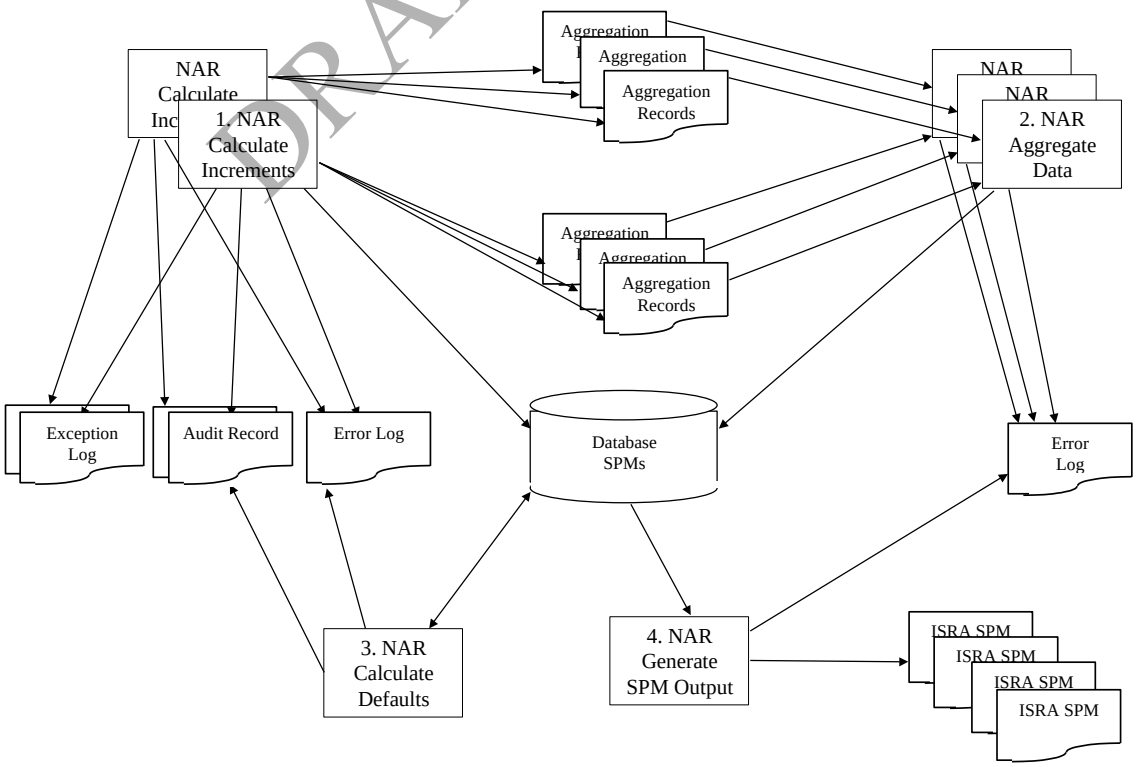


Figure 4: NAR Processing Flow

The numbers against the processes indicate the order in which the processes will be activated. The number of concurrent processes of each type is tuneable, according to the hardware configuration.

Note that each instance of NAR Calculate Increments runs against a single Metering System partition.

All the NAR Calculate Increments processes complete before any Aggregate Data processes are started; all of the Aggregate Data processes complete before Calculate Defaults is invoked. Generate SPM Output is invoked once Calculate Defaults completes.

Note that NAR Aggregate Data and NAR Calculate Defaults are combined into a single activity (NAR_AD) which performs the Aggregate Data and then the Calculate Defaults.

5.3.3 Detailed Process Descriptions

5.3.3.1 NAR Aggregate EACs and AAs

Figure 5 shows the structure of the controlling procedure for Aggregation.

Each iteration process (indicated with a '*') calls the external interface (from Figure 3) with the same name (prefixed by NAR).

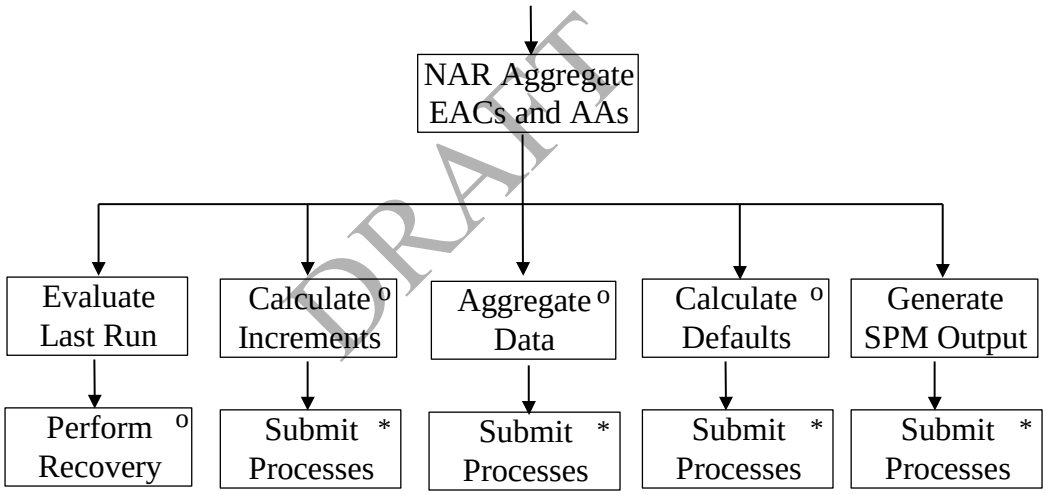


Figure 5: NAR Aggregate EACs and AAs

This process provides the external subsystem interface to process N0008 of [NFUNDEF]. It initialises the aggregation run, and performs the following actions:

- Evaluate Last Run performs any actions necessary to recover from previous failed runs (including deletion of incomplete files and database entries) and returns the list of processing still to be done;
- Calculate Increments, Aggregate Data, Calculate Defaults and Generate SPM Output are run according to this list. Whichever function is run, the functions to the right of it become mandatory to complete the aggregation run.

The structure of these four functions is similar:

- work out the total set of aggregations required, to generate parameter lists for the sub-processes;
- submit calls to the NAR <function name> process (see Figure 3) using CSC Scheduler;
- wait for the sub-processes to complete;
- return success or fail code.

5.3.3.2 NAR Calculate Increments

This process accepts a parameter list including details of the aggregations to be performed and meters to be processed. It initialises the database reads and creates output files to hold increment records.

It then loops through each metering system in turn, within the range given by the activation parameters. For each of the meter's measurement requirements, it creates a record for each scheduled run's settlement date. This contains updates to the SPM fields due to this meter's consumption on this settlement date.

Each set of metering system data is checked for the defined exception conditions. Any exceptions found are written to an exception report file.

The resulting records will be aggregated directly to a file on disk.

Recovery of this stage must be performed by deleting all temporary files, and restarting the complete aggregation run.

5.3.3.3 NAR Aggregate Data

This process reads files of SPM update records generated by the Calculate Increments process, and aggregates them to create SPM records. The aggregated values are added to the database when all files allocated to the process have been read.

Recovery of this stage must be performed by restarting all failed instances of the subprogram. Updates to the database SPMs will not have been committed by failed sub-processes, as they occur in a single database commit block at the end of processing.

This process also generates the DC Performance Report.

5.3.3.4 NAR Calculate Defaults

This process reads the threshold parameter, average fractions of yearly consumption and Researched Default EAC tables and updates the default values for all SPM records generated in this run. Recovery of this stage involves restarting the complete stage. Updates to the database SPMs will not have been committed by failed sub-processes, as they occur in a single database commit block.

5.3.3.5 NAR Generate SPM Output

This process provides the external subsystem interface to process N0005 of [NFUNDEF].

This process uses the input definition of the aggregation run to find the SPM records generated. These records are written to files, sorted by Supplier and

GSP group. The AA% for each file will be calculated and stored to be available for display later.

When all output files are completed and closed, CFS File Sender is used to export the files to the external gateway.

5.4 Data Usage

5.4.1 System Data

5.4.1.1 Database

The following NHHDA database tables are accessed directly. Where a table is partitioned, access will use generic read and write functions. Selects from these tables will be optimised according to the partition structure to control disk reading in multiple disk systems.

- ndb_av_frac_y_cons (read);
- ndb_data_agg_apps (read);
- ndb_data_agg_runs (read, update);
- ndb_dc_apps (read);
- ndb_gsp_groups_run (read);
- ndb_gspg_pc_av_eac (read);
- ndb_isr_agent_apps (read);
- ndb_measure_reqs (read);
- ndb_metering_sys (read);
- ndb_ms_dc_dets (read);
- ndb_ms_prs_dets (read);
- ndb_nar_file location (read)
- ndb_nar_files (create, read, update, delete)
- ndb_register_cons (read);
- ndb_registrations (read);
- ndb_spmatrix (create, read, update, delete);
- ndb_threshold_pars (read);

Where possible, common tables will be accessed using the common functions provided for this purpose. The common tables accessed directly by this subsystem are:

- cdb_activity (read);
- cdb_data_file (update)
- cdb_file_reference (read);
- cdb_system_parameter (read).

The subsystem accesses the system clock, to compare the current date with the settlement dates of Aggregation Runs. This is done through the csl_read_datetime function defined in [CTSPEC].

The `shutdown_requested` global process variable will be read at regular intervals by each main process, to detect requests to terminate the process.

5.4.2 Local Data

5.4.2.1 Aggregation Runs

This is a local copy of the GSP groups vs Settlement Dates required to be aggregated.

5.4.2.2 Meter System Data

This data item holds data from the database which defines a single metering system. The exact contents of this storage area will be determined when the algorithms for each process are defined.

5.4.2.3 Aggregation Records

This is a set of files used as working storage. It contains data from individual settlement registers, appropriate to the settlement dates and GSP Groups for a run, which will be aggregated into an SPM.

5.4.2.4 Aggregation Run GSP Group Metering System Count

This is an array containing the number of valid Metering Systems within a GSP Group for a given Aggregation Run.

5.4.2.5 Exception Logs

This is a set of files which contain exceptions encountered during aggregation.

5.4.2.6 Aggregation Audit Log

These files are generated according to [CTSPEC], using the common functions provided for this purpose.

5.5 Procedure Details

5.5.1 Procedure NAR Aggregate EACs and AAs Specification

```
Procedure Name:     NAR Aggregate EACs and AAs
Inputs:             Scheduled working date of aggregation run
Outputs:            None
```

This procedure provides an external interface to the NAR subsystem.

```
Populate Aggregation Runs local store from the
ndb_data_agg_runs table, to remove duplicate runs and ensure
that all scheduled runs are aggregated in a single pass
through the meter data.

If the System Parameter AAV (Aggregate All Valid GSP Groups)
is set to FALSE but no GSP Groups have been assigned to this
```

```
run, then no GSP Groups are retrieved and this is a fatal
error.

Set run status flag using a call to Evaluate Last Run to tidy
up incomplete runs and return a flag to indicate the
processing required to complete the scheduled run

According to run status flag:
     IF (flag = new run) THEN
          CALL Calculate Increments
     END IF
     IF success or (flag = increments calculated) THEN
          CALL Aggregate Data
          CALL Calculate Defaults
     END IF
     IF success or (flag = defaults calculated) THEN
          CALL Generate SPM Output
     END IF
```

The identities and parameter lists for the scheduled sub-processes are calculated using system constants and the database partitioning of metering systems.

If any called function returns a fatal error status then report the failure.

```
Tidy up working files to start of failed stage
Report failure
Update run status in ndb_data_agg_runs to failed
EXIT
```

This procedure will be implemented using Pro*C.

5.5.2 Procedure NAR Calculate Increments

```
Procedure Name:     NAR Calculate Increments
Inputs:             Partition Id
                    Date of Run
Outputs:            None
```

This procedure implements the detailed functionality required to calculate SPM increments for each meter.

It results in a number of disk files holding individual update records for aggregation.

```
CALL Read Meter to initialise tables for Partition Id
Create working disk files, named by (activity id, SPM range)
FOR each metering system in this partition
     Read all DC data into local arrays
     Read all exception data into local array
     FOR all settlement dates (descending order)
          Write exceptions for settlement date to file
          Get PRS dets, appointments for settlement date
          IF DAA exists THEN
               Get PRS data
               IF (meter GSP Group in settlement run
               or
               Sys. Par. NAR/AAV set to TRUE and not a dispute
               run with GSP Groups assigned) THEN
                    Get AA or EAC to be used [see NFUNDEF)
                    IF value found THEN
                         Calculate SPM updates for all MRs
```

```
                              Add increments to files
                         OTHERWISE
                              Report exception for meter

                                                  Add 1 to default count
                                                  in file
                    END IF
               END IF
               Next (earlier) settlement date
          END FOR
          Next metering system
END FOR
```

This procedure will be implemented using Pro*C.

5.5.3 Procedure NAR Aggregate Data Specification

```
Procedure Name:     NAR Aggregate Data
Inputs:             SPM Range
Outputs:            None
```

This procedure aggregates the individual SPM increments into SPM records in the database.

```
Open all files whose names hold SPM Range
FOR each file
     FOR each record in file
          Add usage/count increments to SPM record locally
     END FOR
END FOR
Write SPM records to database
Generate the DC Performance Report
```


This procedure will be implemented using Pro*C.

5.5.4 Procedure NAR Calculate Defaults

```
Procedure Name:     NAR Calculate Defaults
Inputs:             SPM Range
Outputs:            Status

FOR each SPM in SPM range LOOP
     Read SPM
     IF threshold value > default meter count THEN
          Get AFYC data & Researched Default EAC for SPM
               IF data not found for AFYC & Researched Default
               EAC
                    Write exception
               END IF
     ELSE
          calculate averages from SPM values
     END IF
     Update SPM with calculated usage for defaulted meters
END FOR
```

This procedure will be implemented using Pro*C. When the AFYC or Researched Default EAC data is missing, the AFYC or EAC will be set to zero and the metered or unmetered EAC count will not be incremented. The default count will be set to zero in the SPM.

5.5.5 Procedure NAR Generate SPM Output Specification

```
Procedure Name:     Generate SPMs
Inputs:             Date of Run
Outputs:            Status
```

The aggregation runs will be selected from ndb_data_agg_runs. For each run, the appropriate SPM entries from ndb_spmatrix will be selected, grouped by GSP group. While generating each SPM file the AA percentage will be calculated and stored in the aa_percentage column of the cdb_data_file table. The AA percentage is calculated as:

AA Percentage = (Sum(SPM total AA) / (Sum(SPM total EAC) + Sum(SPM total AA))) * 100

where

SPM total AA = total energy of AA metering system for the supplier purchase matrix file

and

SPM total EAC = total energy of EAC metering system for the supplier purchase matrix file.

Structured files will be written (using CSL functions) as required by the ISR Agents and Suppliers. CFS.EXPORT will then be used to send the files to their target Market Participants. For Scottish GSPs the target ISR Agent depends on the BETTA Start Date. For settlement dates before the BETTA Start Date the ISR Agent for Scottish GSPs will be IAR, for settlement dates on or after the BETTA Start Date for Scottish GSPs the ISR Agent will be retrieved from table nbd_isr_agent_apps. Any SPMs containing no data will not be created and a warning message issued to the Operator Log.

This procedure will be implemented in Pro*C.

6 NCD Check Data Collector Data Subsystem Specification

6.1 Introduction

The NCD Check DC Data subsystem checks all metering system data, from PRS agents and Data Collectors. It produces report files for sending to Suppliers, or displaying to the Data Aggregator.

The NCD subsystem performs the following functions:

- activation of multiple data checking sub-processes;
- reading of metering system data, optimised for the database partitioning, where the exception records are out of date;
- evaluation of the validity of these metering system records;
- activation of report generation processes for the requested NCD runs;
- generation of sets of structured files of Data Collector Exceptions for sending to Suppliers

The subsystem is initiated by the CSC Scheduler process, and runs in batch mode.

Errors occurring during processing are handled by the database rollback/commit facilities. In addition, incomplete files will be logged in the common database tables, and tidied up by the next run of the subsystem.

Processing failures when checking the metering system data will be recorded using the CLG functions to write to the error log. This may result in exceptions being omitted from the report files, but will not result in out of date exceptions being reported.

The facilities of the common subsystems are used for process control, file management, file export and error logging. Communication between separate executables of the subsystem is done using the common scheduling functions.

6.2 Subsystem context

6.2.1 Subsystem Context Diagram

The context diagram for this subsystem is shown in Figure 6.

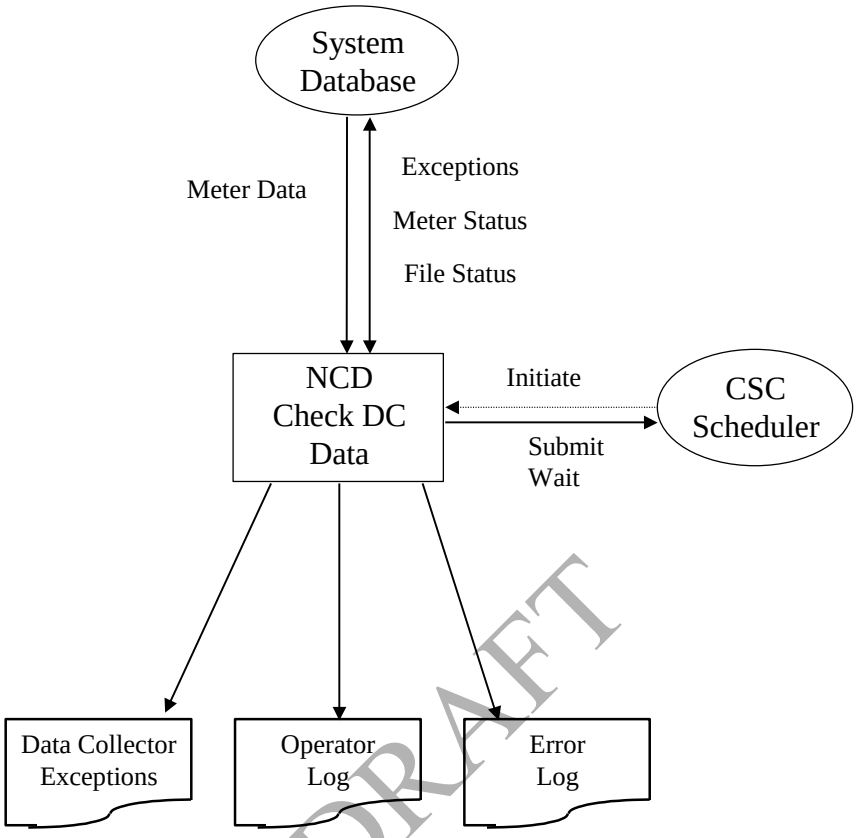


Figure 6: Context Diagram for Check DC Data

The Operator Log and Error Log files are written using the functions provided by the CLG Logging subsystem. The Data Collector Exceptions file is written using the functions of CSL Server Library.

6.2.2 Interfaces

6.2.2.1 CSC Scheduler

This process activates the Check DC Data subsystem. This is triggered by a queue entry generated by the previous run of the subsystem, or by the Check Data Collector Data form. The definitions for any reports to be generated during the run are held in the ndb_check_dc_data_runs table in the database.

The Scheduler is responsible for ensuring that the Check DC Data process does not conflict with other processes scheduled using the Exclusive queue.

The main NCD process keeps an active entry on the Exclusive queue, while submitting multiple sub-processes to non-exclusive queues to perform the DC data checking. The `WAIT_ALL` function of CSC Scheduler is used to synchronise the stages of processing.

6.2.2.2 Database

A number of database tables are accessed and written within the subsystem. The exact identities are specified in the Data Usage section of this document.

The high level data flows are as follows:

Flow Name	Direction	Description
Meter Status	Input Output	The metering system Id and earliest unchecked settlement date (which is updated on successful updating of the exception for that metering system)
File Status	Input Output	The details of report files are read directly, and updated using CSL Delete File, to recover failed runs.
Meter Data	Input	The meter appointments, details and EAC/AAs for metering systems which require checking.
Exceptions	Input Output	Read stored exceptions, delete those which are out of date and write updates to exceptions for meters.

6.2.2.3 Output Files

The table below lists the files which are created during the NCD processing. Multiple instances of each file type may be created.

Flow Name	Direction	Description
Error Log	Output	Unexpected data or processing errors generated during processing, written using CLG Logging functions.
Operator Log	Output	Progress of the Check DC data run, and major events within it, written using CLG Logging functions.
Data Collector Exceptions	Output	A structured file of the expected data exceptions, for sending to the appropriate Supplier, written using CSL Server Library functions.

Only the Data Collector Exceptions file forms part of the external NHHDA interface (see Section 3).

6.2.3 Special Considerations

The following assumptions are made in this design:

- The table of stored exceptions will be kept up to date each day, regardless of whether Supplier reports have been requested;
- The number of changes to metering system data in each working day will be no larger than the estimates in the Logical Design;
- Meters will average one exception outstanding for any settlement date, as specified in the URS;
- The records in the database will be valid according to the checks specified for instruction processing;
- Where errors in the data occur which are not covered by standard exceptions (for example, invalid range of a value), this will be logged and the corresponding database row ignored.

6.3 Subsystem processing

6.3.1 Major Components

The major components of the subsystem are identified in Figure 7.

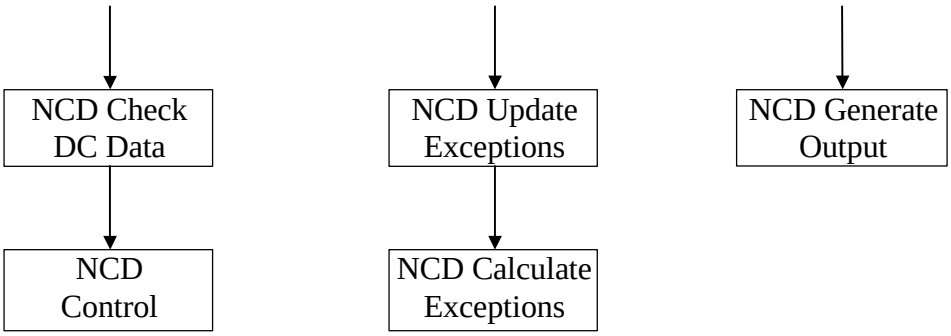


Figure 7: Subsystem Decomposition for Check DC Data

The processing performed by each module is described in section 6.3.3.

6.3.2 Flow Control

The subsystem may run multiple instances of the same executables simultaneously. This is controlled by the NCD Control process, using the facilities of CSC Scheduler.

A single invocation of NCD Check DC Data is made from the Exclusive queue of CSC Scheduler. The NCD Control function determines how many partitions are used to store the metering system data and then submits a CSC queue entry for NCD Update Exceptions, one for each partition, on a non-exclusive queue.

The NCD Check DC Data process waits for the NCD Update Exceptions processes to complete, using the `WAIT_ALL` function in CSC Scheduler. It then submits CSC queue entries on the Non Exclusive queue for the NCD Generate Output processes.

The NCD Check DC Data process waits for the NCD Generate Output processes to complete, using the `WAIT_ALL` function in CSC Scheduler. It then finishes the run, releasing the Exclusive queue.

6.3.3 Detailed Process Descriptions

6.3.3.1 NCD Check DC Data

The NCD Check DC Data process provides the external subsystem interface to process N0010 of [NFUNDEF]. It logs the activation of the process, tidies up incomplete files from the previous run and then calls NCD Control to activate sub-processes to carry out the exception checking and reporting.

6.3.3.2 NCD Control

This module determines how many partitions have been used to divide up the database tables containing metering system data. It will set off an NCD Update Exceptions process for every database partition. When all of these have completed (so that all metering system exceptions are up to date) then

the NCD Control process will set off NCD Generate Output processes to generate the Data Collector Exceptions output files.

6.3.3.3 NCD Update Exceptions

This module provides the external interface to the process which performs the updating of the exception records. It logs its activation, and the data this instance of the module will be checking.

It finds all metering systems on the current partition which have out of date exceptions, and for each metering system it calls NCD Calculate Exceptions to perform the checks. A record is made in the operator log of each call and its returned status.

6.3.3.4 NCD Calculate Exceptions

This module deletes the exceptions stored in the ndb_ms_exceptions table, which have a later date than the earliest unchecked settlement date (as stored in ndb_metering_sys) for the meter specified in the input.

It then uses the functions provided by NCD Read Meter to get the metering system records, and calculates the new set of exceptions for the meter. These are inserted into the ndb_ms_exceptions table.

For exceptions E08-E14 there is additional processing. If these exceptions are found, then the data held in memory for the Data Collector to whom the exception applies is scanned to check whether EACs and AAs were received from that Data Collector during the period of the exception. If no EACs or AAs were received, then the exception is not inserted as it is not applicable.

The ndb_metering_sys table is updated to show that the metering system's exceptions are up to date.

These transactions will be committed once for each meter, at the end of processing for that meter. This means that the meter data remains consistent, and obviates the need for explicit recovery processes.

6.3.3.5 NCD Generate Output

This process is invoked by CSC Scheduler, with the parameters for the output files to be generated. It gets the run details from the database tables, then selects all exceptions from ndb_ms_exceptions which match these details.

These exceptions are counted and written to a structured file, along with records of the number of exceptions of each type. `CFS.EXPORT` is then called to send the file.

Once the file has been successfully generated, the corresponding run details record is deleted.

For each exceptions file created a record is added to NDB_EXCEPTION_DATA table. This table is used to create the D0095 Monthly Report (see 10.16).

6.4 Data usage

The following data is used by this subsystem.

6.4.1 System Data

6.4.1.1 Database

The subsystem accesses the following database table directly:

- ndb_ms_exceptions (create, read, delete)
- ndb_check_dc_data_runs (read, update, delete)
- ndb_metering_sys (read, update)
- ndb_registrations (read)
- ndb_data_agg_apps (read)
- ndb_exception_data (create)
- ndb_dc_apps (read)
- ndb_register_cons (read)
- ndb_ms_dc_dets (read)
- ndb_ms_prs_dets (read)
- ndb_gsp_groups_dis (read)

Indirect database accesses are made to various cdb database tables through the Common system interfaces. In addition, the following are accessed directly:

- cdb_activity (read)
- cdb_file_reference (read)

The `shutdown_requested` global process variable will be read at regular intervals by each main process, to detect requests to terminate the process.

6.4.1.2 Files

The subsystem creates a number of Data Collector Exception output files. These are all structured files (as defined by [CTSPEC]).

6.4.2 Local data

The subsystem will use local data storage to hold the input parameters and database records required to define processing, and to buffer database reads and writes as necessary.

6.5 Procedure details

The external interfaces to the NCD subsystem are described in more detail in the following sections. All procedures are implemented as Pro*C procedures.

6.5.1 Procedure NCD Check DC Data specification

```
Procedure Name:     NCD Check DC Data
Inputs:             None
Outputs:            Status

Call CLG.log_operator to log process start in Operator log
```

```
Delete incomplete files from previous runs where file type is
     that specified for NCD reports and file status is "new"
Call NCD Control

Call CLG.log_operator to log Status returned from NCD Control
```

6.5.2 Procedure NCD Control specification

```
Procedure Name:     NCD Control
Inputs:             None
Outputs:            Status

Read partition identifiers for metering system tables
FOR each partition
     Submit job (NCD Update Exceptions, Partition Id) to
          CSC Scheduler
END FOR
Call CSC.wait_all (NCD Update Exceptions Identifiers)

Read ndb_check_dc_data_runs for scheduled runs
Calculate the set of unique Supplier Ids to be processed
FOR each Supplier Id
     Submit job (NCD Generate Output, Supplier Id) to
          CSC Scheduler
END FOR

Call CSC.wait_all (NCD Generate Output Identifiers)
End Run
```

6.5.3 Procedure NCD Update Exceptions specification

```
Procedure Name:     NCD Update Exceptions
Inputs:             Partition Identifier
Outputs:            Status

Select Metering System Ids from ndb_metering_sys where
     partition Id = specified partition AND
     earliest unchecked settlement date IS NOT NULL AND
     earliest unchecked settlement date <= today

FOR each metering system
     Call NCD Calculate Exceptions (Partition Id,
          Metering System Id)
END FOR
```

6.5.4 Procedure NCD Calculate Exceptions specification

```
Procedure Name:     NCD Calculate Exceptions
Inputs:             Metering System ID
                    Partition Identifier
Outputs:            Status

Delete from ndb_ms_exceptions where settlement date >=
     earliest unchecked settlement date for meter
Call NCD Read Meter functions as required, to read all data
     for this meter
Calculate new exceptions, according to function N0010
     of [NFUNDEF]
Write exceptions to ndb_ms_exceptions
Update earliest unchecked settlement date for metering
     system to null
```

6.5.5 Procedure NCD Generate Output specification

```
Procedure Name:     NCD Generate Output
Inputs:             Supplier
Outputs:            Status (OUT)

Get NCD run definitions from ndb_check_dc_data_runs where
     Supplier = input Supplier
Get the set of Data Collectors referred to in these runs

FOR each Data Collector in set

     Open structured file for Data Collector Exception report
     Select exceptions from ndb_ms_exceptions where
          Supplier = Input Supplier and
          Data Collector = loop value
            IF no exceptions are found THEN
              Do not create report if the Data Collector was
              not specified when requesting the report and an
              MSID is not attached to Input Supplier/Data
              Collector combination
              (Select 1 from ndb_ms_dc_dets where
              dc_participant_id = loop value data collector
              and sup_participant_id = input supplier)
            END IF


     Count number of unique metering system Ids appearing
          against each exception type

     Where the count is > 0 write the the exception type and
          count to the ndb_exception_data.

     Write counts to structured file
     Write exceptions to structured file
     Close file
     Call CFS.export to send file

END FOR
```

7 NMI Manage Instructions Subsystem Specification

7.1 Introduction

The Manage Instructions (NMI) subsystem consists of the following parts:

- Instruction Processing : 3 processes

  'Control' - which is run periodically. This checks for newly arrived files and instructions for (re)processing; it then spawns 'Instruction File Arrival' and 'Apply Instructions' processes as required;

  'Instruction File Arrival' - which validates instruction files and, where appropriate, loads new instruction details;

  'Apply Instructions' - which updates the database according to instructions from valid market participants.

- Manage Failed Instructions : 1 form

  'Manage Failed Instructions' - provides facilities for users to: select failed instructions (by various selection criteria). The selected instructions can be marked for resend or marked and sent via a D0023 file to the originator (the file contains all instructions marked for return to originator, for a specified originator). Alternatively, mark the selected instructions for reprocessing. [Reprocessing of instructions is handled within the 'Apply Instructions' process. Reprocessing takes place when instruction processing is next run.]

- Report Instructions : 1 form

  'Report Instructions' - provides facilities for users to select and view instruction details available on the database.

- Report Refresh Instruction Failures: 1 form

- 'Report Instructions' - provides facilities for users to report on refresh instructions failures and associated reasons for failure available on the database. .

- Manage Refresh Instructions : 1 form + 2 processes

  'Manage Refresh Instructions' form - provides facilities for users to select and view the details on the database for unprocessed "PRS Refresh" instructions and discarded "PRS Refresh" instructions which may still legally be applied. An attempt to apply the instruction may be made (spawning 'Process Refresh'), or the instruction may be marked as "Discarded".

  'Process Refresh' process - applies the specified PRS Refresh instruction, metering system by metering system, reporting on any inconsistencies. This process reads in the instruction and writes a separate file for each partition containing those metering systems from the "PRS Refresh" instruction for that partition. A separate processing activity is then invoked to apply the changes to each partition. Refresh writes error reasons and database changes to its output (this output therefore appears in the activity log file).

- Manage Instruction Files : 1 form

  'Manage Instruction Files' - provides facilities for users to resolve failures with Instruction Files. Files with a status of "Rejected" may be selected and marked for reprocessing as if newly arrived, or marked as "Corrupt". Additionally files may be marked as "Skipped" - such files are then treated as if they contained no instructions.

- Manage Failed Refresh Instructions : 1 form

  'Manage Failed Refresh Instructions' - provides facilities for users to select failed Refresh Instructions (by various selection criteria) and mark them and their associated reasons for failure for return to the Instruction's originator on a per Metering System basis [Return of Instructions is handled by 'Manage Failed Instructions' (see above)].

The forms are part of the General Forms (NGF) subsystem. They are described briefly to show the interaction between the subsystems.

7.1.1 Instruction Processing

It is essential that instruction files from the same market participant are processed in a single stream and that the processes run exclusively. Therefore automatic processing is not configured for the valid instruction file types which may be received by the NHHDA system. Instead, there is a controlling process for instruction processing, 'Control', which runs in the EXCLUSIVE queue and is initiated by the Scheduler (CSC) subsystem. This submits an 'Instruction File Arrival' job for each new instruction file in order and waits for these to complete. Once these activities are complete, the controlling process submits an 'Apply Instructions' process for each instruction file originator. Once these activities are complete, the controlling process completes. This mechanism is described in more detail in the Scheduler (CSC) subsystem.

This subsystem may receive instruction files from market participants in Data Collector and PRS Agent roles. The following types of instruction file may be loaded into the NHHDA database via this subsystem:

File Type	File Description	File Contents
D0019001	Data Collector Instruction File	Changes to existing Metering Systems Deletion of EAC/AA details for an existing Metering System
D0209001	PRS Instruction File	Changes to existing Metering Systems Refresh of existing Metering Systems Deletion of existing Metering Systems Deletion of Data Aggregator Appointments

7.1.2 Manage Failed Instructions

A form is provided to view failed instructions and associated failure reasons. The user may select failed instructions and mark the selected instructions for:

- Reprocessing

The instructions are reprocessed when next instruction processing is run.

- Resend to instruction originator

The instructions can be marked for resend or actually resend the selected instructions to their originator. Resending instructions generates a file of the following type:

File Type	File Description	File Contents
D0023001	Failed Instructions	Failed Instructions for Return to originator

If this file is created (if there is nothing to send, no file will be created), the CFS.EXPORT() function is used to send the file to the local gateway.

The form updates the database for the instructions that have been selected.

The Operator Log contains the count of Non-refresh and Refresh instructions resent.

This form is part of the General Forms (NGF) subsystem.

7.1.3 Report Instructions

A form is provided to view instruction details once the instruction has been loaded from a file.

The form performs no database updates.

This form is part of the General Forms (NGF) subsystem.

7.1.4 Manage Refresh Instructions

A form is provided to view Refresh instructions which are outstanding. The user may select one Refresh instruction and either:

- mark the selected instruction Discarded
- submit a ‘Process Refresh’
- mark the selected instruction Applied (only allowed if current instruction status is 'Validation Errors')

The form performs no database updates.

The process updates the database for the instructions that have been selected.

7.1.5 Manage Instruction Files

A form is provided to view all Instruction Files. Instruction file displayed can also be restricted to ‘Rejected’, ‘Received’ and ‘Processed’. The following can be performed on Instructions Files with a status of ‘Rejected’:

- update the file status as if it had just arrived,
- mark the file as corrupt,
- mark the file, and optionally subsequent files, to be skipped (and treat the marked files as if they contained no instructions).

The form updates the database for the files that have been selected.

This form is part of the General Forms (NGF) subsystem.

7.1.6 Manage Failed Refresh Instructions

A form is provided to view Refresh Instruction failures and the reasons for those failures on a per Metering System basis. The user may select failed Instructions and mark them and the associated failure reasons for return to the Instruction's originator.

The form updates the database for the Instructions that have been selected.

This form is part of the General Forms (NGF) subsystem.

7.1.7 Report Refresh Instruction Failures

A form is provided to report refresh instruction failures and their associated reasons.

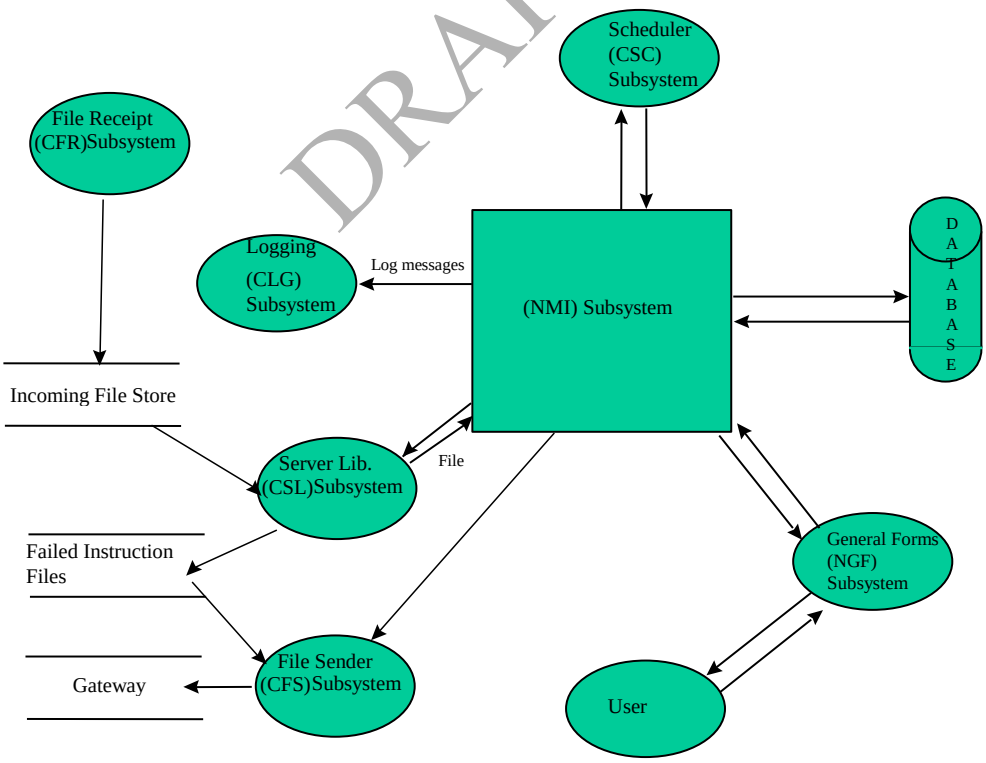
The form performs no database updates.

This form is part of the Report Forms (NFR) subsystem.

7.2 Subsystem Context

7.2.1 Subsystem Context Diagram

The following diagram shows the context for this subsystem:



7.2.2 Interfaces

7.2.2.1 User Interface / Forms

The following forms are provided:

- Manage Failed Instructions;

- Report Instructions;
- Manage Refresh Instructions;
- Manage Instruction Files;
- Manage Failed Refresh Instructions.

7.2.2.2 Scheduler (CSC) Interface

The Scheduler (CSC) subsystem initiates the 'Control' process. This then submits an 'Instruction File Arrival' process for each newly received instruction file. It then informs the Scheduler to respond when all such "child" processes have completed The 'Control' process then submits an 'Apply Instructions' process for each data originator (PRS agent or Data Collector). It then informs the Scheduler to respond when all of these "child" processes have completed. The initiation of all "child" process is performed by the Scheduler (CSC) subsystem.

7.2.2.3 Database Interface

Instruction and File records are retrieved from the database and displayed in the various forms. Some of the forms also update these records. Details of these interactions are included in the relevant form description sections.

All other database interactions within this subsystem are handled by batch processes initiated by the Scheduler (CSC). Details of these interactions are included in the relevant procedure sections.

7.2.2.4 File Interfaces

7.2.2.4.1 Instruction Files

Instruction file receipt is handled by the File Receipt Subsystem (CFR). These files are manipulated using functions from the Server Library (CSL) subsystem.

Section 3 provides the details of instruction files which may be received.

7.2.2.4.2 Failed Instructions

When the user selects instructions to be returned to source, a machine-readable report file is created. The CFS.EXPORT() function is used to initiate transfer of the created file to the gateway machine.

Section 3 provides details of this file's structure.

7.2.2.5 Logging (CLG) Interface

The NMI subsystem uses the Logging (CLG) subsystem to write to the operator and error logs.

Operator log entries will relate to the run-time information about the batch process (i.e: file identification information of the instruction file being processed and lists of any global parameters obtained from the database) plus messages relaying the high level progress of the process.

Error log entries will relate to fatal errors which are encountered such as file handling problems.

7.2.3 Special Considerations

7.2.3.1 Database

Since some database tables have been de-normalised for performance reasons (Section 2.7.2), an approach has been taken that:-

- loads the required table images into memory prior to the application of an instruction (or if 'Refresh' a single metering system clause),
- applies the changes to this in memory structure,
- updates the database in line with the new memory structure.

This memory structure is sized at the worst possible case of 1 change every day for 2 years.

7.2.3.2 Default Values

For performance reasons, an 'Effective To' field is present in many database tables. Where this is the case and an end date is not yet known (i.e.: it is sometime in the future), the maximum date value (31st December 4712) will be inserted until such time as a 'real' value can replace it. This ensures Effective To dates for 'current' records are not in the past.

7.2.3.3 Error Handling

A simple approach has been adopted for this subsystem. Where an error is detected in a low-level procedure an error_code and error_reason will be set and the procedure will return to the calling routine. An error_code returned from a lower level routine will (normally) cause the procedure to return to its calling routine passing the error_code and error_reason. The error itself will be logged at the higher levels of the processing viz. 'Process Instructions' and/or 'Reprocess Instructions'. When an error is detected while validating an instruction, this will not prevent subsequent validation checks, but will prevent application of the instruction.

7.2.3.4 Recovery

To protect against problems should an error occur during processing:

- the set of database updates associated with each individual Instruction (other than PRS Refresh) are handled as a single transaction;
- each instruction has an independent status which is updated when the instruction has been processed;
- processing of individual instructions is initiated when the 'Control' process finds file records where the file status is "Loaded" (i.e.: there may be outstanding instructions to process);
- only when all instructions within a file have been processed, is the status of the file changed to "Processed" to prevent further attempts to handle the file.

Using this approach, instructions not applied in a particular run of the 'Apply Instructions' process will be attempted in a subsequent run.

7.2.3.5 Interaction with Aggregation

Before any Instruction Processing can start, the database lock flag is checked. If it is set the process writes a message to the error log and exits.

7.2.3.6 Refresh

As a Refresh Instruction may update data for a large number of Metering Systems, each Metering System is processed as a success unit. Prior to processing of a refresh instruction, a backup of the database must be made. If the database is restored from this backup, the database will indicate that the refresh instruction has not been applied. There are three possible error conditions which should be handled by the user:

Refresh completes with validation errors, in which case two actions are possible:

- The new state of the database is considered to be acceptable, and the validation errors are resolved via the Manage Failed Refresh Instructions mechanism.
- The new state of the database is considered to be unacceptable, in which case the database is manually restored to its state prior to the application of the refresh instruction; the refresh instruction should then be discarded.

Refresh fails (e.g. due to running out of space for one partition), leaving the database is in an unknown state. The database must be manually restored to its state prior to the application of the refresh, then one of the following actions can take place:

- The problem is addressed (e.g. extending storage available for partition) and refresh is applied.
- The refresh is discarded to allow processing of other instructions to continue.

System fails during refresh, leaving the database in an unknown state. The database must be manually restored to its state prior to application of the refresh, then one of the following actions can take place:

- The refresh is applied.
- The refresh is discarded.

As refresh instructions are large, the implementation of apply refresh has been optimised to exploit the multi-partition metering system tables. A temporary file (type L0039001) is created for each partition. Processing reads the instruction one metering system at a time and writes the metering system data to the appropriate temporary file. A processing activity is then submitted for each temporary file. On completion, the temporary files are deleted. The format of the refresh processing log is described in section 7.3.

7.3 Refresh Processing Log

The refresh processing log is created automatically by the scheduler (refer CSC in [CTSPEC]). This log file will contain copies of all messages

written to the Operator Log and Error Log. In addition, the refresh activities will record all changes made to the database.

Note that there will be a Refresh Processing Log created for each partition when a "PRS Refresh" instruction is applied.

The report will contain all records *deleted* and *inserted* and both the before (*old*) and after (*new*) versions of records which are changed by the instruction.

To dates are blank for open-ended end dates (although they are stored on the database as 31 Dec 4712).

7.3.1 Changes made to table ndb_registrations

```
         Type  Metering Sys Eff.From  Eff. To Supplier
    NREG OLD 1234567890123 YYYYMMDD YYYYMMDD XXXX
    NREG NEW 1234567890123 YYYYMMDD YYYYMMDD XXXX
 NREG DELETE 1234567890123 YYYYMMDD YYYYMMDD XXXX
 NREG INSERT 1234567890123 YYYYMMDD YYYYMMDD XXXX
```

7.3.2 Changes made to table ndb_data_agg_apps

```
         Type  Metering Sys Eff.From  Eff. To Sup.From
    NDAA OLD 1234567890123 YYYYMMDD YYYYMMDD YYYYMMDD
    NDAA NEW 1234567890123 YYYYMMDD YYYYMMDD YYYYMMDD
 NDAA DELETE 1234567890123 YYYYMMDD YYYYMMDD YYYYMMDD
 NDAA INSERT 1234567890123 YYYYMMDD YYYYMMDD YYYYMMDD
```

7.3.3 Changes made to table ndb_ms_prs_dets

```
        Type  Metering Sys Eff.From ES GSP MC  PC  LLF Dis.  SSC ES|GG|MC|PC|LF|SC
   NMPD OLD 1234567890123 YYYYMMDD  X  XX  X XXXX XXXX XXXX XXXX  Y| Y| Y| Y| Y| Y
   NMPD NEW 1234567890123 YYYYMMDD  X  XX  X XXXX XXXX XXXX XXXX  Y| Y| Y| Y| Y| Y
NMPD DELETE 1234567890123 YYYYMMDD  X  XX  X XXXX XXXX XXXX XXXX  Y| Y| Y| Y| Y| Y
NMPD INSERT 1234567890123 YYYYMMDD  X  XX  X XXXX XXXX XXXX XXXX  Y| Y| Y| Y| Y| Y
```


Note that the change flags are either Y or blank - Y indicates that the value changes on the Effective From Settlement Date of the record, blank indicates that it does not change. See section 4.3.27 for a fuller explanation of these flags.

7.3.4 Changes made to table ndb_dc_apps

```
         Type  Metering Sys Eff.From Sup.From Participant
    NDCA OLD 1234567890123 YYYYMMDD YYYYMMDD XXXX
    NDCA NEW 1234567890123 YYYYMMDD YYYYMMDD XXXX
 NDCA DELETE 1234567890123 YYYYMMDD YYYYMMDD XXXX
 NDCA INSERT 1234567890123 YYYYMMDD YYYYMMDD XXXX
```

7.3.5 Instruction failure reasons

Failure reasons are stored in the database using the tables ndb_refresh_instr_failure and ndb_refr_instr_failure_reason.

Processing continues after an error unless that error is a physical file format error (0I - Invalid Instruction) in which case processing stops immediately. Dates before 1900 are treated as invalid format.

7.3.6 Totals summary

```
Refresh thread: partition 12
  1234567890 metering systems in file
  1234567890 (100.00%) failed validation
  1234567890 metering systems on database not in file
```

```
1234567890 (100.00%) not deleted due to validation rules
```

At the end of each partition's log file a summary will appear.

These figures are repeated in the refresh control processes log file as a table, for example:

```
Partition Metering Systems Failed Validation       Not in file       Not deleted
    1                    0                 0                 1                 0
    2                    1                 1                 1                 0
    3                    2                 0                 1                 0
  TOTAL                  3                 1                 3                 0

Refresh completed with validation errors
```

If any metering systems (whether in the refresh instruction or not) were not updated, the instruction status is updated to a status of 'Validation Errors'. The user must either restore the database to the state immediately before the apply, or use the Manage Failed Refresh Instruction form to inform instruction source of problems and the Manage Refresh form to set the status to Applied.

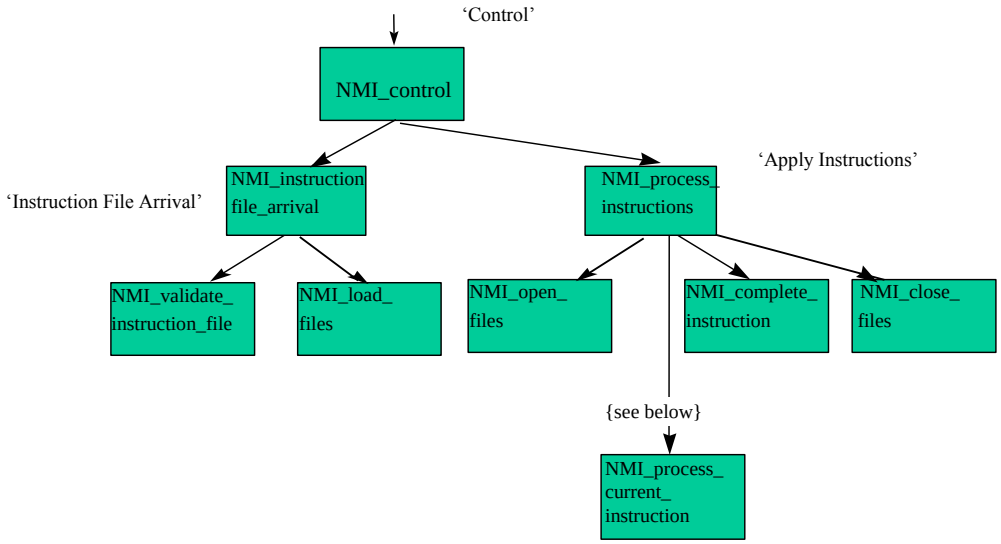
7.4 Subsystem Processing

There are effectively three batch processing components to this subsystem:

- Instruction Processing;
- 'Process Refresh';
- 'Return Instructions'.

The interactions of the various components within this subsystem is as follows. Interactions with other subsystems are detailed for the individual procedure, where appropriate.

7.4.1 Instruction Processing



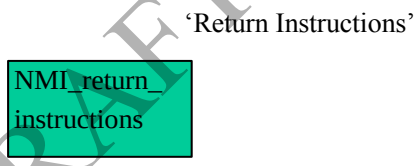
Instruction	Procedures called (in order)
"Data Aggregator Appointment Details"	extract_MS(PRS) validate_PRS_data validate_Registrations(PRS)

Instruction	Procedures called (in order)
	apply_Registrations(PRS) validate_DA_appts apply_DA_appts validate_DC_appts apply_DC_appts validate_PCs_SCCs(PRS) apply_PCs_SSCs(PRS) validate_Measure_Classes(PRS) apply_Measure_Classes(PRS) validate_Energ_Status(PRS) apply_Energ_Status(PRS) validate_LLFs apply_LLFs validate_GSP_groups(PRS) apply_GSP_groups(PRS) validate_AFYC(PRD) reapply_MS(PRS)
"Data Collector Appointment Details"	extract_MS(PRS) validate_PRS_data validate_DC_appts apply_DC_appts reapply_MS(PRS)
"EAC/AA & MS Details"	extract_MS(DC) validate_DC_data validate_AAs apply_AAs validate_EACs apply_EACs validate_Registrations(DC) apply_Registrations(DC) validate_PCs_SCCs(DC) apply_PCs_SSCs(DC) validate_Measure_Classes(DC) apply_Measure_Classes(DC) validate_GSP_groups(DC) apply_GSP_groups(DC) validate_AFYC(DC) validate_Energ_Status(DC) apply_Energ_Status(DC) reapply_MS(DC)
"Energisation Status Details"	extract_MS(PRS) validate_PRS_data validate_Energ_Status(PRS) apply_Energ_Status(PRS) reapply_MS(PRS)
"GSP Group Details"	extract_MS(PRS) validate_PRS_data validate_GSP_groups(PRS) apply_GSP_groups(PRS) validate_AFYC(PRS) reapply_MS(PRS)

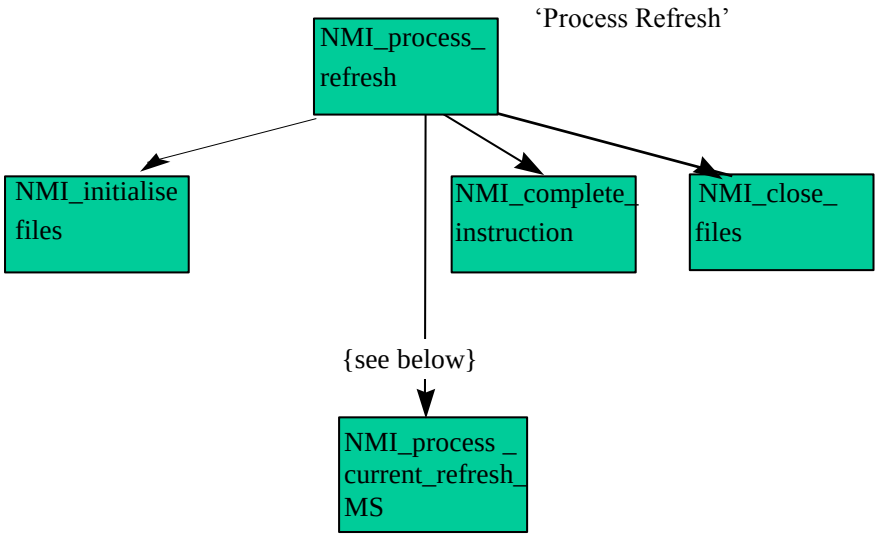
Instruction	Procedures called (in order)
"LLFC Details"	extract_MS(PRS) validate_PRS_data validate_LLFs apply_LLFs reapply_MS(PRS)
"Measurement Class Details"	extract_MS(PRS) validate_PRS_data validate_Measure_Classes(PRS) apply_Measure_Classes(PRS) reapply_MS(PRS)
"Profile Class/SCC Details"	extract_MS(PRS) validate_PRS_data validate_PCs_SCCs(PRS) apply_PCs_SSCs(PRS) validate_AFYC(PRS) reapply_MS(PRS)

It should be noted that Oracle Database data is not inserted or validated unless it crosses the archive date or is after the archive date.

7.4.2 Return Instructions



7.4.3 Process Refresh



Instruction	Procedures called (in order)
"PRS Refresh Details"	extract_MS(PRS) validate_PRS_data validate_Registrations(PRS) apply_Registrations(PRS)

Instruction	Procedures called (in order)
	validate_DA_appts apply_DA_appts validate_DC_appts apply_DC_appts validate_PCs_SCCs(PRS) apply_PCs_SSCs(PRS) validate_Measure_Classes(PRS) apply_Measure_Classes(PRS) validate_Energ_Status(PRS) apply_Energ_Status(PRS) validate_LLFs apply_LLFs validate_GSP_groups(PRS) apply_GSP_groups(PRS) validate_AFYC(PRS) reapply_MS(PRS)

7.5 Data Usage

7.5.1 General

7.5.1.1 Instruction File Status Transitions

The following changes to the status of an instruction file may be made by this subsystem:

Transition	Reason	Comment
Received to Loaded	All instructions in file are loaded	It is not possible to selectively load instructions
Loaded to Processed	All instructions in the file have been addressed	This transition occurs when instruction processing completes processing of the file and determines that all instructions have been addressed.
Received to Rejected	Failed validation checks within 'Instruction File Arrival'	
Rejected to Corrupt	User Operation	Discard File
Rejected to Received	User Operation	Treat file as if newly arrived
Rejected to Skipped	User Operation	File is ignored - treat file as if it contained no instructions
Received to Skipped	a) User Operation (file having sequence number within specified sequence number range was already present in received state) b) 'Instruction File Arrival' determines that a file with the same sequence number exists with a status of Skipped	File is ignored - treat file as if it contained no instructions

All transitions are made using the library routine csl_update_file.

If there is an error from csl_update_file, the transition may be applied to the database directly.

7.5.1.2 Instruction Status

In addition to the Unprocessed, Applied, Discarded, Failed and Superseded major states, 'Failed' instructions have two independent types of sub states:

- null, 'Return to Source' (i.e.: whether the "Failed" Instruction and its reasons for failure are to be reported to the Source);
- null, 'Reprocess', or 'Cannot Reprocess' (i.e.: whether the system is to attempt to reapply the "Failed" Instruction, or cannot due to successful processing of a subsequent Instruction).

7.5.2 System Data

7.5.2.1 Database

Table	**Total** (so far)	**Form "Manage Failed Instructions"**	**Form "Report Instructions"**	**Form "Report Refresh Instruction Failures"**
cdb_file_reference				
cdb_instruction_file				
ndb_data_agg_apps				
ndb_dc_apps				
ndb_instructions	RU	RU	R	
ndb_metering_sys				
ndb_ms_dc_dets				
ndb_ms_prs_dets				
ndb_register_cons				
ndb_registrations				
ndb_m_participants				
ndb_instruction_ status_reason	RU	RU	R	
ndb_refresh_instr_fa ilure	RU			RU
ndb_refr_instr_failur e_reason	R			R
cdb_return_paramete r		CRU		

Table	Total (so far)	Form "Manage Refresh Instructions"	Form "Manage Instruction Files"	close_ files	validate_ file
cdb_file_reference	RU		RU	U	RU
cdb_instruction_file	R		R		R
ndb_data_agg_apps					
ndb_dc_apps					
ndb_instructions	RU	R			R
ndb_metering_sys					
ndb_ms_dc_dets					
ndb_ms_prs_dets					
ndb_register_cons					
ndb_registrations					
ndb_m_participants	R				R
ndb_instruction_ status_reason	RU				
ndb_refresh_instr_failure	RU				
ndb_refr_instr_failure_reason	R				

Table	Total (so far)	complete_ instruction	control	extract_ MS	open_ files
cdb_file_reference	RU		R		U
cdb_instruction_file	R				
ndb_data_agg_apps	R			R	
ndb_dc_apps	R			R	
ndb_instructions	RU	U			
ndb_metering_sys	R			R	
ndb_ms_dc_dets	R			R	
ndb_ms_prs_dets	R			R	
ndb_register_cons	R			R	
ndb_registrations	R			R	
ndb_m_participants	R				
ndb_instruction status_reason	RU				
ndb_refresh_instr_failure	RU				
ndb_refr_instr_failure_reason	R				

Table	Total (so far)	instruction_ file_ arrival	process_ instructions	process_ refresh	reapply_ MS
cdb_file_reference	RU	U			
cdb_instruction_file	R				
ndb_data_agg_apps	CRUD				CRUD
ndb_dc_apps	CRUD				CRUD
ndb_instructions	RU		R	R	
ndb_metering_sys	CR	C			
ndb_ms_dc_dets	CRUD				CRUD
ndb_ms_prs_dets	CRUD				CRUD
ndb_register_cons	CRUD				CRUD
ndb_registrations	CRUD				CRUD
ndb_m_participants	R				
ndb_instruction status_reason	CRUD		CD	C	
ndb_refresh_instr_failure	CRU			C	
ndb_refr_instr_failure_reason	CR			C	

Table	Total (overall)	supersede	load_ files	Form "Manage Refresh Instruction Failures"
cdb_file_reference	RU		U	
cdb_instruction_file	R			
ndb_data_agg_apps	CRUD			
ndb_dc_apps	CRUD			
ndb_instructions	CRU	U	C	
ndb_metering_sys	CR		CR	
ndb_ms_dc_dets	CRUD			
ndb_ms_prs_dets	CRUD			
ndb_register_cons	CRUD			
ndb_registrations	CRUD			
ndb_m_participants	R			
ndb_instruction status_reason	CRUD			
ndb_refresh_instr_failure	CRUD	D		RU
ndb_refr_instr_failure_reason	CRUD	D		RU

All updates to cdb_file_reference are made using the library routine csl_update_file.

Indirect database access is also made through common subsystems.

7.5.3 Local Data

Within the 'Apply Instructions' and 'Process Refresh' processes the following specific process global data is used :

- file header details : RECORD
- significant date : DATE
- current instruction (or MS clause) : ARRAYS of RECORDS

  Each instruction or ,if a PRS Refresh, individual Metering System clause, is read in with each set of details held in an array. Arrays are pre-allocated at maximum size and reused.

- current data for target MS : ARRAYS two per physical table

  For each instruction or ,if a PRS Refresh, individual Metering System clause, an image of the database tables for the target Metering System is loaded into a series of arrays, and then an array of pointers to each entry is generated.

  These arrays are statically allocated and sized to the theoretical maximum of one change per day for 2 years. This approach simulates a linked list without the need for dynamic memory allocation or complex memory management

7.6 Procedure Details

This section describes the various components of the Manage Instruction (NMI) subsystem. A description of the procedures within the subsystem is included in this section. All procedures are implemented in Pro*C.

Note that although the logical entities do not have end dates, the physical ones do so checks on 'End Date' are valid.

Where procedure details describe validation of instructions against business rules, the exact rules are those specified in [NFUNDEF]. Note that the processing described here may be incomplete.

7.6.1 Control

This procedure controls the submission of instruction loading and processing jobs.

It runs in the EXCLUSIVE queue and is run periodically by the Scheduler (CSC) Subsystem.

7.6.1.1 Processing

Joins cdb_file_reference and cdb_instruction_file selecting all Instruction Files with a status of "Received", (ordered by Participant Id, Market Role and Instruction File Sequence Number).

For each file it CSC.SUBMITs an immediate 'Instruction File Arrival' job. Once all files have been dealt with, it invokes CSC.WAIT_ALL to wait for their completion. (Note that only one job is submitted at a time per source so that files are processed in receipt order for a given source).

Looks up the number of database partitions and for each partition CSC.SUBMITs an immediate 'Apply Instructions' job. It then invokes CSC.WAIT_ALL to wait for their completion.

Joins cdb_file_reference and cdb_instruction_file selecting all Instruction Files with a status of "Loaded".

For each file it checks whether there are any instructions in ndb_instructions with a status of either "Failed" or "Unprocessed". If there are none, the file status is updated to "Processed".

7.6.1.2 Input / Output

input:

none

output:

error_status

7.6.2 Instruction File Arrival

This procedure validates and loads newly received instruction files.

7.6.2.1 Processing

Call validate_instruction_file

If valid, Call load_file

If invalid or load failed, log message to operator

exit

7.6.2.2 Input / Output

input:

File Id

output:

error_code

7.6.3 Process Instructions

This procedure is the main instruction processing engine.

7.6.3.1 Processing

Call open_files

While there are instructions to process:

Select instruction from ndb_instructions for the specified file with lowest Instruction Sequence Number which is either "Unprocessed" or, "Failed" with the 'Reprocess' flag set.

If the instruction is not a PRS Refresh then,

- Load the instruction data into the memory structure, checking that the physical structure of the instruction is correct and that following the last record read the next record is either another instruction header or a file footer.

- Call process_current_instruction with : 'Reprocess' flag state
- Call set_instruction_state with : Applied | Failed
- If the 'Reprocess' flag was set, update the ndb_instructions record to clear it.
- If the instruction was successful then,
  - Call supersede_instructions with : metering system id, instruction sequence number, instruction type.

If the instruction is a PRS Refresh, log message to operator

When all instructions for the file have been considered, or a PRS Refresh encountered:

Call close_files with : applied = more

exit

7.6.3.2 Input / Output

input:

File Id

output:

error_code

7.6.4 Process Refresh

This procedure is the PRS Refresh processing engine. It is invoked by the Manage Refresh Instructions form.

Note that a database backup must be made before applying a refresh as updates for each Metering System are applied as a success unit. In the event of a failure, a restore will be required.

7.6.4.1 Processing

Call open_files

Check that the file originator is a PRS Agent, and that the PRS agent is appointed to the subject Distribution Business.

Select specified instruction from ndb_instructions

Check that the instruction is indeed a PRS Refresh.

Make a list of all current Metering Systems for the Distribution Business

Create a temporary file for each database partition

While there are Metering System clauses within the PRS Refresh:

Establish the partition for the Metering System

copy all records for the Metering System into that partition's temporary file

For each partition

submit a sub-activity to process each temporary file

wait for all sub-activities to complete.

If no errors were encountered

- Call set_instruction_state with : Applied
- Delete all Metering Systems details with an Effective From Date on or after the Significant Date
- Call close_files with : done

If only validation errors were encountered

- Call set_instruction_state with : Validation Errors
- Call close_files with : more

Otherwise,

- Call set_instruction_state with : Discarded
- Call close_files with : more

exit.

Each sub-activity processes as follows:

While there are Metering System clauses within the temporary file:

Read details of next Metering System into memory structure.

Load the instruction data into the memory structure, checking that the physical structure of the instruction is correct and that following the last record read the next record is either another metering system header or a file footer.

Remove Metering System from the list.

Call process_current_refresh_MS

If business errors occurred, set business error flag

Else Call Supersede Instructions

When there are no more Metering System clauses or an error occurred reading in Metering System details:

If no errors were encountered,

- For each MS remaining in the list for the current partition

Read details of Metering System into memory structure

Call process_current_refresh_MS (passing a null instruction - i.e. MSID, Significant Date and no data)

If business errors occurred, set business error flag

Else Call Supersede Instructions

Delete the temporary file

If any errors were encountered or business error flag set

exit (failure)

otherwise

exit (success)

7.6.4.2 Input / Output

input:

instruction sequence number
file_id

output:

error_code

7.6.5 Process Current Refresh MS

This procedure applies the validation and database updates appropriate to an individual Metering System in a Refresh instruction which has been read into memory.

7.6.5.1 Processing

Check Metering System is in the subject Distribution Business

Call extract_MS

The Metering System update clause is now validated and applied to the in memory structure. Failure of any stage will return an error_code and error_reason which will be used to insert new ndb_refresh_instr_failure and ndb_refr_instr_failure_reason records.

Call validate_Registrations(PRS)
Call apply_Registrations(PRS)

Call validate_DA_appts
Call apply_DA_appts

Call validate_DC_appts
Call apply_DC_appts

Call validate_PCs_SCCs(PRS)
Call apply_PCs_SSCs(PRS)

Call validate_Measure_Classes(PRS)
Call apply_Measure_Classes(PRS)

Call validate_Energ_Status(PRS)
Call apply_Energ_Status(PRS)

Call validate_LLFs
Call apply_LLFs

Call validate_GSP_groups(PRS)
Call apply_GSP_groups(PRS)

Call validate_AFYC(PRS)

If there have been no errors,

- Call reapply_MS(PRS)
- return SUCCESS

otherwise

- return FAILURE

7.6.5.2 Input / Output

input:

none

output:

Error Status

7.6.6 Process Current Instruction

This procedure applies the validation and database updates appropriate to a single instruction (other than Refresh) which has been read into memory.

7.6.6.1 Processing

The instruction is validated and applied to the in memory structure. Failure of any stage will return an error_code and error_reason which will be used to insert a new ndb_instruction_status_reason record.

If originator is a "PRS Agent",

- delete any ndb_instruction_status_reason records for this instruction
- Call extract_MS(PRS)
- Call validate_PRS_data
- For "Data Agg. Appt. Details":
  - If there is only one DA Appointment, and the Effective To Date is the same as the Significant Date and the Data Aggregator Appointment exists and has an Effective To Date of the maximum value,
    - Validate the Effective To Date is on or after the Effective From Date
    - Update the DA Appointment Effective To Date to the Significant Date
    - delete Profile Class, SSC, Measurement Class, Energisation Status, Line Loss Factor Class, and GSP Group details for the Metering System where the Effective From Date is after the Significant Date
  - Otherwise (i.e.: not the special case)
    - delete Registration, Data Collector Appointment, SSC, Measurement Class, Energisation Status, Line Loss Factor Class, and GSP Group details for the Metering System where the Effective From Date current on the Significant Date
    - Call validate_Registrations(PRS)
      Call apply_Registrations(PRS)
    - Call validate_DA_appts
      Call apply_DA_appts

- Call validate_DC_appts
  Call apply_DC_appts
- Call validate_PCs_SSCs(PRS)
  Call apply_PCs_SSCs(PRS)
- Call validate_Measure_Classes(PRS)
  Call apply_Measure_Classes(PRS)
- Call validate_Energ_Status(PRS)
  Call apply_Energ_Status(PRS)
- Call validate_LLFs
  Call apply_LLFs
- Call validate_GSP_groups(PRS)
  Call apply_GSP_groups(PRS)
- Call validate_AFYC(PRS)

- For “Data Collector Appointment Details”
  - Call validate_DC_appts
    Call apply_DC_appts
- For “Profile Class/SSC in Registration Details”
  - Call validate_PCs_SCCs(PRS)
    Call apply_PCs_SSCs(PRS)
  - Call validate_AFYC(PRS)
- For “Measure. Class in Registration Details”
  - Call validate_Measure_Classes(PRS)
    Call apply_Measure_Classes(PRS)
- For “Energ. Status in Registration Details”
  - Call validate_Energ_Status(PRS)
    Call apply_Energ_Status(PRS)
- For “GSP Group Details”
  - Call validate_GSP_groups(PRS)
    Call apply_GSP_groups(PRS)
  - Call validate_AFYC(PRS)
- For “Line Loss Factor Class Details”
  - Call validate_LLFs
    Call apply_LLFs
- For “PRS Refresh” or unrecognised instruction
  - log message to operator

If the originator is a “Data Collector”,

- delete any ndb_instruction_status_reason records for this instruction
- Call extract_MS(DC)

- For “EAC/AA & MS Details”
  - Call validate_DC_data
  - Call validate_AAs
    Call apply_AAs
  - Call validate_EACs
    Call apply_EACs
  - Call validate_Registrations(DC)
    Call apply_Registrations(DC)
  - Call validate_PCs_SCCs(DC)
    Call apply_PCs_SSCs(DC)
  - Call validate_Measure_Classes(DC)
    Call apply_Measure_Classes(DC)
  - Call validate_GSP_groups(DC)
    Call apply_GSP_groups(DC)
  - Call validate_AFYC(DC)
  - Call validate_Energ_Status(DC)
    Call apply_Energ_Status(DC)
- For unrecognised instruction
  - log message to operator

If the originator is not a PRS Agent or Data Collector, log message to operator.

If there have been no errors,

- return SUCCESS

otherwise

- return FAILURE

7.6.6.2 Input / Output

input:

none

output:

Error Status

7.6.7 Open Files

This procedure opens the instruction file to be processed and reads the header.

7.6.7.1 Processing

Call CSL Common Server Library routines to:

- Open the file.
- Read file header records

Data is stored in global variables

7.6.7.2 Input / Output

input:

Instruction File Id

output:

Error Status

7.6.8 Load Files

This procedure loads a validated instruction file.

7.6.8.1 Processing

Using CSL Common Server Library routines:

Call open_files

Read next record

While record is not File Footer

- If the record is an Instruction Header
  - extract the record details
  - If the instruction is not a PRS Refresh,
    - select record for target Metering System in ndb_metering_system
    - if none exists, create it
  - determine the file offset
  - Insert a record into ndb_instructions with the record and offset details
- Read next record

Close the file

Update file status to “Loaded”

7.6.8.2 Input / Output

input:

Instruction File Id

output:

Error Status

7.6.9 Validate Instruction File

This procedure checks that it is valid to load an instruction file.

7.6.9.1 Processing

Join the cdb_file_reference and cdb_instruction_file records for the specified file and select the details

If the Participant Id and Market Role combination does not exist in ndb_m_participants,

- log message to operator (Unknown Originator)
- Call csl_update_file to set the file status to “Rejected”
- exit

If the originator is a PRS Agent,

- select the last instruction from this PRS Agent
- If the instruction is a “PRS Refresh” and is “Unprocessed”,
  - log message to operator (Processing Suspended until Refresh Handled)
  - exit

Select files in cdb_file_reference with this file’s originator and File Sequence Number and the File Status is “Skipped”

If any files are found,

- Call csl_update_file to set the file status to “Skipped”
- log message to operator (file skipped)
- exit

Select files in cdb_file_reference with this file’s originator and a File Sequence Number >= this files Sequence Number and File Status is not “Corrupt”

If any files (other than this one) are found,

- Call csl_update_file to set the file status to “Rejected”
- log message to operator (File Sequence Number Error)
- exit

select files in cdb_file_reference with this file’s originator and a File Sequence Number one less than this file’s Sequence Number and File Status is “Received” or “Skipped”

If no files are found,

- Call csl_update_file leave the file status as “Received”
- log message to operator (Earlier File Missing)
- exit

Join the cdb_file_reference and cdb_instruction_file and select files in with this file’s originator and a File Sequence Number one less than this file’s Sequence Number, i.e.: the previous file.

Check that the First Instruction Sequence Number is one greater than the Last instruction Sequence Number of the previous file.

(CSL will already have checked that the Instruction Sequence Numbers in the file are contiguous and that the checksum is correct)

Using CSL Common Server Library routines:

Call open_files

Read next record

While record is not File Footer

- If the record is an Instruction Header
  - If the originator is a PRS Agent,
    - If the instruction is a PRS Refresh, check that First Instruction Sequence Number = Last instruction Sequence Number for this file i.e.: there is only one instruction
    - check the instruction type is Data Aggregator Appointment, Data Collector Appointment, Profile Class/SSC, Measurement Class, Energisation Status, GSP Group, or Line Loss Factor Class Details
  - If the originator is a Data Collector
    - check the instruction type is EAC/AA and Metering System Details
- Read next record

Close the file

If all checks pass,

- return Success

Otherwise,

- return Failure

7.6.9.2 Input / Output

input:

File Id

output:

error_code

7.6.10 Close Files

This procedure invokes Server Library (CSL) procedures to close the instruction file and updates the file status detail if appropriates.

7.6.10.1 Processing

Using CSL Common Server Library routines:

Close the file

If there are outstanding instructions (i.e.: Processing Status is not DONE),

- Update file status to “Processed”

7.6.10.2 Input / Output

input:

Processing Status	MORE|DONE
Instruction File Id	

output:

Error Status

7.6.11 Complete Instruction

This procedure records the success, failure, or other changes to the status of an instruction.

7.6.11.1 Processing

Update the appropriate ndb_instructions with the new status.

7.6.11.2 Input / Output

input:

instruction_seq_no
instruction_file_id
new_instruction_status APPLIED|FAILED

output:

error_code

7.6.12 Extract MS

This procedure extracts the current state of the database for a given metering system. The data is stored in global data structures.

7.6.12.1 Processing

For each of the tables appropriate to role/instruction type:

PRS ndb_registrations_n

ndb_dc_apps_n *

ndb_ms_prs_dets_n

ndb_data_agg_apps_n

ndb_dc_apps_n

DC ndb_register_cons_n

ndb_ms_dc_dets_n

(* Data Aggregator Appointment, Data Collector Appointment & Refresh Instructions only)

Fill the pointer array and table array with nulls

Determine the partition for the Metering System. The actual table names of the tables are as listed above but in the trailing '_n', n is replaced by the partition number (eg for partition 4 the tables are ndb_registrations_4 etc.).

Read all records for the Metering System, starting from the one active on the Significant Date (for the _dets_ tables, read all records) and ordered by date into the table array

Create the array of pointers to entries in table array

7.6.12.2 Input / Output

input:

Metering System Id
Instruction Type
Originator Role

output:

error_code
error_reason

7.6.13 Reapply MS

This procedure updates the database to match the current contents of global data structures. If the instruction was a PRS Refresh, any changes are reported to the Data Aggregator.

Processing

For each appropriate subset of the arrays:

Construct a physical view from the logical arrays, inserting and deleting records and updating flags as needed

Compare this view with the current database representation (record by record)

For each difference

- If instruction was PRS Refresh, report difference.
- Insert / Delete or Update record as appropriate (do not update tables where no change is necessary)

If the database update results in the Metering System having no details (other than in ndb_ms_exceptions), the code does *not* delete the Metering System. This is performed by the archive function.

7.6.13.1 Input / Output

input:

Metering System Id
Originator Role
Instruction Type
Was Refresh (boolean)

output:

error_code
error_reason

7.6.14 Apply Data Aggregator Appointments

This procedure creates specified Data Aggregator Appointments and, if necessary the Registrations specified in the Instruction.

N.B. changes are made in memory structure.

7.6.14.1 Processing

Using the array for ndb_data_agg_apps

Search (via the list of pointers) for the first record with an Effective To Date >= Significant Date. For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.14.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.15 Apply Data Collector Appointments

This procedure performs the processing associated with an instruction to create a new Data Collector Appointment. Any appointments with effective dates after the Significant Date of the instruction are deleted.

N.B. changes are made in memory structure.

7.6.15.1 Processing

Sort the array for ndb_dc_apps by DCA Effective From Settlement Date.

Search (via the list of pointers) for the first record with an Effective From Date >= Significant Date. For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

For each detail in the instruction, search the array for an existing appointment. If none is found, copy the details into the first null record in the data array and add the new pointer.

Resort the array by Registration ID and DCA Effective From Settlement Date.

7.6.15.2 Input / Output

input

none - all required data is global

output

error_code
error_reason

7.6.16 Apply Est. Annual Consumption

This procedure applies sets of Estimated Annual Consumption changes.

N.B. changes are made in memory structure.

7.6.16.1 Processing

Using the array for ndb_register_cons

Search (via the list of pointers) for the last record with an Effective From Date <= Significant Date. For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.16.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.17 Apply Annualised Advances

This procedure applies sets of Annual Advance and Estimated Annual Consumption changes.

N.B. changes are made in memory structure.

7.6.17.1 Processing

Using the array for ndb_register_cons

Search (via the list of pointers) for the first record with an Effective To Date >= Significant Date. For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.17.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.18 Apply Energisation Statuses

This procedure applies changes to the energisation status of a Metering System; deleting changes after the new effective from date before applying the change.

N.B. changes are made in memory structure.

7.6.18.1 Processing

Using the array for ndb_ms_prs_dets or ndb_ms_dc_dets as appropriate

Search (via the list of pointers) for the first record with an Effective From Date >= min(Significant Date, earliest Energisation Status Effective From Data in Instruction). For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

If the last remaining record does not overlap a Data Aggregator Appointment (PRS data) or Meter Advance Period (DC data), fill that record with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.18.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.19 Apply GSP Groups

This procedure applies changes to a Metering System's GSP group; deleting changes after the new effective from date before applying any change.

N.B. changes are made in memory structure.

7.6.19.1 Processing

Using the array for ndb_ms_prs_dets or ndb_ms_dc_dets as appropriate

Search (via the list of pointers) for the first record with an Effective From Date >= min(Significant Date, earliest GSP Group Effective From Data in Instruction). For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

If the last remaining record does not overlap a Data Aggregator Appointment (PRS data) or Meter Advance Period (DC data), fill that record with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.19.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.20 Apply Line Loss Factor Classes

This procedure applies changes to the Line Loss Factor associated with a Metering System. Changes after the new effective from date are purged before applying any change.

N.B. changes are made in memory structure.

7.6.20.1 Processing

Using the array for ndb_ms_prs_dets

Search (via the list of pointers) for the first record with an Effective From Date >= min(Significant Date, earliest Line Loss Factor Class Effective From Data in Instruction). For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

If the last remaining record does not overlap a Data Aggregator Appointment (PRS data) or Meter Advance Period (DC data), fill that record with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.20.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.21 Apply Measurement Classes

This procedure applies changes to the Measurement Class for a Metering System. Changes after the new effective from date are purged before the new Measurement Class is recorded.

N.B. changes are made in memory structure.

7.6.21.1 Processing

Using the array for ndb_ms_prs_dets or ndb_ms_dc_dets as appropriate

Search (via the list of pointers) for the first record with an Effective From Date >= min(Significant Date, earliest Measurement Class Effective From Data in Instruction). For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

If the last remaining record does not overlap a Data Aggregator Appointment (PRS data) or Meter Advance Period (DC data), fill that record with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.21.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.22 Apply Profile Class/SSC Details

This procedure applies changes to a Metering System's Profile Class and Standard Settlement Configuration. Changes after the new effective from date are purged before the new attribute is recorded.

N.B. changes are made in memory structure.

7.6.22.1 Processing

Using the array for ndb_ms_prs_dets or ndb_ms_dc_dets as appropriate

Search (via the list of pointers) for the first record with an Effective From Date >= min(Significant Date, earliest Profile Class/SSC Effective From Data in Instruction). For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

If the last remaining record does not overlap a Data Aggregator Appointment (PRS data) or Meter Advance Period (DC data), fill that record with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.22.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.23 Apply Registrations

This procedure applies a set of Supplier Registrations specified in the Instruction.

N.B. changes are made in memory structure.

7.6.23.1 Processing

For DC data, using the array for ndb_ms_dc_dets:

Search (via the list of pointers) for the first record with an Effective From Date >= min(Significant Date, earliest Registration Effective From Data in Instruction). For that pointer (and all subsequent pointers) fill the record pointed with nulls and null the pointer.

If the last remaining record does not overlap a Meter Advance Period (DC data), fill that record with nulls and null the pointer.

For PRS data, using the array for ndb_registrations:

Search (via the list of pointers) for the first record with an Effective From Date >= Significant Date. For that pointer (and all subsequent pointers)

- Search the array for ndb_data_agg_appts for any record which is a detail of the current ndb_registrations record; fill that record with nulls and null the pointer;
- Search the array for ndb_dc_appts for any record which is a detail of the current ndb_registrations record; fill that record with nulls and null the pointer;

- fill the record pointed with nulls and null the pointer.

For each detail in the instruction, copy the details into the first null record in the data array and add the new pointer

7.6.23.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.24 Supersede Instructions

This procedure marks as Superseded all earlier Instructions for a Metering System which have not been successfully applied but can now be disregarded.

7.6.24.1 Processing

If current Instruction is from a PRS

- Select all "Discarded" Instructions with the same subject distribution business as the current Instruction
- For each selected Instruction which is a candidate for supersede (i.e.: *either* the Instruction is from the same PRS Agent and has a lower Instruction Sequence Number, *or* the originator PRS Agent has no future appointment to the Distribution Business):
  - Update "Failed" Instruction, setting Reprocess Flag to "Cannot Reprocess"

If current Instruction Type is "Data Aggregator Appointment Details" or "PRS Refresh",

- Select all "Failed" PRS Instructions with the same subject metering system as the current Instruction (DAA) or current Metering System (Refresh)
- For each selected Instruction which is a candidate for supersede:
  - If the Significant Date of the "Failed" Instruction is < Significant Date of current Instruction.
    - Update "Failed" Instruction, setting Reprocess Flag to "Cannot Reprocess"
  - Otherwise,
    - Update "Failed" Instruction, setting Status to "Superseded"
    - Delete all Instruction Status Reason records for this Instruction
    - Insert new Instruction Status Reason for this Instruction to record that the Instruction was superseded by the current Instruction

- Select all Refresh Instruction Failures for the same Metering System as the current Instruction (DAA) or current Metering System (Refresh).
- For each selected Refresh Instruction Failure:
  - if the Significant Date of the Refresh Instruction is equal to or later than that of the current Instruction and either
  - Refresh Instruction is from the same PRS Agent as the current Instruction and has an earlier Instruction Sequence Number or
  - Refresh Instruction is from a PRS Agent which has no future appointment to the Distribution Business
    - delete the Refresh Instruction Failure and all associated Refresh Instruction Failure Reasons.

If current Instruction Type is from a PRS Agent but is not "PRS Refresh" or "Data Aggregator Appointment Details",

- Select all "Failed" Instructions with the same subject metering system as the current Instruction and *either* the same Instruction Type as the current Instruction *or* with Type = "Data Aggregator Appointment"
- For each selected Instruction which is a candidate for supersede:
  - If *either* the "Failed" Instruction is a "Data Aggregator Appointment" *or* Significant Date of the "Failed" Instruction is < Significant Date of current Instruction.
    - Update "Failed" Instruction, setting Reprocess Flag to "Cannot Reprocess"
  - Otherwise,
    - Update "Failed" Instruction, setting Status to "Superseded"
    - Delete all Instruction Status Reason records for this Instruction
    - Insert new Instruction Status Reason for this Instruction to record that the Instruction was superseded by the current Instruction

If Instruction Type is "EAC/AA & MS Details",

- Select all "Failed" DC Instructions with the same subject Metering System and from the same Data Collector as the current Instruction
- for each selected Instruction,
  - If the Significant Date of the "Failed" Instruction is < Significant Date of current Instruction.
    - Update "Failed" Instruction, setting Reprocess Flag to "Cannot Reprocess"
  - Otherwise,
    - Update "Failed" Instruction, setting Status to "Superseded"

- Delete all Instruction Status Reason records for this Instruction
- Insert new Instruction Status Reason for this Instruction to record that the Instruction was superseded by the current Instruction

7.6.24.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.25 Validate PRS data

This procedure performs validation common to all PRS Agent generated instructions.

7.6.25.1 Processing

Check the Originator is current PRS Agent for the Distribution Business for this MS

If Instruction Type is “Data Aggregator Appointment”,

- Check there is no Data Aggregator Appointment active at the Significant Date unless it is also in the instruction
- If there is only 1 Data Aggregator Appt. with Start & End Date Only,
  - Check that the Data Aggregator Appt exists with same Start Date and the End Date is {max}
  - Check that there are no other records in the instruction

7.6.25.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.26 Validate DC data

This procedure performs validation common to all Data Collector generated instructions.

7.6.26.1 Processing

Check this instruction will not leave the Metering System without a Registration, Profile Class, SSC, Measurement Class, Energisation Status or GSP group during any of the time period covered by the EAC or AA

If the significant date is within an existing AA effective period, Check that said AA is updated within the instruction.

Check there is no change to SSC, Energisation Status, Registration or Measurement Class during a Meter Advance period

7.6.26.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.27 Validate Data Aggregator Appointments

This procedure performs checking associated with sets of Data Aggregator Appointments.

7.6.27.1 Processing

Check:

Start date <= End Date

Registrations exist

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,

a) That one must exist with an End Date >= Significant Date

b) All others must have a Start Date > Significant Date

Start Date >= Registration Start Date

End Date <= Registration End Date

No appointments overlap and Start Dates are unique

Check there is at least one Data Aggregator Appointment for every Registration ending on or after the Significant Date

Check that after applying the Instruction, for each Settlement Date within a Data Aggregator Appointment there will be an AFYC for the SSC/PC/GSP Group combination of the Metering System on that date

7.6.27.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason.

7.6.28 Validate Data Collector Appointments

This procedure performs the validation specific to Data Collector Appointments.

7.6.28.1 Processing

Check:

All DCs are valid

Registrations exist

If one has Start Date < Significant Date, all others for the same Registration must have Start Date > Significant Date

Start Date >= Registration Start Date

If Start Date < Significant Date the Data Collector Appointment must already exist on the database and must be the latest appointment on the database for the Registration which starts before the Significant Date

No registration will be without a Data Collector Appointment for any date within a Data Aggregator Appointment

Start Dates are unique within each Registration

7.6.28.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.29 Validate Estimated Annual Consumption

This procedure performs the validation specific to sets of Estimated Annual Consumptions.

7.6.29.1 Processing

Check:

EACs are for Time Pattern Regimes in SSC

Start Dates are unique

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

Check that after applying the Instruction, for each Settlement Date within a Data Aggregator Appointment there will be an AFYC for the SSC/PC/GSP Group combination of the Metering System on that date

Check that the EAC value is within the boundary values defined in the system_parameter table

7.6.29.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.30 Validate Annualised Advances

This procedure performs validation specific to sets of Annualised Advances.

7.6.30.1 Processing

Check:

Effective from Settlement Date <= Effective to Settlement Date

AAs are for Time Pattern Regimes in SSC

Meter Advance periods do not overlap

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

Check that after applying the Instruction, for each Settlement Date within a Data Aggregator Appointment there will be an AFYC for the SSC/PC/GSP Group combination of the Metering System on that date

Check that the AA value is within the boundary values defined in the system_parameter table

7.6.30.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.31 Validate Energisation Statuses

This procedure performs the validation specific to changes to energisation statuses.

7.6.31.1 Processing

Check:

Energisation Status is ‘D’ or ‘E’

If PRS Agent,
Registrations Exist

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

If PRS Agent,
Start Date >= Registration Start Date
Start Date <= Registration End Date
Overlap at least one Data Aggregator Appointment
No Registrations will be without a Energisation Status
on a Settlement Day within a Data Aggregator Appointment

Start Dates unique

If DC,
Metering System will not be left without Energisation Status
on a Settlement Day within an AA or EAC

7.6.31.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.32 Validate GSP Group

This procedure performs validation particular to changes in GSP group details.

7.6.32.1 Processing

Check:

GSP Groups exist

If PRS Agent,
Metering Systems Exist

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

If PRS Agent,
Overlap at least one Data Aggregator Appointment
No Metering Systems will be without a GSP Group
on a Settlement Day within a Data Aggregator Appointment

Start Dates unique

If DC,
Metering System will not be left without GSP Group
on a Settlement Day within an AA or EAC

Check that after applying the Instruction, for each Settlement Date within a Data Aggregator Appointment there will be an AFYC for the SSC/PC/GSP Group combination of the Metering System on that date

Check that the Distributor is valid for this GSP group on the Start Date

If PRS,

Check that the Distributor is valid for this GSP group for all dates which overlap a DAA

7.6.32.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.33 Validate Line Loss Factor Classes

This procedure performs validation specific to Line Loss Factor Class changes.

7.6.33.1 Processing

Distributors exist and matches Distributor according to the short code of the Metering System ID (ie first two digits)

LLFs Exist

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

Overlap at least one Data Aggregator Appointment

No Metering Systems will be without a LLF Class
on a Settlement Day within a Data Aggregator Appointment

Start Dates unique

7.6.33.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.34 Validate Measurement Classes

This procedure performs validation specific to changes in Measurement Class.

7.6.34.1 Processing

Measurement Classes Exist

If PRS Agent,
Registrations Exist

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

If PRS Agent,
Start Date >= Registration Start Date
Start Date <= Registration End Date
Overlap at least one Data Aggregator Appointment
No Registrations will be without a Measurement Class
on a Settlement Day within a Data Aggregator Appointment

Start Dates unique

If DC,
Metering System will not be left without a Measurement Class
on a Settlement Day within an AA or EAC

7.6.34.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.35 Validate Profile Class/SSC Details

This procedure validates changes to Profile Class and/or Standard Settlement Configuration.

7.6.35.1 Processing

Profile Classes Exist

SSCs Exist

Profile Class/SSC combination valid

If PRS Agent,
Registrations Exist

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

If PRS Agent,
Start Date >= Registration Start Date
Start Date <= Registration End Date
Overlap at least one Data Aggregator Appointment
No Registrations will be without a Profile Class or SSC
on a Settlement Day within a Data Aggregator Appointment

Start Dates unique

If DC,
Metering System will not be left without a Profile Class or SSC
on a Settlement Day within an AA or EAC

Check that after applying the Instruction, for each Settlement Date within a Data Aggregator Appointment there will be an AFYC for the SSC/PC/GSP Group combination of the Metering System on that date

7.6.35.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.36 Validate Registrations

This procedure validates registrations.

7.6.36.1 Processing

Supplier Ids Exist

End Date > Significant Date OR Start Date >= Significant Date

If one has Start Date < Significant Date,
All others must have Start Date > Significant Date

Start Dates unique

If PRS Agent,
least one Data Aggregator Appointment per Registration

If DC,
Metering System will not be left without a Registration
on a Settlement Day within an AA or EAC

7.6.36.2 Input / Output

input:

none - all required data is global

output:

error_code
error_reason

7.6.37 Return Instruction

This function writes all Instructions marked "Return to Source" for a specified Instruction originator to a file which will be sent to the originator.

7.6.37.1 Processing

Select

- all ndb_instructions and
- all ndb_refresh_instr_failure and
- ndb_refr_instr_failure_reason records

for the originator where the instruction is marked "Return to Source".

Call csl_create_file

Use csl routines to write file header(s)

For each Instruction

- Use csl routines to write Instruction details
- For each failure reason associated with the Instruction
  - Use csl routines to write details of the failure reasons

Use csl routines to write file footer

Call csl_close_file

Call CFS.EXPORT

7.6.37.2 Input / Output

input:

Market Participant Id

Metering System Id

output:

error_code

8 NLD Load Data Subsystem Specification

8.1 Introduction

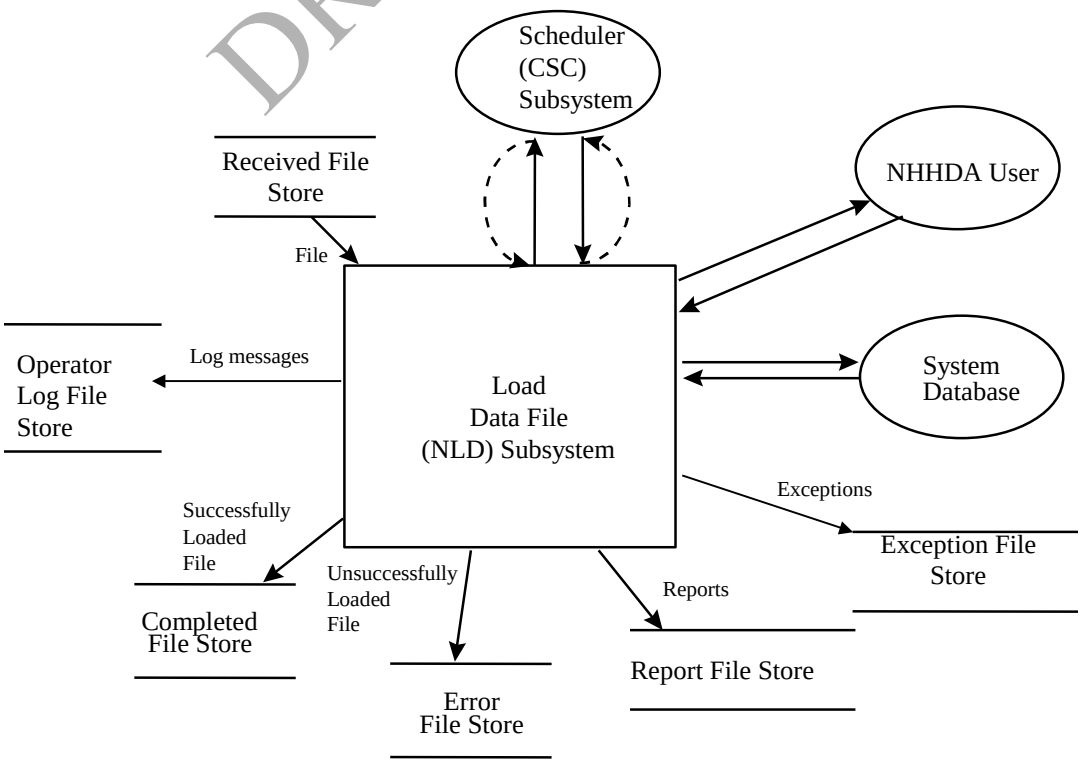
The Load Data File (NLD) subsystem enables the data contained in (data) files with a status of 'Received' (i.e.: those new files which have been recognised by the File Receipt (CFR) subsystem) to be loaded into the database in batch. It also enables the user to modify and report on the Aggregation Run Schedule and to reprocess the last successfully loaded data file.

This subsystem may only receive data files from The Pool Market Domain Data Agency or the ISR Agent. There are two valid types of data file which may be loaded into the NHHDA database via this subsystem:

File Type	Source	File Description	File Contents
D0286001	Pool Market Domain Data Agent	Data Aggregation and Settlement Timetable File	One Pool Settlement Timetable
D0269002	ISR Agent	Market Domain Data Complete Set	As specified in the Interface Specification

The background processes responsible for the loading of the data and generating logs will be written in Oracle Pro*C. The communications between the PC client and the Oracle Database on the Server is established and controlled via Oracle Net8.

8.2 Subsystem Context



8.2.1 Scheduler (CSC) Interface

For data loading, the Scheduler (CSC) subsystem initiates the data loading control process, nld_control. The data loading control process itself is submitted as described in 2.11 Operational design.

This process submits the appropriate data load process for each of the data files available for loading in order, and waits for each 'child' process to complete before initiating the next. The initiation of each 'child' process is performed by the Scheduler (CSC) subsystem.

Other subsystem processing is controlled via the user interface. If the user requests a report, the report parameters are stored. The initiation of the 'child' process is performed by the Scheduler (CSC) subsystem.

8.2.2 User Interface

The user may modify and report on the Aggregation Run Schedule, controlled via the following forms:

- Schedule Aggregation Run
- Browse Data Aggregation Run Schedule
- Report Data Aggregation Run Schedule

Note that the user may modify and report on Market Domain Data via the following forms which are part of the Maintain Standing Data (NSD) subsystem:

- Define/Browse GSP Groups
- Define/Browse Line Loss Factor Classes
- Define/Browse Profile Classes
- Define/Browse Market Participant
- Define/Browse Threshold Parameters
- Define Standard Settlement Configuration
- Browse Standard Settlement Configuration
- Report Standard Settlement Configuration and Associated Items
- Define Average Fractions of Yearly Consumption
- Report Average Fractions of Yearly Consumption

8.2.3 Database Interface

The database interactions within this subsystem are handled by batch loading processes initiated by the Scheduler (CSC) or via the user interface. Details of batch loading interactions are included in the NLD procedure section. Details of on-line and reporting interactions are described in the relevant Forms and Reports specifications respectively.

Data loaded from files may be amended subsequently via the user interface. The volume of data concerned is small so, for ease of keeping the audit trail together, the online auditing option will be invoked for database changes whether these are as result of data loading or made via the user interface.

The mechanism for capturing audit data will be database triggers on the tables concerned.

8.2.4 File Interfaces

8.2.4.1 Data Loading

New (unprocessed) files which have been recognised by the File Receipt (CFR) subsystem have a status of 'Received'. The NHHDA External Interfaces section provides the details of data files which may be received.

Files are manipulated using functions from the Server Library (CSL) subsystem. (The interface with this subsystem is not shown in the context diagram.)

Following processing, the status of each data file may remain as 'Received' (if the file concerned is not the next of that type to be processed from its source) or changed to:

- Processed - files which have been processed successfully (but not necessarily applied to the database).
- Rejected - files whose contents can not beloaded.

Each invocation of nld_load_pst or nld_load_mdd will result in messages being written to the current Operator Log using functions from the Logging (CLG) subsystem. (The interface with this subsystem is not shown in the context diagram.) Operator messages from this subsystem will relate to the run-time information about the batch process (i.e.: file identification information of the data file being processed and lists of any global parameters obtained from the database) plus messages relaying the high level progress of the batch process, such as the file details of the Exception Report if one is created.

Each invocation of the nld_load_pst or nld_load_mdd may result in a machine-readable report file being created. The Report Formatter subsystem (CRP) handles the production of a human-readable version of this report file where required.

8.2.4.2 User Invoked

The following reports are available as specified in the NFR Forms and Reports Subsystem:-

Report Data Aggregation Run Schedule

Report Average Fractions of Yearly Consumption

Report Distributors and Associated Items

Report GSP Groups

Report Line Loss Factor Class

Report SSC and Associated Items

Report Profile Class and Associated Items.

8.2.5 Special Considerations

Batch data loading processes are likely to conflict with both Aggregation and Instruction processing, and therefore it is necessary for the control process to run in the EXCLUSIVE queue. Although data files of different file types act on separate areas of the database and are not thought likely to conflict, the files concerned are small and are received infrequently. Therefore, it has been decided that all data files are loaded in a single stream. Automatic processing should not be configured for the valid data file types which may be received by the NHHDA system. Instead, the controlling process for data loading, nld_control, will be configured to run using the EXCLUSIVE queue.

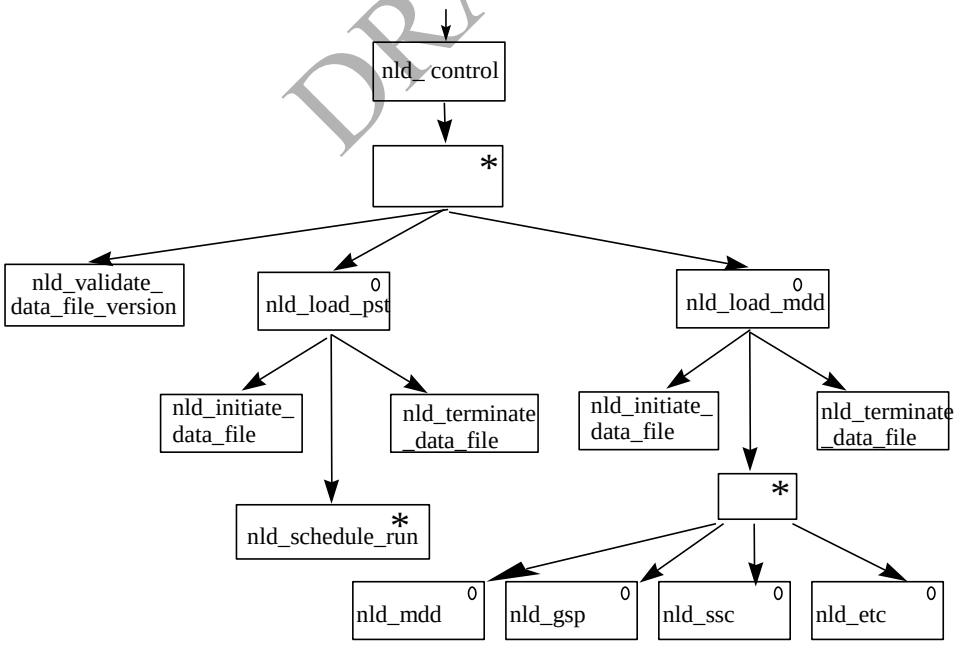
If the database is locked, the operator will be informed (via the Error Log) and no updates will be performed.

8.3 Subsystem Processing

This subsystem consists of the following components:

- Data File Loading
- Schedule Aggregation Run
- Report Data Aggregation Run Schedule

'Schedule Aggregation Run' and 'Report Data Aggregation Run Schedule' are described in NGF General Forms Subsystem Specification (section 9) and NFR Forms and Reports Subsystem Specification (section 10). The control process for 'Data File Loading' is as follows:



8.4 Data Usage

8.4.1 System Data

The following tables give the data usage mapping for the NHHDA subsystems, excluding most common database table accesses which are made through the common library functions. Where a common database table access is made, via a common library function, which has a material effect on a subsystem's functionality, it is shown in brackets. An example of the distinction made is that the update of file status would be included but not the manipulation of the cdb_queue table.

	Total	**nld_ control**	**nld_validate_ data_file_ version**	**nld_initiate_ data_file**
cdb_data_file				
cdb_file_reference	R(M)	R(M)	R	R(M)
cdb_ref_values				
cdb_system_parameter				
cdb_return_parameter				
ndb_av_frac_y_cons				
ndb_data_agg_runs				
ndb_gsp_groups				
ndb_gsp_groups_run				
ndb_measure_reqs				
ndb_profile_classes				
ndb_settlements				
ndb_std_sett_cfgs				
ndb_t_p_regimes				
ndb_vsscpcs				
ndb_m_participants				
ndb_threshold_pars				
ndb_llf_classes				
ndb_gsp_groups_dis				
ndb_isr_agent_apps				

	Total	**nld_ load_ mdd**	**nld_ load_ pst**	**nld_ terminate_ data_file**	**nld_ schedule_ run**
cdb_data_file	R		R		
cdb_file_reference	R(M)	R		R(M)	
cdb_ref_values	R		R		
cdb_system_parameter	R	R	R		
ndb_av_frac_y_cons	RCU	RCU			
ndb_data_agg_runs	RCD	R	RD		C
ndb_gsp_groups	R	R	R		

	Total	nld_load_mdd	nld_load_pst	nld_terminate_data_file	nld_schedule_run
ndb_gsp_groups_run	RCD	R	D		C
ndb_measure_reqs	RC	RC			
ndb_profile_classes	RCU	RCU			
ndb_settlements	RCU	R	RU		C
ndb_std_sett_cfgs	RCU	RCU			
ndb_t_p_regimes	RCU	RCU			
ndb_vsscpcs	RC	RC			
ndb_m_participants	RCU	RCU			
ndb_threshold_pars	RCU	RCU			
ndb_llf_classes	RCU	RCU			
ndb_gsp_groups_dis	RCU	RCU			
ndb_isr_agent_apps	RCU	RCU			

8.4.2 Local Data

Arrays to load inserts and updates to be applied to the database.

GSP_array

- 1 element per GSP Group on the database
- contains GSP Group Id for the GSP Group

GSP_latest

- 1 element per GSP Group on the database
- contains latest Effective From Settlement Date of all AFYCs for the GSP Group identified in the corresponding element of GSP_array

ndb_AFYC_temp

- database table used to hold temporary copy of all AFYCs for current SSC when SSC already exists on the database.

TPR_array

- 1 element per Measurement Requirement on the database for the current SSC
- contains Time Pattern Regime id

TPR_found

- 1 element per Measurement Requirement on the database for the current SSC
- boolean indicating ‘found’ state of TPR in corresponding element of TPR_array

PC_array

- 1 element per valid SSC Profile Class on the database for the current SSC
- contains Profile Class Id

PC_found

- 1 element per valid SSC Profile Class on the database for the current SSC
- boolean indicating 'found' state of Profile Class in corresponding element of PC_array

8.4.3 Exception Files

Processing of data files results in the creation of exception files. These report that processing has been attempted along with warnings and/or error messages.

The format of the exception files is as follows

8.4.3.1 Load Settlement Timetable Exception File

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0009001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

FNI - File Name and Id			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=FNI
2	File Name	text(14)	original name of file (from cdb_file_reference.alternative_filename)
3	File Id	integer	

XXX - Rejection Reason			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=XXX
2	Position	integer	location to allow technical support to identify exactly where this reason was detected
3	Reason	text(80)	text explaining why the file has been rejected

DND - Dispute run Not Deleted			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=DND
2	Run Date	date	
3	Settlement Date	date	
4	Settlement Code	text(2)	

This run has not been deleted because it has a dispute type Settlement Code.

AAP - Aggregation Already Performed			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=DBP
2	Run Date	date	
3	Settlement Date	date	
4	Settlement Code	text(2)	

This run has not been deleted because the Aggregation Run has already been performed.

NIA - Run not inserted (Duplicate run already performed)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=NIA
2	Settlement Date	date	
3	Settlement Code	text(2)	
4	Run Date	date	Run date (as determined by NLD processing) for Aggregation Run that was not inserted
5	Existing Run Date	date	Run date for existing Aggregation Run

This run was not inserted because an Aggregation Run for the same Settlement Date and Code has already been performed.

NID - Run not inserted (Duplicate run already on database)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=NID
2	Settlement Date	date	
3	Settlement Code	text(2)	
4	Run Date	date	Run date (as determined by NLD processing) for Aggregation Run that was not inserted
5	Existing Run Date	date	Run date for existing Aggregation Run

This run was not inserted because an Aggregation Run for the same Settlement Date and Code already exists on the database. This exception should occur very rarely and only under unusual circumstances.

NIP - Run not inserted (no Payment Date)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=NIP
2	Settlement Date	date	
3	Settlement Code	text(2)	
4	Run Date	date	Run date (as determined by NLD processing) for Aggregation Run that was not inserted
5	Existing Run Date	date	Run date for existing Aggregation Run

This run was not inserted because an Aggregation Run for the same Settlement Date and Code already exists on the database but does not have a Payment Date in the corresponding ndb_settlements record and so was not considered for deletion. For example, runs scheduled using the "Schedule Aggregation Run" form will not have an associated Payment Date.

DPD - Defaulted to Provisional Default			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=DPD
2	Run Date	date	
3	Settlement Date	date	
4	Settlement Code	text(2)	

The system could not derive enough working days to schedule this run so it has instead been scheduled to run on the Planned Data Aggregation Run Date held in the PST record and has been given a status of 'Provisional Default'.

SYS - System Parameter value			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SYS
2	Param_Type	text(3)	
3	Param_Type2	text(3)	
4	Value	text(20)	

The value of this System Parameter was used during the DAST loading process.

GSP - GSP Group In Run			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=GSP

GSP - GSP Group In Run			
Field	**Field Name**	**Type**	**Comments**
2	GSP Group ID	text(2)	
3	GSP Group Name	text(30)	

This GSP Group was included in all Aggregation Runs scheduled during the loading of the DAST file.

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of File:

```
Load PST Exceptions          ::= ZHD FNI {SYS} {GSP}
                                 {Exception} ZPT
Exception                    ::= XXX|DND|AAP|NIA|NID|
                                 NIP|DPD
```

Sorting:

There is no defined sorting for this file. The records in the file appear in the order they were encountered.

8.4.3.2 Load Market Domain Data Complete Set Exception File

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0040001
3	From Role Code	text(1)	=B (Non Half Hourly Data Aggregator)
4	From Participant Code	text(4)	Market Participant ID of the Non Half Hourly Data Aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

FNI - File Name and Id			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=FNI
2	File Name	text(14)	original name of file (from cdb_file_reference.alternative_filename)
3	File Id	integer(9)	

XXX - Rejection Reason			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=XXX
2	Position	integer	location to allow technical support to identify exactly where this reason was detected
3	Reason	text(80)	text explaining why the file has been rejected

MDD - MDD Exception Report Header Information			
Field	**Field Name**	**Type**	**Comments**
1	Market Domain Data File Header	text(3)	=MDD
2	MDD Version Number	integer(8)	
3	MDD Load Date	date	this is the date when the data in the file is supposed to go live.
4	Information	text(80)	MDD Processing Information

M01 - Warning:- Market Participant and Role On Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M01
2	Market Participant ID	text(4)	
3	Market Participant Role Code	text(1)	
4	Distributor Short Code	text(2)	The Distributor Short Code field is only populated if the Market Participant is acting in the role of Distributor.

{ MPRL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M02 - Error:- Failed to Update Distributor Short Code From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M02
2	Market Participant ID	text4)	
3	Market Participant Role Code	text(1)	
4	Distributor Short Code	text(2)	only populated when MP Role is equal to Distributor Role Code.

{ MPRH1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M03 - Warning:- Modified Threshold Parameter has been used in a Final Initial Settlement			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M03
2	Threshold Parameter	integer(7)	
3	Effective From Settlement Date	date	{TPAR}

{ THPL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M04 - Warning:- Threshold Parameter On Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M04
2	Threshold Parameter	integer(7)	
3	Effective From Settlement Date	date	{TPAR}

{THPL2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M05 - Warning:- GSP Group In File is Missing From Database			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M05
2	GSP Group ID	text(2)	
3	GSP Group Name	text(30)	

{GSGL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M06 - Warning:- GSP Group On Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M06
2	GSP Group ID	text(2)	

{GSGL2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M07 - Warning:- GSP Group/Distributor Relationship On Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M07
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	

M07 - Warning:- GSP Group/Distributor Relationship On Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
4	Effective From Settlement Date	date	

{GGDL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M08 - Error:- Invalid Distributor for GSP Group/Distributor Relationship			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M08
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	
4	Market Participant Role Code	text(1)	
5	Effective From Settlement Date	date	{GGD}

{GGDM1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M09 - Error:- Unable to Update Distributor Appointment (MSID has open DAA)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M09
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	
4	Effective From Settlement Date	date	{GGD}

{GGDH1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M10 - Error:- Distributor Appointment Effective To Settlement Date is less then Effective From Settlement Date			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M10
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	
4	Effective From Settlement Date	date	{GGD}
5	Effective To Settlement Date	date	{GGD}

{GGDH2} (as specified in Function Definition N0036 Load Pool Market Domain Data)

M14 - Error :- Invalid PRS Agent for PRS Agent Appointment to Distributor			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M14
2	GSP Group ID	text(2)	
3	PRS Agent ID	text(4)	
4	Market Participant Role Code	text(1)	

{PAAM1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M15 - Error :- No Distributor Appointment for GSP Group corresponding to PRS Agent Appointment			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M15
2	GSP Group ID	text(2)	
3	PRS Agent ID	text(4)	

{PAAM2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M19 - Warning :- ISR Agent Appointment on Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M19
2	GSP Group ID	text(2)	
3	ISR Agent ID	text(4)	
4	Effective From Date	date	
5	Effective To Date	date	

{IAAL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M20 - Error :- Invalid ISR Agent for ISR Agent Appointment			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M20
2	GSP Group ID	text(2)	
3	ISR Agent ID	text(4)	
4	Market	text(1)	

M20 - Error :- Invalid ISR Agent for ISR Agent Appointment			
Field	**Field Name**	**Type**	**Comments**
	Participant Role Code		
5	Effective From Date	date	{IAA}

{IAAM1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M21 - Error :- ISR Agent Appointment Effective To Settlement Date is less than Effective From Settlement Date.			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M21
2	GSP Group ID	text(2)	
3	ISR Agent ID	text(4)	
4	Effective From Date	date	{IAA}
5	Effective To Date	date	{IAA}

{IAAH1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M22 - Error :- Date overlap exists between two or more ISR Agent Appointments in the file			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M22
2	GSP Group ID	text(2)	
3	ISR Agent ID	text(4)	first appointment
4	Effective From Date	date	{IAA} first appointment
5	Effective To Date	date	{IAA} first appointment
6	ISR Agent ID	text(2)	second appointment
7	Effective From Date	date	{IAA} second appointment
8	Effective To Date	date	{IAA} second appointment

{IAAH2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M23 - Error :- ISR Agent Appointment on database overlaps Appointment in the file.			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M23
2	GSP Group ID	text(2)	
3	ISR Agent ID	text(4)	on database

M23 - Error :- ISR Agent Appointment on database overlaps Appointment in the file.			
Field	**Field Name**	**Type**	**Comments**
4	Effective From Date	date	on database
5	Effective To Date	date	on database
6	ISR Agent ID	text(4)	from file
7	Effective From Date	date	from file
8	Effective To Date	date	from file

{IAAH3}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M24 - Warning:- Profile Class on Database is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M24
2	Profile Class ID	integer(2)	

{PFCL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M25 - Warning:- Time Pattern Regime on Database is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M25
2	Time Pattern Regime ID	text(5)	

{TPDL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M26 - Warning :- LLF Class/Distributor Relationship on Database is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M26
2	LLFC ID	integer(3)	
3	Distributor Participant ID	text(4)	Market Participant ID of the Distributor

{ LLFL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M27 - Error :- Invalid LLFC Distributor ID			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M27
2	Distributors Market	text(4)	Market Participant ID of the Distributor

M27 - Error :- Invalid LLFC Distributor ID			
Field	**Field Name**	**Type**	**Comments**
	Participant ID		
3	LLFC ID	integer(3)	
4	Effective From Settlement Date	date	{LLFC}

{ LLFM1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M28 - Warning:- SSC on Database is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M28
2	SSC ID	text(4)	

{ SCIL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M29 - Warning:- Measurement Requirement TPR on Database is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M29
2	Standard Settlement Configuration Id	text(4)	
3	Time Pattern Regime Id	text(5)	

{ TPRL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M30 - Error:- Invalid Measurement Requirement TPR Value			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M30
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SSC}
4	Time Pattern Regime Id	text(5)	

{ TPRM1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M31 - Error:- Invalid Update of Measurement Requirement Used by Metering System			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M31

M31 - Error:- Invalid Update of Measurement Requirement Used by Metering System			
Field	**Field Name**	**Type**	**Comments**
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SSC}
4	Time Pattern Regime Id	text(5)	

{TPRH1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M32 - Warning:- VSCPC On Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M32
2	Standard Settlement Configuration Id	text(4)	
3	Profile Class Id	integer(2)	

{VSDL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M33 - Error:- Invalid VSCPC Profile Class Value			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M33
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SSC}
4	Profile Class Id	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}

{VSDM1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M34 - Warning:- Update/insert of AFYC set before latest date which has been used in Final Initial Settlement			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M34
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SSC}

M34 - Warning:- Update/insert of AFYC set before latest date which has been used in Final Initial Settlement			
Field	**Field Name**	**Type**	**Comments**
4	Profile Class ID	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}
6	GSP Group ID	text(2)	
7	Effective From Settlement Date	date	{AFOYCS}
8	Effective To Settlement Date	date	{AFOYCS}
9	Time Pattern Regime Id	text(5)	
10	Average Fraction of Yearly Consumption	decimal (7,6)	

{ASDL1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M35 - Warning:- AFYC set for GSP Group Exists On Database Is Missing From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M35
2	Standard Settlement Configuration Id	text(4)	
3	Profile Class ID	integer(2)	
4	GSP Group ID	text(2)	
5	Effective From Settlement Date	date	
6	Effective To Settlement Date	date	

{ASDL2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M36 - Error:- MDD Load Would Cause Missing AFYC Data During DAA Appointment			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M36
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SSC}
4	Profile Class ID	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}

M36 - Error:- MDD Load Would Cause Missing AFYC Data During DAA Appointment			
Field	**Field Name**	**Type**	**Comments**
6	GSP Group ID	text(2)	
7	Effective From Settlement Date	date	{AFOYCS}
8	Effective To Settlement Date	date	{AFOYCS}
9	Date Range Start	date	start of range of dates which would not be covered by any AFYC sets for the SSC/PC/GSP
10	Date Range End	date	end of range of dates which would not be covered by any AFYC sets for the SSC/PC/GSP

{ASDH1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M37 - Error:- AFYC Set Effective To Settlement Date is less than Effective From Settlement Date			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M37
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SSC}
4	Profile Class ID	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}
6	GSP Group ID	text(2)	
7	Effective From Settlement Date	date	{AFOYCS}
8	Effective To Settlement Date	date	{AFOYCS}

{ASDH2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M38 - Error:- Date overlaps exist between two or more sets of AFYCS for the same GSP Group			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M38
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SCI}first ssc record
4	Profile Class ID	integer(2)	

M38 - Error:- Date overlaps exist between two or more sets of AFYCS for the same GSP Group			
Field	**Field Name**	**Type**	**Comments**
5	Effective From Settlement Date	date	{VSCPC} first vscpc record
6	GSP Group ID	text(2)	
7	Effective From Settlement Date	date	{AFOYCS} first AFYC set
8	Effective To Settlement Date	date	{AFOYCS} first AFYC set
9	Effective From Settlement Date	date	{SCI}second ssc record
10	Effective From Settlement Date	date	{VSCPC} first vscpc record
11	Effective From Settlement Date	date	{AFOYCS} second AFYC set
12	Effective To Settlement Date	date	{AFOYCS} second AFYC set

{ASDH3}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M39 - Error:- AFYCS in file overlaps an AFYCS on the database			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	M39
2	Standard Settlement Configuration Id	text(4)	
3	Profile Class ID	integer(2)	
4	GSP Group ID	text(2)	
5	Effective From Settlement Date	date	on database
6	Effective To Settlement Date	date	on database
7	Effective From Settlement Date	date	{SCI} from file
8	Effective From Settlement Date	date	{VSCPC} from file
9	Effective From Settlement Date	date	{AFOYCS} from file
10	Effective To Settlement Date	date	{AFOYCS} from file

{ASDH4}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M40 - Error:- AFYC Set Does Not Sum to 1.0000			
Field	**Field Name**	**Type**	**Comments**

M40 - Error:- AFYC Set Does Not Sum to 1.0000			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M40
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SCI}
4	Profile Class Id	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}
6	GSP Group Id	text(2)	
7	Effective From Settlement Date	date	{AFOYCS}
8	Effective To Settlement Date	date	{AFOYCS}
9	Sum of all AFYCs in set	decimal (8,6)	Field size defined to allow for sum of 48 fractions each with the value 1.000000 (!)

{AFDM1}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M41 - Error:- Incorrect Additional Measurement Requirement for SSC			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M41
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SCI}
4	Profile Class Id	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}
6	GSP Group Id	text(2)	
7	Effective From Settlement Date	date	{AFOYCS}
8	Time Pattern Regime Id	text(5)	

{AFDM2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M42 - Error:- Incorrect Duplicate Measurement Requirement in AFD record for SSC			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M42
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SCI}
4	Profile Class Id	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}
6	GSP Group Id	text(2)	
7	Effective From Settlement Date	date	{AFOYCS}
8	Time Pattern Regime Id	text(5)	

{AFDM3}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M43 - Error:- Incorrect Missing Measurement Requirement for SSC			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M43
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SCI}
4	Profile Class Id	integer(2)	
5	Effective From Settlement Date	date	{VSCPC}
6	GSP Group Id	text(2)	
7	Effective From Settlement Date	date	{AFOYCS}
8	Time Pattern Regime Id	text(5)	

{AFDM4}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M44 - Error:- Invalid Update of Measurement Requirement for Which There is Already One or More Sets of AFYCs			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M44
2	Standard Settlement Configuration Id	text(4)	
3	Effective From	date	{SCI}

M44 - Error:- Invalid Update of Measurement Requirement for Which There is Already One or More Sets of AFYCs			
Field	**Field Name**	**Type**	**Comments**
	Settlement Date		
4	Time Pattern Regime Id	text(5)	New Measurement Requirement which may not be added

{TPRH2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M45 - Error:- Measurement Requirement specified which is not specified for another SCI for the same Standard Settlement Configuration			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M45
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SCI} from file
4	Time Pattern Regime Id	text(5)	Measurement present in set for specified SCI record, but not present in another set.
5	Effective from Settlement Date	date	{SCI} from file for SCI which has specified TPR missing from its measurement requirements.

{TPRM2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M46 - Error:- Illegal Duplicate Measurement Requirement in TPR record for SSC			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M46
2	Standard Settlement Configuration Id	text(4)	
3	Effective From Settlement Date	date	{SCI}
4	Time Pattern Regime Id	text(5)	

{TPRM3}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M48 - Error:-No corresponding Distributor to PRS Agent			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M48
2	Market Participant ID	text4)	
3	Market Participant Role	text(1)	

M48 - Error:-No corresponding Distributor to PRS Agent			
Field	**Field Name**	**Type**	**Comments**
	Code		

{MPRH2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M49 - Error:-No corresponding PRS Agent to Distributor			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M49
2	Market Participant ID	text4)	
3	Market Participant Role Code	text(1)	
4	Distributor Short Code	text(2)	

{MPRH3}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M50 - Error:- Missing PRS Agent Appointment for Distributor appointment to GSP Group			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M50
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	
4	Effective From Settlement Date	date	{GGD}
5	Effective To Settlement Date	date	{GGD}

{GGDM2}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M51 - Error:- Distributor Appointment on database overlaps Appointment in the file			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M51
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	
4	Effective From Settlement Date	date	on database
5	Effective To Settlement Date	date	on database
6	Effective From Settlement Date	date	from file

M51 - Error:- Distributor Appointment on database overlaps Appointment in the file			
Field	**Field Name**	**Type**	**Comments**
7	Effective To Settlement Date	date	from file

{GGDH4}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M52 - Error:- Reappointment of the same Distributor in the same GSP Group			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M52
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	
4	Effective From Settlement Date	date	{GGD}
5	Effective To Settlement Date	date	{GGD}

{GGDH5}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M54 - Error:- Reappointment of the same PRS Agent in the same GSP Group			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M54
2	GSP Group ID	text(2)	
3	PRS Agent Participant ID	text(4)	

{PAAH5}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M55 - Error:- Failed to Insert due to dup. Dist Short Code From File			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M55
2	Market Participant ID	text4)	
3	Market Participant Role Code	text(1)	
4	Distributor Short Code	text(2)	

{MPRH4}(as specified in Function Definition N0036 Load Pool Market Domain Data)

M56 – Database changes resulting from load			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=M56
2 …	Tablename	text	Name of database table updated.(variable length field with a maximum length of 30 chars).
3	Operation	Text(8)	Type of Database Operation (UPDATE, INSERT or DELETE).
4	Data	Text	Data changed with the individual fields separated by commas. For UPDATE/INSERT data after amendment. For DELETE the record deleted. Variable length field.

MGD – Warning :- GSP Grp/Dist appt. on DB is missing from File.			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MGD
2	GSP Group ID	text(2)	
3	Distributor Participant ID	text(4)	
4	Efffective from settlement date	date	
5	Effective to settlement date (file)	date	
6	Effective to settlement date (database)	date	

There is no equivalent to this exception in the logical design, this is a physical data issue.

MID - Metering System Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MID
2	Metering System ID	integer(13)	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of File:

```
Load MDD Exceptions          ::= ZHD FNI [MDD] {Exception}
                                  [MDD] ZPT

Exception                    ::= XXX|M01|M02|M03|M04|M05|
                                 M06|M07|M08|M09_set|M10|
                                 M14|M15|
                                 M19|M20|M21|M22|M23|
                                 M24|M25|M26|M27|M28|M29|
                                 M30|M31_set|M32|M33|M34|
                                 M35|M36_set|M37|M38|M39|
                                 M40|M41|M42|M43|M44|M45|
                                 M46|M48|M49|M50|M51|M52|
                                 M54|M55
M09_set                      ::= M09 MID {MID}
M31_set                      ::= M31 MID {MID}
M36_set                      ::= M36 MID {MID}
```

The MDD record in the L0040001 file is optional as it is derived from the D0269002 MDD record. In the scenario where the incoming data is missing a load failure due to the file structure will occur. The MDD record will not be output to the exception file as it is the cause of the file rejection.

Sorting:

There is no defined sorting for this file. The records in the file appear in the order they were encountered.

8.5 Procedure Details

This section describes the various components of the Load Data File (NLD) subsystem. All procedures are implemented using Pro*C.

8.5.1 Procedure nld_control

The inputs to this procedure are: none

It returns an Error Status.

This procedure controls the submission of data loading jobs. It runs in the EXCLUSIVE queue. It selects all incoming Market Domain Data Complete Set and Data Aggregation and Settlements Timetable Files with a status of ‘Received’, ordered by Market Role, Participant Id, File Type, Creation Time, (as held in cdb_file_reference).

Invoke NAR_DB_LOCK.P_CHECK_DB_LOCK

(this will raise a fatal Oracle exception if the database is locked and abort processing)

For each file:

- validate that the Source Address identifies the Pool Market Domain Data Agency
- invoke nld_validate_data_file_version
- If any of these validation checks failed, reject the file as follows:

- log an error to the operator log
- change the file_status to 'Rejected'

otherwise:

- SUBMIT an immediate job for the File Id and Activity Type
- invoke WAIT_ALL on the Activity Id returned by the Scheduler
- if the activity completes successfully, continue with next file of the same file type for the source otherwise start with the next file type for the source.

Once all activities are complete, then exit.

8.5.2 Procedure nld_initiate_data_file

The inputs to this procedure are: Data File Id

It returns: Exception Report File Id and an Error Status.

This procedure identifies the file to be loaded and invokes Server Library (CSL) procedures to:

- create and open an exception report file,
- open the data file and update its file status details to 'Running'
- read past the file headers.
- commit changes to the database (i.e.: ensure status change is recorded)

8.5.3 Procedure nld_validate_data_file_version

The inputs to this procedure are: File Id, File Type, Market Role, Participant Id, Creation Time.

It returns an Error Status.

This procedure performs a number of checks on a data file's version (as defined by its creation date-time stamp). An error code will be returned if:

- an incoming data file of the same file type exists from the same source with a status of 'Running' (a previous load failed).
- the Creation Time of this file is less than that of the last successfully loaded (i.e., status not 'Received' or 'Running') data file of this type from the same source. Note: there might not be one.

8.5.4 Procedure nld_terminate_data_file

The inputs to this procedure are: Data File Id, Next Status for Data File, Exception Report File Id, Next Status For Exception Report File

It returns an Error Status.

This procedure invokes Server Library (CSL) procedures to close the data and exception report files, if they have been opened and updates their file status details according to Next Status for Data File and Next Status For Exception Report File. These changes are committed to the database.

8.5.5 Procedure nld_load_mdd

Procedure Name: Load Market Domain Data

The inputs to this procedure are: file id, exception file id, mdd_load_mode

It returns an Error Status.

The procedure nld_load_mdd can be run in two different modes. By default, nld_load_mdd will run in 'Validate Only' mode. If required the system may run nld_load_mdd in 'Validation and Apply' mode. This procedure accepts a data file containing the Pool Market Domain Data. If the mdd_load_mode is not equal to 'APPLY_MDD' then the system will only process the file in default 'Validate Only' mode. If the mdd_load_mode is equal to 'APPLY_MDD' then the system will process the file in 'Validate and Apply' mode.

Only a subset of this data is relevant to the NHHDA system. The data of relevance to NHHDA is as specified in section 'Interface Specification'. The file will contain a snapshot of all elements of the Market Domain Data. The Market Domain Data loaded into NHHDA will be a refresh of data currently on the database, within the time period specified by the 'MDD Load Window' (as specified in Function Definition N0036 [NFUNDEF]).

Data Items in the file which are not considered for loading are ignored by the MDD load process. This may cause exception messages to be generated when the appropriate data is in the file. These exception messages will be displayed in the format of the exception number, the type of data missing, for example Threshold Parameter, and an explanation that the data is on the database but missing from the file. Examples of these data items are those outside the load window or Site Specific Line Loss Factor Classes.

The information written to the exception report for this procedure will include:

- the reason why the file was rejected
- the key of each record which could not be created, plus the exception reason

Note that exceptions at medium or high level (i.e. exceptions that are not Warnings only) will cause the file to fail processing and as a result no database updates will be made. If only Exception Warnings are generated, then the file may be processed successfully. The exception file will contain any problems encountered for each group of data e.g. Record Group 'Market Participant Role Details' which it has rejected. Any problems encountered at a particular level of the file will mean that child data held in the relevant lower level record groups, will not be validated. Only when parent data is validated successfully will the processing go on to validate the child related record groups as specified in the NHHDA Function Definition N0036.

The processing for this procedure is split into three phases. The functionality of each phase is summarised below:

- **Pre-processing:**
  - invoke nld_initiate_data_file. Resume at Post-processing if an error was detected.
  - verify that the relevant record types follow the data structure expected for the File Type, as specified in section 'External Interfaces', ignoring record types which are not defined. If record types do not conform to the record structure, log exception, set Next Status for Data File = 'Rejected', Next Status for Exception Report File = 'Completed' and skip to Post-processing.
- **Data processing:**

  read all data from the input file

  apply validation as defined in Function Definition N0036 Load Pool Market Domain Data.

  Report exceptions to exception file

  record required database changes

  IF pmode = apply_mdd AND no medium or high level exceptions exist THEN

  apply changes to the database

  END IF
- **Post-processing:**

  invoke nld_terminate_data_file. The file statuses will depend on whether the pre-processing detected verification errors, or whether or not the data-processing completed successfully.

8.5.6 Procedure nld_load_pst

The inputs to this procedure are: file id

It returns an Error Status.

This procedure accepts a data file containing the default schedule for a Data Aggregation and Settlements Timetable or subsequent revisions to it. The procedure loads the timetable.

The information written to the operator's log for this procedure will include:

- the values for Use Run Date from File, Days before Notification, and Valid Calendar Days for Run.
- a list of any working days derived from existing entries in ndb_settlements, if any. (A working day is defined as any date which appears as an ISR Notification Date.)
- a list of GSP Group Ids which were used.

The information written to the exception report for this procedure will include:

- the reason why the file was rejected (if it was rejected)
- the key of each record which could not be deleted, plus the exception reason
- the key of each ndb_data_agg_runs record which was created with a 'Provisional Default' status, plus the exception reason.
- the key of each record which could not be created plus the exception reason.

The processing for this procedure is split into three phases, each of which is a success unit. This ensures that the File details are retained if the database changes are rolled back. (NB File rejection criteria are checked during pre-processing to avoid the need to 'roll back' the exception report.) The functionality of each phase is summarised below:

- Pre-processing:
  - invoke nld_initiate_data_file. Resume at Post-processing if an error was detected.
  - read file header information from cdb_data_file
  - verify that:
    1. the record types are as expected for the file type, as defined in Section 3, External Interfaces.
    2. the Payment Dates are within the timetable range specified by the 'TTH' record.
    3. the Settlement Dates are before their associated Planned Data Aggregation Run Dates.
    4. the Planned Data Aggregation Run Dates are before their associated ISR Notification Dates.
    5. the ISR Notification Dates are before their associated Payment Dates.
    6. the Settlement Codes are known to the system.

    If any check 1-6 fails, log exception ('XXX'), set Next Status for Data File = 'Rejected', Next Status For Exception Report File = 'Completed' and skip to Post-processing.
  - read the system configuration parameters: Days before Notification and Max Days before Notification.
  - if Days before Notification > 0, attempt to derive this number of unique isr_deadline_dates from existing entries in ndb_settlements. Whenever there is a gap between ISR Notification Dates in the data file, the database is interrogated for possible values which fill the gap.
  - read all GSP Group IDs into a data structure.
- Data processing:

- select all ndb_data_agg_runs and ndb_gsp_groups_run records with Payment Date within the range covered by the timetable.
- For each ndb_data_agg_runs record selected

  If the run has a dispute type Settlement Code, write an exception record. [DND]

  If the run has already been performed, write an exception record. [AAP]

  otherwise (not a dispute and has not already been performed)

  delete the record and all associated records in ndb_gsp_groups_run.

For each PST record in the data file:

- If the user configurable parameter "Use Run Date from File" is "FALSE", the Data Aggregation Run Date is calculated as "Days before Notification for Aggregation Run" working days before the corresponding ISR Notification Deadline Date. If no working day can be found or the working day calculated is more than a user configurable number ('Max Days before Notification for Aggregation Run') of calendar days before the ISR Notification Deadline Date, then the Data Aggregation Run Date is set to the date held in the Planned Data Aggregation Run Date field of the PST Details record, the run is given a status of 'Provisional Default' and a report is made to the exception log.
- If the user configurable parameter "Use Run Date from File" is "TRUE", the date held in the Planned Data Aggregation Run Date field of the PST Details record is used as the Data Aggregation Run Date.
- If there is already a Data Aggregation Run for the same Settlement Date/Code as for the current PST record, write an exception record (This will be because the run has already been performed [NIA], the associated ndb_settlements record has no Payment Date and so was not considered for deletion [NIP], or there is already an Aggregation Run scheduled for this Settlement Date/Code [NID]). Otherwise, call nld_schedule_run.

- Post-processing
  - invoke nld_terminate_data_file. The file statuses will depend on whether the pre-processing detected verification errors, or whether or not the data-processing completed successfully.

8.5.7 Procedure nld_schedule_run

The inputs to this procedure are: settlement_date, settlement_code, isr_deadline_date, payment_date, data_agg_run_date, data_agg_run_stat, gsp_group_data_structure

It returns an Error Status.

This procedure

- inserts or updates a record in ndb_settlements,
- inserts a record in ndb_data_agg_runs. (The data_agg_run_stat will be set to 'Released' unless a status of 'Provisional Default' is passed into this procedure.)
- inserts a record in ndb_gsp_groups_run for each GSP Group.

9 NGF General Forms Subsystem Specification

9.1 Forms Overview

9.1.1 Navigation

Navigation within Forms is handled at four levels; screen, block, record and field. Navigation to each screen is generally handled in two ways, either via the NHHDA application menu where each screen is explicitly invoked from a menu option or from one screen to another via a button. On entry to a screen the user is placed into the first enterable field of the first enterable block (some blocks are for display only purposes and therefore do not allow the user into them). Block, record and field navigation are handled via the mouse or via the Forms Menu (see Block, Record and Field menu options).

9.1.2 Querying

There are two types of queries that can be carried out by the user; a global query and a user defined query. A global query fetches all records that are applicable to the block from the database to the screen. A user defined query will fetch all records that meet the query criteria entered by the user. There are two functions that allow this to be carried out, an enter query function and an execute query function. Enter query function places the form into enter query mode. This mode passes control over to the user so that they can enter query criteria with which to perform a query - it differs from the forms normal mode of operation in that the only task that can be carried out is the entering of query criteria, no other processing is possible. The execute query function actually carries out the query with the criteria entered. A global query can be performed by invoking execute query without first invoking enter query. The number of records returned from the database to the screen is controlled internally and is invisible to the user, the perception is that all records retrieved from the database are available for viewing.

9.1.3 Commit Processing

When an operator uses a form, any modifications are not recorded in the database but are recorded in the Forms own workspace. In order to make these modifications permanent the user must explicitly save the contents of the workspace to the database by issuing a save via the Forms menu (Action -> Save). The save command issues a commit to the database. When a commit is issued data that has been entered or modified is validated. Forms navigates to each block in sequence, validating data in each record that is new or has been modified. If the data is invalid, Forms displays error message to the user and fails commit processing else if the data is valid it is saved to the database.

9.1.4 Validation

Validation within Forms is handled at three levels; entry of a value into a field, entry of a record and commit time. Field validation has generally been handled by displaying a valid list of values to the user in response to an incorrect entry. This is achieved by providing a list of values for the required fields and setting their LOV For Validation property to True, Forms then handles the rest. Record and commit time validation is handled programmatically and, if required, will be specified in the relevant sections

of the Forms technical specification below (Forms Structure details field and record validation and Action on Insert / Update / Delete commit time validation).

The cdb_ref_values table, defined in the common subsystem [CTSPEC], is designed to hold values for a particular domain. NHHDA reference data that exists in these tables is used throughout the screens for lookup and validation purposes. A common NHHDA routine will exist in the common Forms library, std_lib, that will populate pop lists based on fields that require lists and validation from values held in the cdb_ref_values table. This generic routine is called when a form is initially started for each of these fields. The routine accepts a domain code which is used to populate a pop list with values held in cdb_ref_values for the domain code passed. Pop lists only allow selection of a valid item and therefore by using this mechanism any values defined in cdb_ref_values can be validated generically. A full list of all domains held in cdb_ref_values can be found in section 4.3.4 Use of common Database Tables.

Some fields are subject to numeric range checks. The valid ranges are held in the cdb_ref_values table within the value_from and value_to fields. Each field requiring the range check has a domain associated with it, against which the range is specified. If a field requires such validation then it will be detailed in the Forms Structure section of the Forms technical specification below.

9.1.5 Error Handling

Errors are handled generically across all of the screens using a common error handling routine held in the standard Forms library (std_lib). This function will return from cdb_error_messages a predefined Confirmation, Information, Warning, Error or Fatal message that is invoked programmatically from the Forms. Warning and Information messages display the error message to the user without failing processing whilst Error and Fatal messages fail processing. The response to confirmation messages may affect what action is taken next.

9.1.6 Forms Infrastructure

All of the NHHDA Forms have a common infrastructure that enables code and Forms objects to be shared and standardised across the system. Common Forms objects such as the Toolbar and Object Classes are held in ref_form. Common code falls into two categories, code held on the server and code held on the client. Code held on the server will include PL/SQL that must access the database. Code held on the client will include Forms specific code that is not required to access the database. Code on the server will be located in a number of packages including the common package, pkg_common (see Procedure pkg_common below) where code common to all Forms will be held. Code on the client is held in the common library, std_lib, each form references the library in order to access the code.

9.1.7 Browse Functions

ORACLE Forms can be called in two modes, a maintenance mode and a query mode where access is restricted to query only. The browsing

functions will be handled at the physical level by calling the maintenance Forms in query only mode from the menu.

9.2 Menu Structure

9.2.1 Overview

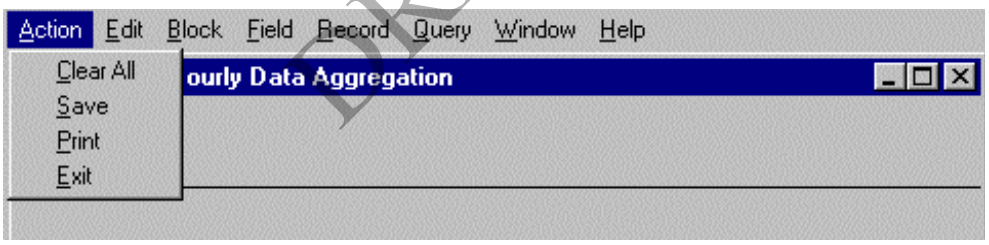
This section will provide details of the menu structure for screens which will be used for browsing, maintaining and reporting on NHHDA standing data. In addition, it outlines the general approach to Forms functionality, the tables maintained by each of the Forms and menu security before giving a detailed specification of each of the Forms.

9.2.2 The NHHDA Forms Menu

Actions permitted on each block (querying, inserting, updating, deleting and navigation) are controlled via the toolbar and the NHHDA Forms menu by greying out the relevant buttons on the toolbar and disabling the associated menu options. The toolbar is common across all three systems and is therefore defined in the Common Subsystems Technical Specification [CTSPEC] document. The NHHDA Forms menu is detailed below.

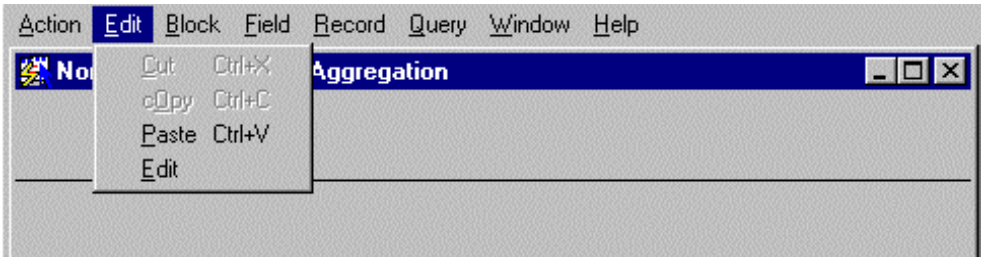
9.2.2.1 Action Menu

This provides form-level operations. Clear All carries out a global clear to the form, this is useful for rolling back any user modifications since the last Save. Save commits any new records, changes to existing records or deletes to the database. Print prints the current screen. Exit exits the form after first prompting the user to commit any outstanding changes.



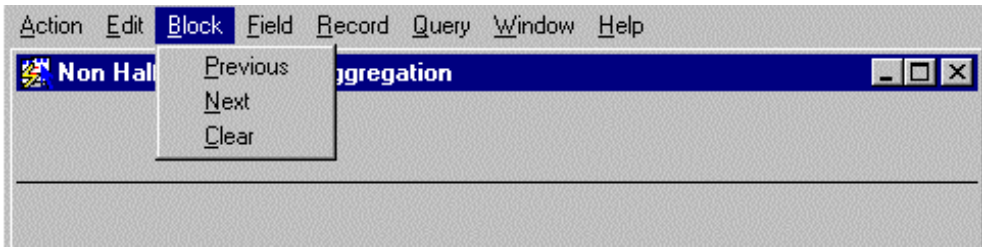
9.2.2.2 Edit Menu

This provides the standard cut, copy, paste functionality and an option to open up the default Forms Editor on a field.



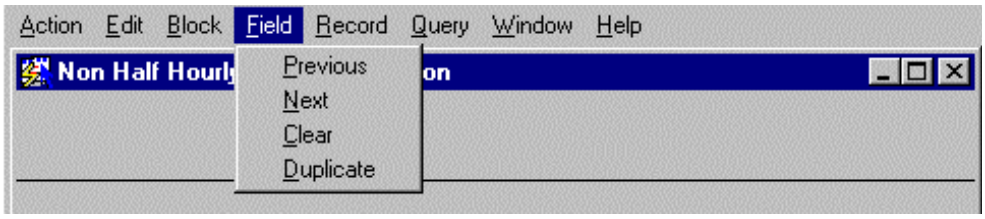
9.2.2.3 Block Menu

This allows navigation between blocks within the form and allows the User to Clear the current block.



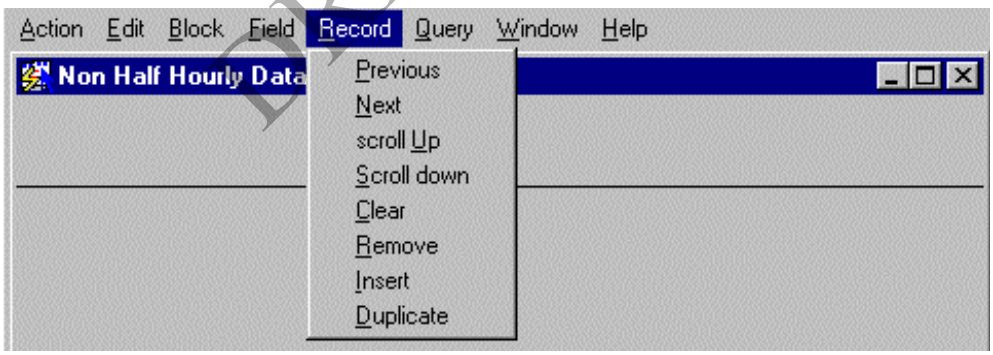
9.2.2.4 Field Menu

This provides field navigation (Previous, Next), duplication of a field value from a previous record and clearing of the current field.



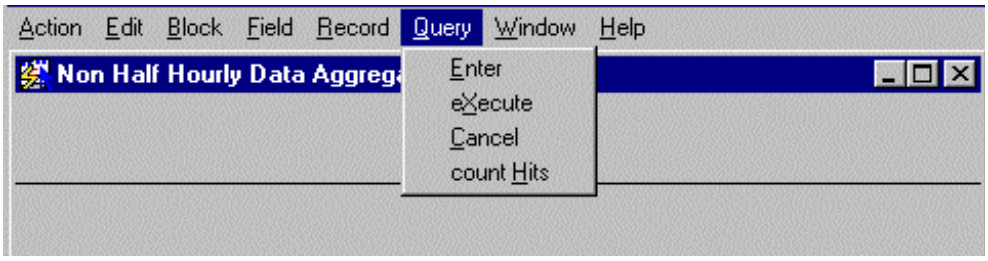
9.2.2.5 Record Menu

This allows record navigation and manipulation. Navigation to the previous and next record is carried out by selecting the Previous or Next menu option. Scroll Up and Scroll Down allows scrolling of records that have been retrieved from the database. Clear will clear the current record from the screen, it does not delete it from the database. Remove removes the record from the screen and deletes the record from the database. Insert creates an empty record ready for user input. Duplicate, copies record details from the previous record to the current one.



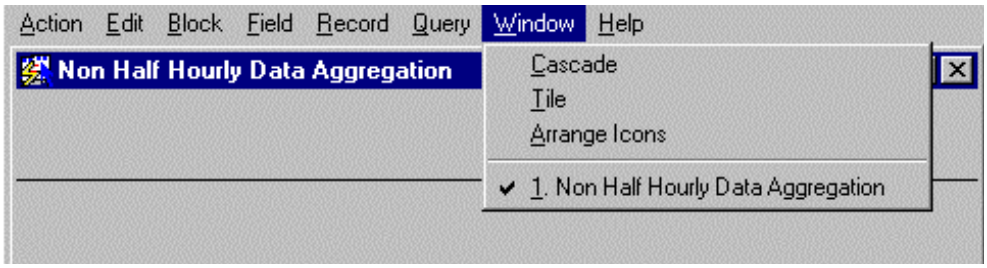
9.2.2.6 Query Menu

This provides the Querying facility for the form. Enter places the form into enter query mode. This mode passes control over to the user so that they can enter query criteria with which to perform a query. The Cancel option takes the user out of enter query mode, clearing any query criteria from the screen. Count Hits displays the expected number of records that will be returned if the query is executed. The Execute option actually carries out the query.



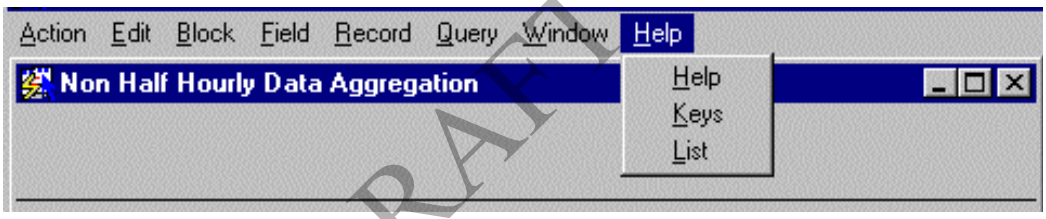
9.2.2.7 Window Menu

This provides standard Microsoft™ functionality to manipulate windows.



9.2.2.8 Help Menu

This provides a list of available keys (Keys), help text (Help), and the facility to popup a list of values where applicable (List).



9.2.3 NHHDA Application Menu Structure

The following application menu will provide access to the NHHDA subsystems.

Top Level Menu Option	Second Level Menu Option	Third Level Menu Option	Form/Report/Function Invoked
File	Exit		
Edit Standing Data	Average Fraction of Yearly Consumption		Define/Browse Average Fraction of Yearly Consumption
	GSP Groups		Define/Browse GSP Groups
	Line Loss Factor Classes		Define/Browse Line Loss Factor Classes
	Market Participant		Define/Browse Market Participant
	Profile Classes		Define/Browse Profile Class
	Standard Settlement Configuration		Define/Browse Standard Settlement Configuration
	System Parameters		[CTSPEC] Maintain System Parameters
	Threshold Parameter		Define/Browse Threshold Parameters
View Standing Data	Average Fraction of Yearly Consumption		Define/Browse Average Fraction of Yearly Consumption (read only)
	GSP Groups		Define/Browse GSP Groups (read only)
	Line Loss Factor Classes		Define/Browse Line Loss Factor Classes (read only)
	Market Participant		Define/Browse Market Participant (read only)
	Profile Classes		Define/Browse Profile Class (read only)
	Standard Settlement Configuration		Define/Browse Standard Settlement Configuration (read only)
	System Parameters		[CTSPEC] Maintain System Parameters (read only)
	Threshold Parameter		Define/Browse Threshold Parameters (read only)
Reports	Request Standing Data	Average Fraction of Yearly Consumption	Report Average Fraction of Yearly Consumption
		Distributors and Associated Items	Report Distributors

		GSP Groups Profile Class and Associated Items Standard Settlement Configuration and Associated Items	Report GSP Groups Report Profile Class and Associated Items Report SSC and Associated Items
	Request Metering System Select Reports Request Monthly D0095 Report	MS and Associated Items MS History, EACs and AAs	Report Metering System and Associated Items Report Metering System History, EACs and AAs [CTSPEC] CRP Report Formatter Report monthly D0095 exceptions summary
Aggregation	Schedule Aggregation Run Check Data Collector Data Browse Aggregation Run Schedule Report Aggregation Run Schedule Generate Supplier Purchase Matrix Data		Schedule Aggregation Run Check Data Collector Data Schedule Aggregation Run (read only) Report Data Aggregation Run Schedule Generate Supplier Purchase Matrix

Top Level Menu Option	Second Level Menu Option	Third Level Menu Option	Form/Report/Function Invoked
External Files	Browse File Extraction and Transmission Status Browse Aggregation Files Browse File Loading Status Manage Failed Instructions Manage Refresh Instructions Manage Failed Refresh Instructions Manage Instruction Files Report Instructions Report Refresh Instruction Failures		Browse File Extraction and Transmission Statuses Browse Aggregation Files Browse File Loading Status Manage Failed Instruction Manage Refresh Instructions Manage Failed Refresh Instructions Manage Instruction Files Report Instruction Report Refresh Instruction Failures
Activities	Browse Activity Queue Statuses		Browse Activity Queue Statuses

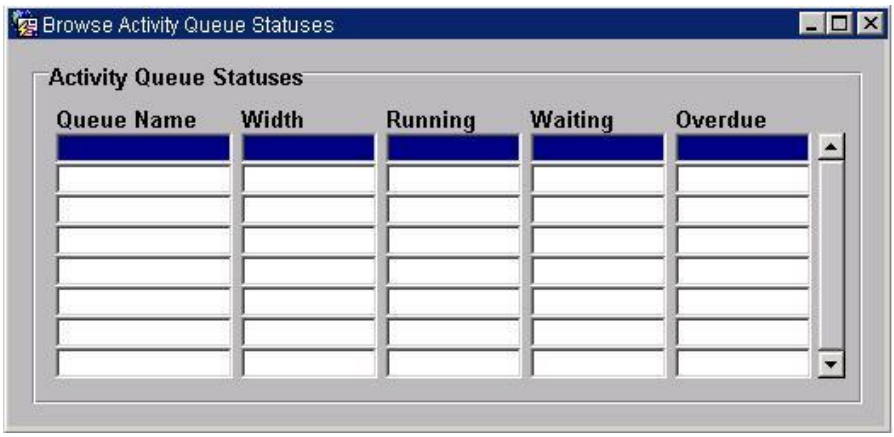
	Browse Activity Statuses		Browse Activity Statuses
Account Management	User Management Change Password		User Management Change Password
Help	Contents About		

9.2.3.1 Menu Security

Access to the interface modules will be handled via database roles. These roles will be assigned to the relevant menu options. If the user does not have access to a particular option, then it will be greyed out. The roles are defined in chapter four of this document.

9.3 Browse Activity Queue Statuses

9.3.1 Screen layout



9.3.2 Screen behaviour

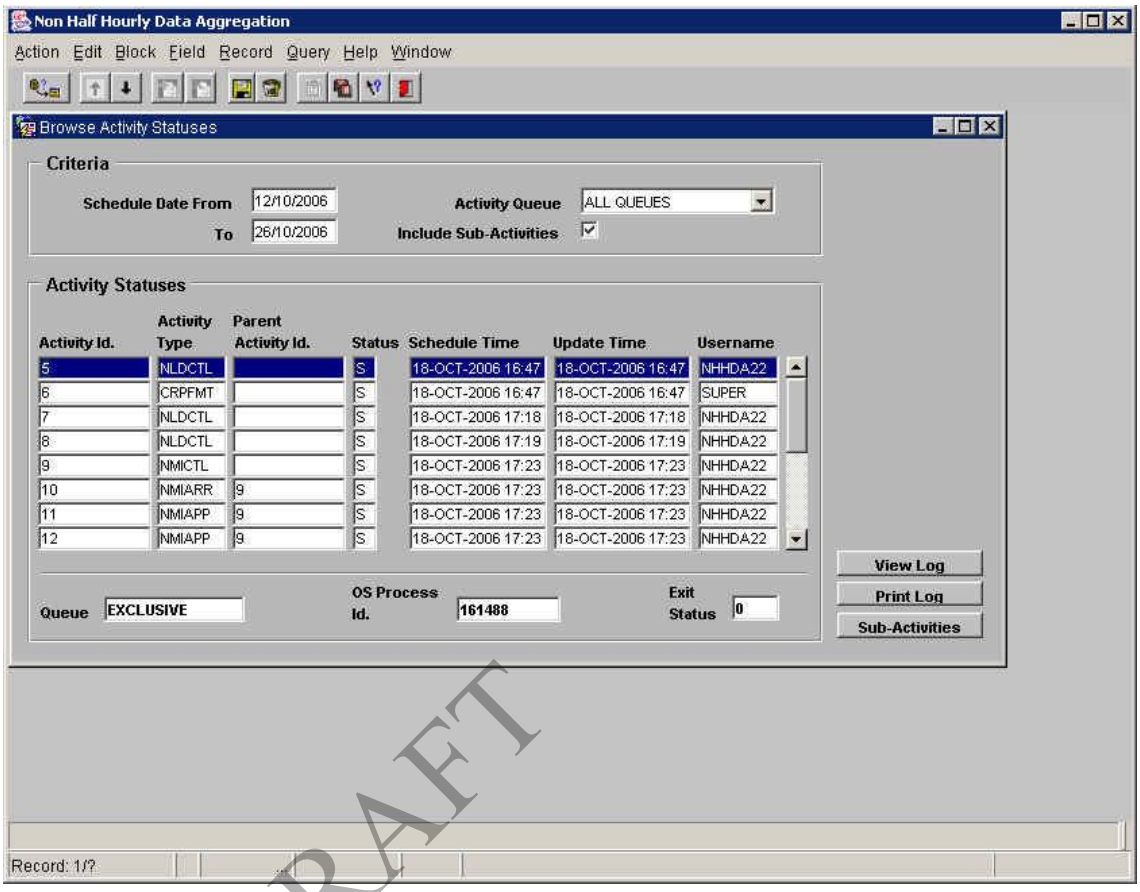
This form provides facilities to allow users to browse the NHHDA activity queue statuses.

The form displays a list showing each queue's identifier, width (the maximum number of activities which may run concurrently on the queue), the number of running activities, the number of activities waiting to run with a start date-time that has passed and the number of activities waiting to run with a start date-time which has not yet passed.

The user may update the list by re-running the query.

9.4 Browse Activity Statuses

9.4.1 Screen layout



9.4.2 Screen behaviour

This form provides facilities to allow users to browse the NHHDA activities schedule.

On entry to the form, the user must specify a date range (default: ± 7 days from date) and whether or not sub-activities (activities scheduled by parent activities) are to be included in the list (default: include sub-activities).

The user may optionally restrict the list to a single queue, otherwise activities scheduled on all queues will be displayed.

Once the user has provided the selection criteria, a list is displayed, ordered by scheduled run date-time and then activity identifier, showing the following for each activity satisfying the criteria.

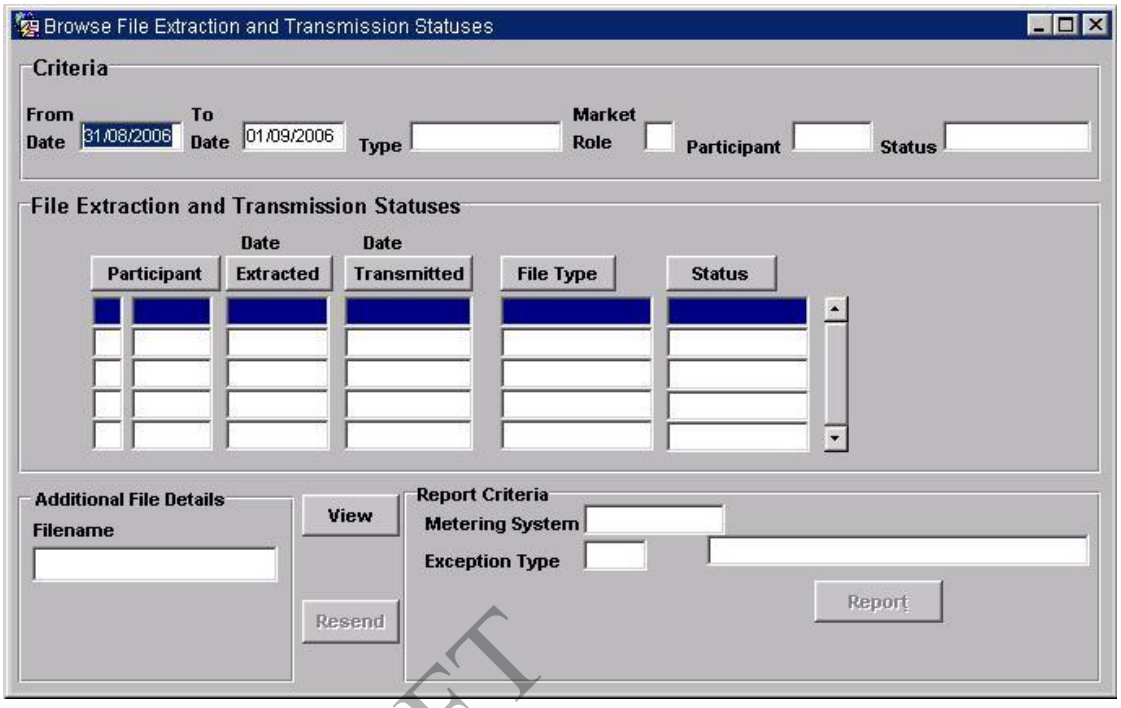
- scheduled run date-time
- activity identifier
- type
- host operating system process id.
- parent activity identifier
- update time
- username

- status
- exit code

The user may select a row from the list and view the associated activity's log file by pressing the 'View Log' button or print the log by pressing the 'Print Log' button. A snapshot of the activity log is transferred from the server to the client using CRP.FETCH_ACTIVITY_LOG (as specified in [CTSPEC]) and viewed or printed using the client's configured viewing and printing utilities.

9.5 Browse File Extraction and Transmission Statuses

9.5.1 Screen layout



9.5.2 Screen behaviour

This function is invoked by the NHHDA user to allow reporting of the status of all non aggregation files generated by the system.

On entry, a user will select a file type and/or destination. The destination being the Market Role and Participant. A user can also select the date or a range of dates on which the files were extracted and / or transmitted, or select all files which have a specified status.

The file type, market role code, participant id and file status will be selected via a list of values. Dates will be entered manually and will have default values set to yesterday's date for the From date and the current date for the To date.

The second section (file extraction and transmission statuses block) will display all records corresponding to the selected criteria. The file type, date extracted, date transmitted, market role and participant and status are multi row items. The Additional Data block displays the filename. This is a single row item. The single row value changes as the user scrolls between the multi row records.

Once the records corresponding to the selected criteria information have been displayed the user will have the options to request a report to be generated (which can then be printed via the Reports for Viewing screen) or to view more specific information relating to the currently displayed

records, or to Resend a file The buttons displayed on the form will allow the user to carry out these operations, dependant on the conditions below :

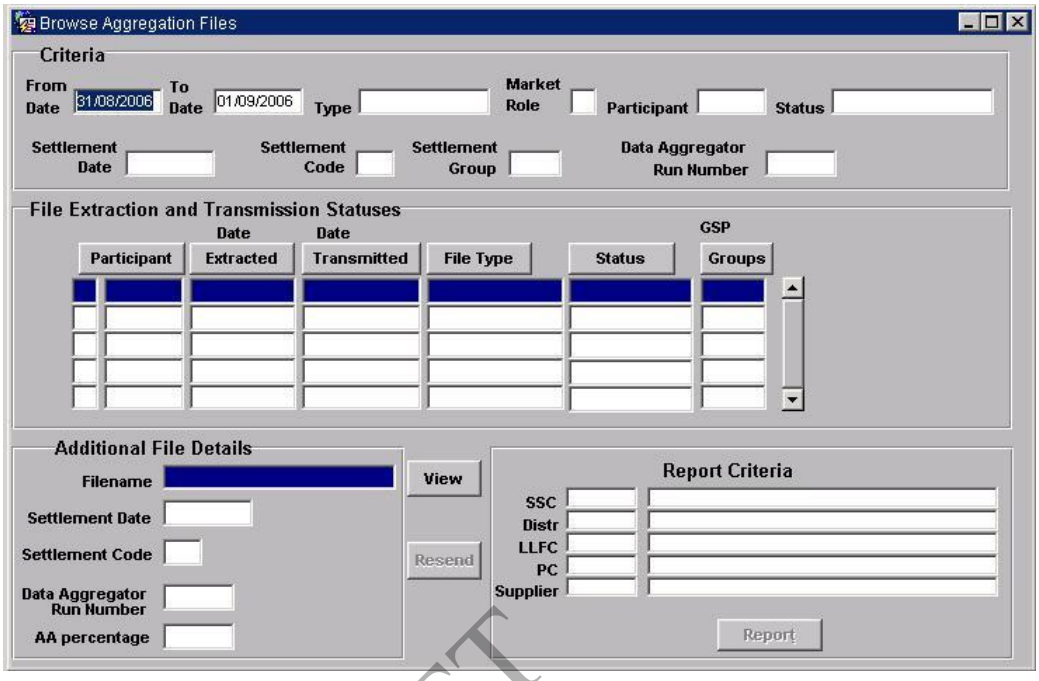
The View button will be enabled for all file types.

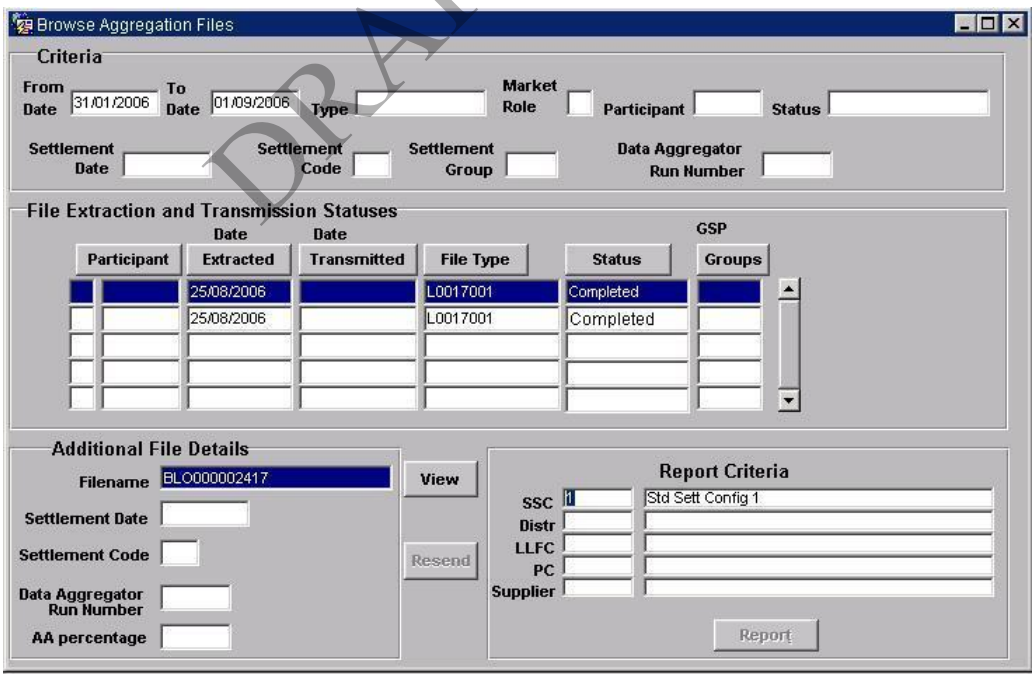
The Report button will be greyed out, and the Report bevel disabled until a file type of D0095 (Data Collector Exceptions) is chosen, whereupon they and will be enabled.

The Resend button will be greyed out unless the file type selected and user role combination (applicable to the user logged into the application) exists in the cdb_resend_access table, whereupon it will be enabled. If the Resend button is pressed, a warning that the file is about to be resent will be displayed. The file will be queued for resending.

9.6 Browse Aggregation Files

9.6.1 Screen layout





9.6.2 Screen behaviour

This function is invoked by the NHHDA user to allow reporting of the status of all aggregation files generated by the system.

On entry, a user will select a file type and/or destination. The destination being the Market Role and Participant. A user can also select the date or a

range of dates on which the files were extracted and / or transmitted, or select all files which have a specified status.

The file type, market role code, participant id and file status will be selected via a list of values. Dates will be entered manually and will have default values set to yesterday's date for the From Date value and the current date for the To date value.

For supplier purchase matrix data files only the user can select the settlement date and / or settlement code to which the file(s) refer, or the data aggregation run number of the run which produced the data in the file, and the GSP Group. The settlement code and the Data Aggregator Run Number and GSP Group will be populated by using a list of values.

The second section (file extraction and transmission statuses block) will display all records corresponding to the selected criteria. The file type, date extracted, date transmitted, market role , gsp group and participant are multi row items. The Filename Data Aggregator Run Number, Settlement Date Settlement Run Type and AA percentage(calculated by the aggregation run subsystem) are displayed in the Additional Items block and are single row items. The single row value changes as the user scrolls between the multi row records.

Once the records corresponding to the selected criteria information have been displayed the user will have the option of printing a report, resending a file or viewing more specific information relating to the currently displayed records. The buttons displayed on the form will allow the user to carry out this operation when suitable file types are chosen, until then, the buttons will be greyed out.

If a file of type D0041 'supplier purchase matrix data' is currently selected the the 'Report' button and the report bevel will be enabled. In this instance this will allow the user to specify Supplier Purchase Matrix Data details (namely the Supplier id and description, the distributor id for line loss factor class and description, the line loss factor class id and description, the profile class id and description and the standard settlement configuration id and description). A list of values will be available for these fields to enable the user to select a specific supplier, distributor, LLFC, profile class or SSC to report on. The Report is invoked by pressing the Report button, this report only contains SPM data which matches the specified criteria.

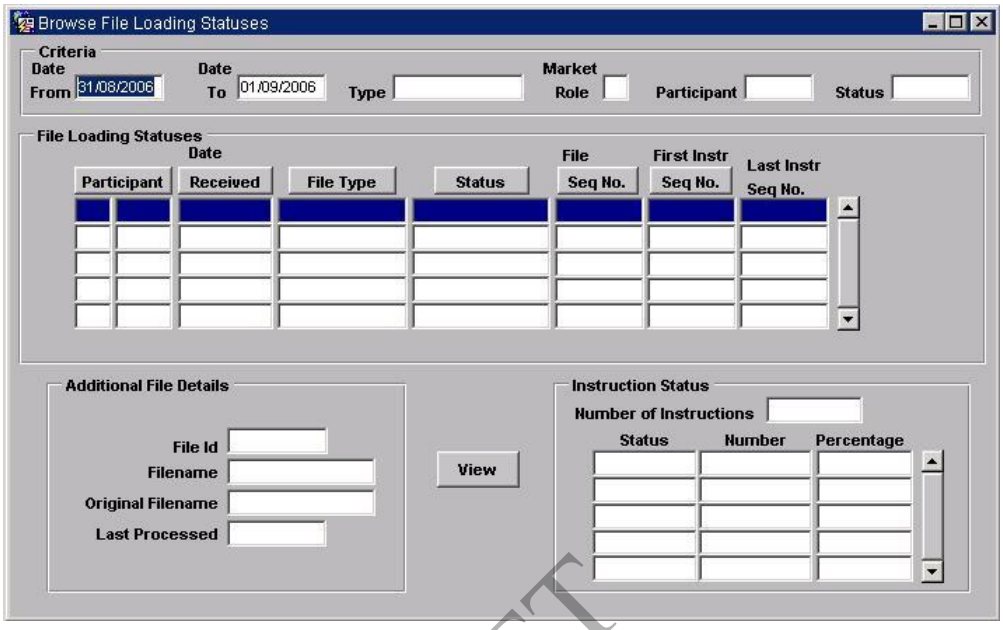
If a file of L0037 'aggregation exception log' is selected in the initial window the 'Report' button and Report bevel will be enabled, allowing the user to enter a Metering System Id and exception types. A list of values will be available for exception type. They will then be able to report on the selected records by pressing the Report button.

The Resend button will be greyed out unless the file type selected and user role combination (applicable to the user logged into the application) exists in the cdb_resend_access table , whereupon it will be enabled. If the Resend button is pressed, a warning that the file is about to be resent will be displayed. The file will be queued for resending.

Note : If a report is requested, the report will be generated, but it can only be printed via the Reports for Viewing screen.

9.7 Browse File Loading Statuses

9.7.1 Screen layout



9.7.2 Screen behaviour

This function is invoked by the NHHDA user to allow browsing of the loading status of the files received by the system.

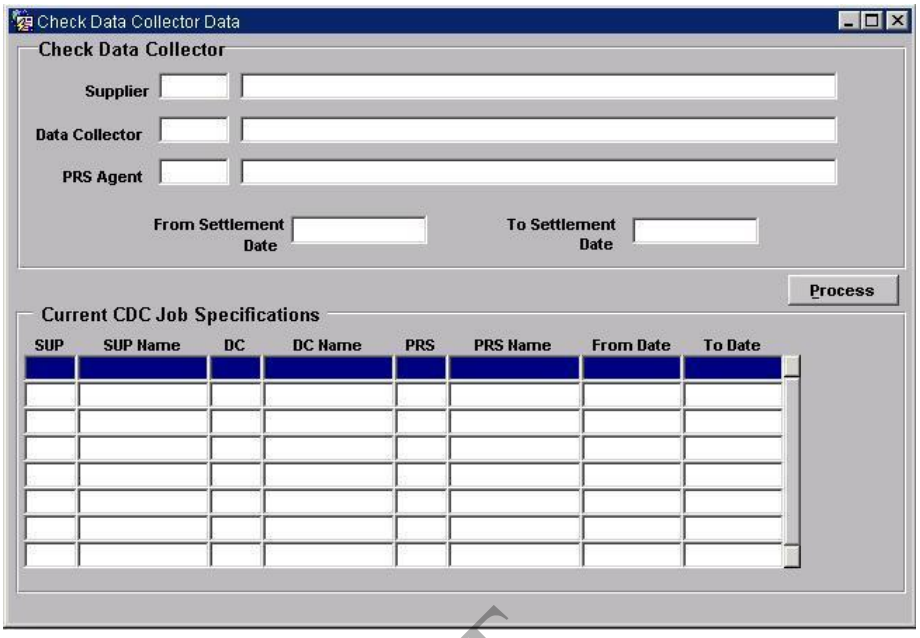
On entry, a user may select a file type, a market role, a participant and a range of dates. They will also be able to specify whether they wish to view only files which have a specified status. The market role and participant information make up the file source.

The user will select the type, market role and participant using the Forms 'enter query' mode or via a list of values. Dates will be entered manually and will default to the current date for 'Date To and yesterday for 'Date From.

For each qualifying file, the type, date received, source, loading status, file sequence number, first and last instruction sequence numbers are displayed. As each file is selected additional information about the file is displayed, these are the file id, file name, original file name, last processed date. The selected file can also be viewed by selecting the 'View' button. For successfully loaded instruction files, the total number of instructions in the file, and the number and percentage of instructions of each possible instruction status (unprocessed, failed, validation errors, discarded, superseded or applied) are displayed. Note that the status "Validation Errors" is shown as "Invalid".

9.8 Check Data Collector Data

9.8.1 Screen layout



9.8.2 Screen behaviour

This function is invoked by the exception administrator to request a report identifying any inconsistencies between data received from a data collector and metering system data received from a PRS, or to amend or delete previously submitted report requests.

A list of supplier Ids and their corresponding names is displayed via a list of values. The user may select one of them. This field is not mandatory.

Next a list of data collector Ids and their corresponding names is displayed via a list of values. The user may select one of them. This field is not mandatory.

A list of PRS Agent Ids and their corresponding names is displayed via a list of values. The user selects one of them. These fields are not mandatory.

The user selects a range of dates. These dates default to the current date. These fields are mandatory.

The user may then press the Process button to request the generation of the report meeting the specified criteria.

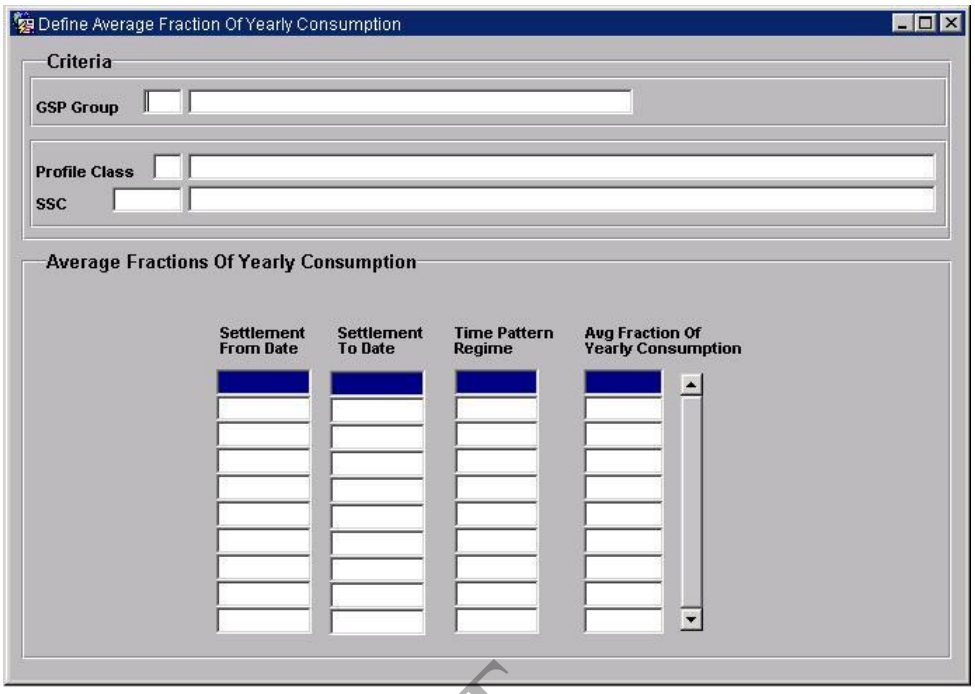
Alternatively, the user may use Execute Query to display a list of the report requests currently awaiting processing that match the specified criteria. The user may then modify details of these requests and press the Process button. If the NCD Check DC data process is not running, the changes are committed. Otherwise, an error message is displayed and the changes are not committed.

Processing is carried out in batch mode; the output of this process is an exception log. This log is automatically sent to the supplier when the process completes.

Note that this form adds a report request to the database, or modifies or deletes report requests already in the database. Processing of these requests is only carried out when the system manager invokes the NCD batch process.

9.9 Define/Browse Average Fraction of Yearly Consumption

9.9.1 Screen layout



9.9.2 Screen behaviour

This function is invoked by a suitably authorised NHHDA user to allow browsing and maintenance of the Average Fractions of Yearly Consumption assigned to each Measurement Requirement for a particular Standard Settlement Configuration, Profile Class and GSP Group combination.

On entry, the user must enter a GSP Group. A list of valid values is available to assist the user whilst in query mode. The user may not create, modify or delete GSP Groups using this form.

Next, the user has to enter a valid Profile Class and SSC combination (once again, a list of valid values is available to help the user choose valid Profile Classes and SSCs). The user may not create, modify or delete Profile Class/SSC combinations using this form.

Once both a GSP Group and Profile Class/SSC combination have been entered by the user, the form displays the Average Fractions of Yearly Consumption (if any) associated with the combination. The user may now create, modify or delete Average Fraction of Yearly Consumption rows.

The following validation is applied to any changes that the user makes to Average Fractions of Yearly Consumption for the current GSP Group/SSC/Profile Class combination.

- For each Effective From Settlement Date, there must be an entry for every Time Pattern Regime of the Standard Settlement Configuration.
- The effective periods of each Time Pattern Regime's Average Fractions of Yearly Consumption must not overlap.

- For all Settlement Dates within any Data Aggregator Appointment, no Metering System may be without an effective AFYC.
- For each Effective From Settlement Date, the Time Pattern Regime rows must be unique.
- The Effective To Settlement Date must be on or after the Effective From Settlement Date.
- The Effective To Settlement Date must be the same for all TPRs with the same Effective From Settlement Date.
- The sum of the Average Fractions of Yearly Consumption must equal one for each Effective From Settlement Date.

The user will not be allowed to save their changes to the database until their changes have passed the above validation. This effectively means the user must enter all changes to Average Fraction of Yearly Consumption data for a GSP Group, Profile Class, SSC and Effective From Settlement Date combination before saving any of their changes to the database.

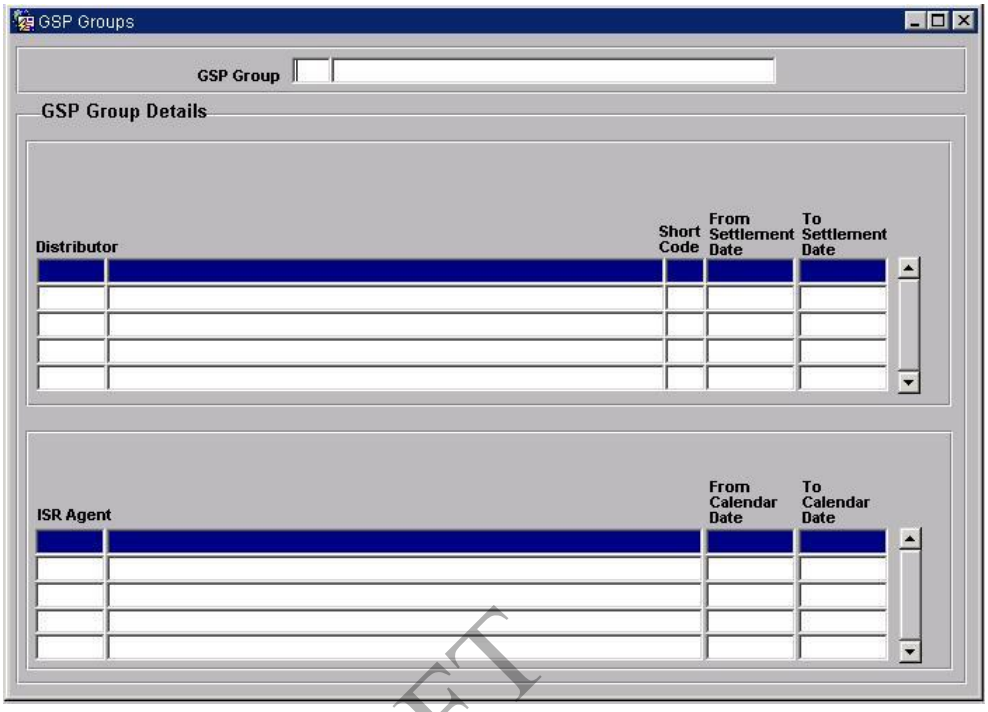
The user may select a new GSP Group without having to repeat all the other selections.

Time Pattern Regime will have a list of valid values which prompts the user with the Time Pattern Regimes that must be entered for any given GSP Group, Profile Class and SSC combination.

Average Fractions of Yearly Consumption data may not be updated if it has been used in a 'Final Initial Settlement' except by the Superior Market Domain Data Administrator. Any such change is reported to the operator log.

9.10 Define/Browse GSP Groups

9.10.1 Screen layout



9.10.2 Screen behaviour

This function is invoked by a suitably authorised NHHDA user, and allows details of GSP Groups and their associated distributor/PRS agent and ISR Agent appointments to be browsed and maintained.

A user will select a GSP Group Id and its corresponding name by using the Forms 'enter query' mode option or via a list of values. The user then selects one of them to amend, delete, or creates a new one.

This form has a master/detail relationship. The top GSP Groups section being the master block and the lower distributor/PRS agent and ISR Agent sections being the detail blocks. Details are only displayed for the corresponding master.

For creation the user enters the GSP Group Id and GSP Group name. This is for the master. The user may also enter the GSP Groups detail records information if required. This being the distributor details and the ISR Agent details.

If the detail records information is not known at the time this can be entered later using the amendment facility.

For amendment, deletion and browsing, the GSP Group Id and name are displayed together with the corresponding detail records. The detail records will have a list of values available for the distributor Id/PRS Agent Id and ISR Agent Id fields.

If a GSP Group is deleted and there are any associated ISR Agent appointment, GSP Group distributors, GSP Group profile class Researched

Default EACs or average fraction of yearly consumption then these are also deleted. The user will be able to confirm this action.

An error message is displayed to the user if a new or changed distributor Id is not already defined on the system.

When amending distributor assignments, a message is displayed to the user if any of the metering systems in the GSP Group have an open data aggregator appointment. A distributor appointment will not be allowed to be deleted or terminated if it previously covered a period of a DAA appointment.

An error message is displayed to the user if a new or changed ISR agent Id is not displayed on the system.

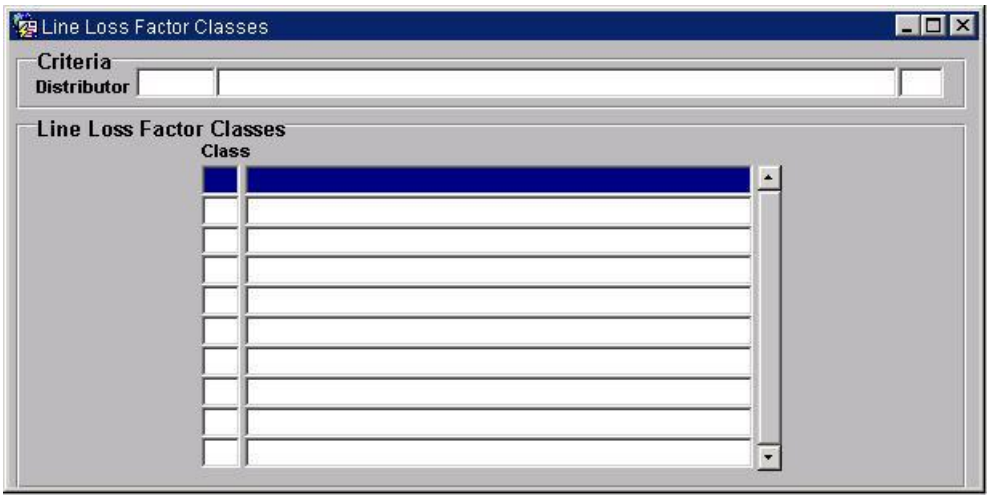
The appointment of a new distributor with a GSP group will not automatically terminate a previous appointment.

Users may delete a GSP Group if it has no associated occurrences of Metering System GSP Group, Metering System GSP Group (DC), or GSP Group in Aggregation runs.

Insertion, modification or deletion of a distributor relationship to a GSP group will automatically insert, modify or delete a PRS agent appointment to the distributor for the same settlement period.

9.11 Define/Browse Line Loss Factor Classes

9.11.1 Screen layout



9.11.2 Screen behaviour

This function is invoked by the NHHDA user to allow browsing and maintenance of the set of valid line loss factor classes for each distributor. A list of existing line loss factor classes for the distributor is displayed.

A user will select a distributor and its corresponding name and short code by using the Forms 'enter query' mode option or via a list of values.

This form has a master/detail relationship. The top criteria section being the master block and the lower line loss factor class section being the detail block. Details are only displayed for the corresponding master.

The user selects a line loss factor class to amend, delete, browse or creates a new one.

For creation a user enters a new line loss factor class Id and line loss factor class name.

For amendment, deletion and browsing, the distributor Id, distributor name, short code, line loss factor class Id and line loss factor class description are displayed. The user may either amend the line loss factor class description or delete the line loss factor classes.

The detail line loss factor class block will have a list of values associated with the line loss factor class id field.

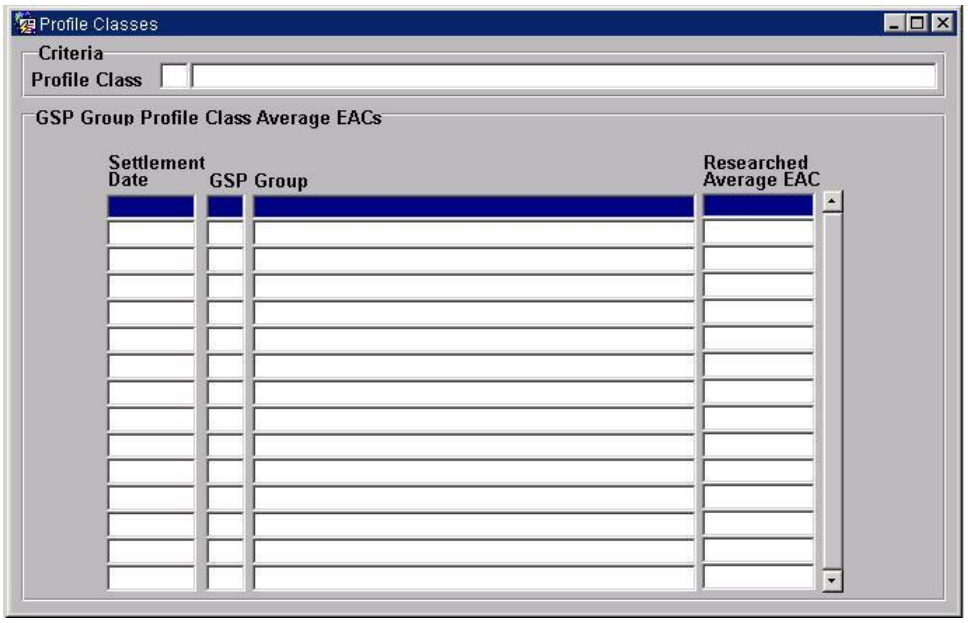
Users may only delete a line loss factor class if it has no associated metering system line loss factor classes or supplier purchase matrix data. If a deletion cannot occur an error message will inform the user.

New line loss factor classes can only occur for existing distributors. New line loss factor classes must also be unique for the same distributor.

An error message will be displayed to the user if a new line loss factor class is not unique for the same distributor.

9.12 Define/Browse Profile Class

9.12.1 Screen layout



9.12.2 Screen behaviour

This function is invoked by a suitably authorised NHHDA user to allow browsing and maintenance of the set of valid profile classes and their associated GSP Group profile class Researched Default EACs (Note that for historical reasons, the form uses the title 'Average EAC' - CR487).

A user will select a profile class Id and its corresponding description by using the Forms 'enter query' mode option or via a list of values. The user then selects one of them to amend, delete, or creates a new one.

This form has a master/detail relationship. The top criteria section being the master block and the lower GSP Group section being the detail block. Details are only displayed for the corresponding master.

For creation the user must enter the profile class Id and profile class description, for the master records. The user may also enter the profile classes detail record's information if required: This being the GSP Group profile class Researched Default EAC information and consists of Effective from Settlement Date, GSP group Id, and the Researched Default EAC.

The Effective from Settlement Date has the current date as the default date as an aid to the user.

If the detail records information is not known at the time this can be entered later using the amendment facility.

For amendment, deletion and browsing, the profile class Id and description are displayed together with the Effective from Settlement Date, GSP group name, GSP group Id and the Researched Default EAC. This allows both master and detail records to be manipulated.

For amendment, the user is able to change the profile class description and add or delete existing GSP group profile class Researched Default EACs. When existing GSP group profile class Researched Default EACs are edited

the user can change either or both the Effective from Settlement Date and the Researched Default EAC. Both of these values must be entered when creating a new record.

For deletion, the user deletes the Profile class and all of its associated GSP group profile class Researched Default EACs are deleted automatically.

An error message will be reported to the user if a new profile class entered is not unique.

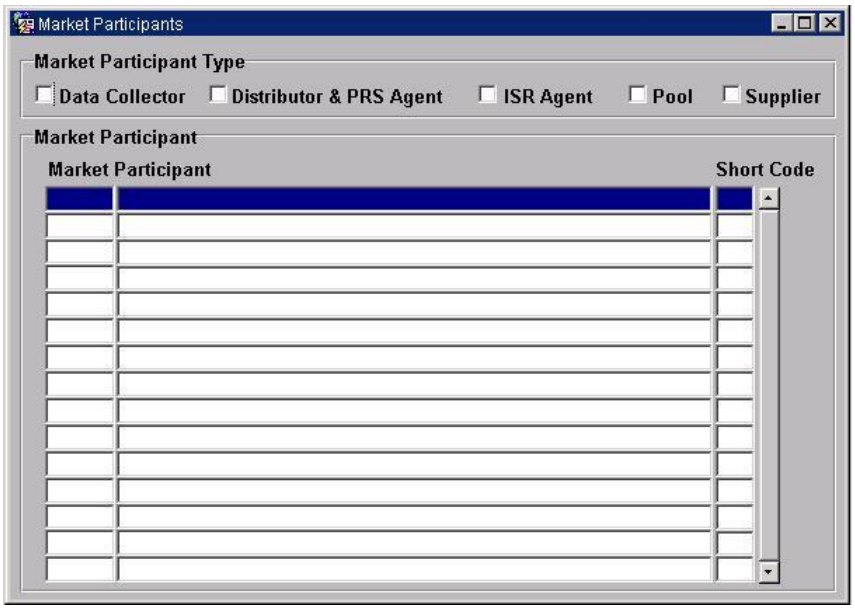
An error message will also be reported to the user if a new GSP Group Id does not exist already on the system.

A check will also be made to ensure that data has not been updated if it has been used in a 'final initial settlement', unless the user has sufficient authority. Any such change is reported to the operator log.An error message will be displayed if there are any associated valid settlement configuration profile classes, or occurrences of metering system profile class (DC)s or metering system profile classes with a profile class before it is deleted.

A warning will also be issued if an attempt is made to delete a profile class which has GSP Group Researched Default EACs defined.

9.13 Define/Browse Market Participant

9.13.1 Screen layout



9.13.2 Screen behaviour

On entry, the user may enter the Id and Name of a new Market Participant. The user will then check the Market Participant Types which apply to the new Market Participant. Alternatively, the user may enter query mode and specify a Market Participant Id and/or Market Participant Name (or wild card) and/or one or more Market Participant Types. All Market Participants matching the specified Id and Name (if any) and any of the specified Market Participant Types will be displayed.

When a Market Participant is selected, the appropriate Market Participant Types will be checked and, if the Market Participant is a Distributor, the Short Code is displayed.

A Market Participant's roles may be changed by checking or unchecking the appropriate Market Participant Type boxes. Note that unchecking a Type performs a logical delete and so invoked the validation listed for deletion of that type of Market Participant in the same way as deletion of a Market Participant which has that Market Participant Type checked.

The user may create, amend or delete Market Participants, restrictions on these actions are as follows:

Users may only amend Market Participant Names and Short Codes.

All Market Participants Ids must be unique.

Market Participants must have an Id and name specified.

For all Distributors that are inserted a Short Code is mandatory.

Distributor short codes must be unique.

The distributor short code may not be changed if there are any metering systems which are details of this distributor.

Market Participants of type Supplier cannot be deleted if it has any associated registrations, registration (DC)s or Supplier Purchase Matrix.

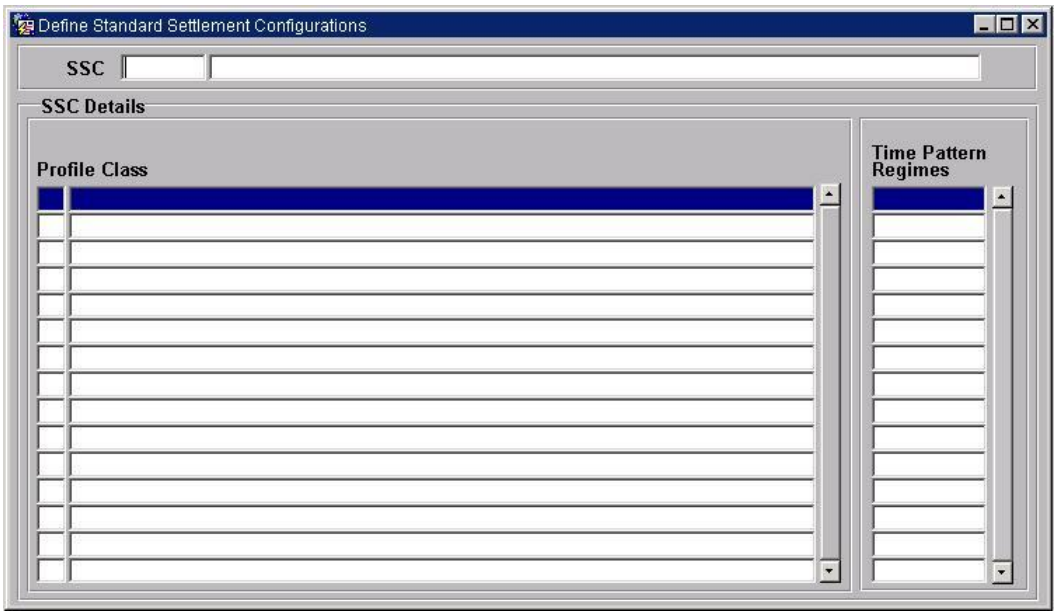
Market Participants of type Data Collector cannot be deleted if they have any associated Data Collector Appointments, Metering System Measurement Class (DC)s, Registration (DC)s, Metering System GSP group (DC)s, Metering System Energisation Status (DC)s, Metering System Profile Class (DC)s, Settlement Configuration (DC)s or Settlement Register (DC)s.

Market Participants of type Distributor cannot be deleted if it has any associated Line Loss Factor Classes, GSP Group Distributors or metering systems.

Market Participants of type ISR Agent cannot be deleted if it has any associated ISR Agent Appointments.

9.14 Define/Browse Standard Settlement Configuration

9.14.1 Screen layout



9.14.2 Screen behaviour

This function is invoked by the NHHDA user to allow browsing and maintenance of standard settlement configurations and their associated time pattern regimes and profile classes. Each associated time pattern regime is recorded by an occurrence of measurement requirement.

This is a master/detail form displaying Standard Settlement Configurations and its corresponding Profile Classes of all associated Valid Settlement Configuration Profile Classes and Time Pattern Regimes of all Measurement Requirements belonging to that Standard Settlement Configuration.

Standard Settlement Configurations will be displayed in a single row in the master block and Profile Classes and Time Pattern Regimes will be displayed in the detail blocks.

The user will select a Standard Settlement Configuration from a List Of Values or as query criteria in Enter Query mode and will then be allowed to insert, update or delete Standard Settlement Configurations, Profile Classes and Time Pattern Regimes.

On creating a new Standard Settlement Configuration the user enters a Standard Settlement Configuration Id and description. A Profile Class is entered by entering a Profile Class Id or using a List of Values. Time Pattern Regimes may also be entered and these will also have a List of Values associated with them or will be manually input.

For amendment, deletion and browsing, the standard settlement configuration Id and description are displayed, together with the time pattern regime Ids of all associated measurement requirements and the profile class Ids of all associated valid settlement configuration profile classes.

On amendment the user is able to query back a Standard Settlement Configuration and amend its description or assign/de-assign Profile Classes and Time Pattern Regimes.

A user can add to, or delete from the lists of time pattern regime Ids and profile class Ids assigned to that standard settlement configuration; or delete the standard settlement configuration and all of its associated measurement requirements and valid settlement configuration profile classes.

Standard Settlement Configurations may be deleted by the user and this will consequently delete all associated Profile Classes and Time Pattern Regimes. Deletion of Standard Settlement Configurations will not be allowed if there are associated Settlement Configurations or Settlement Configuration (DC)s. The user will be able to confirm this action.

It will only be possible to change (i.e. Add, Modify or Delete) a Measurement Requirement for a Standard Settlement Configuration if no Metering Systems or Supplier Purchase Matrix data are assigned to any Measurement Requirements for the Standard Settlement Configuration and if no Average Fraction of Yearly Consumption data exists for the Standard Settlement Configuration.

Valid Settlement Configuration Profile Class and Measurement Requirement need to be kept in step such that for each occurrence of Valid Settlement Configuration Profile Class there is an occurrence of Valid Measurement Requirement Profile Class corresponding to each occurrence of Measurement Requirement associated with a Standard Settlement Configuration.

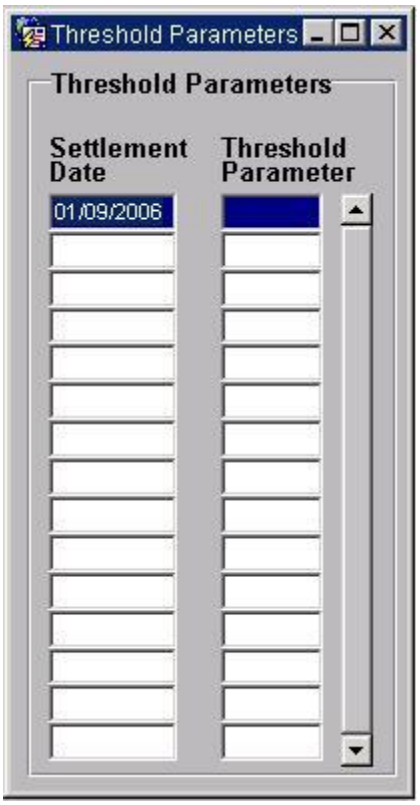
Standard Settlement Configurations can only be assigned to existing Profile Classes; a new Time Pattern Regime Id may be entered if the required Id does not already exist.

An error message will be displayed if an attempt is made to delete a Standard Settlement Configuration which has Settlement Configurations or Settlement Configuration (DC)s associated with it.

It will only be possible to allow a Standard Settlement Configuration to be unassigned from a Profile Class if Metering Systems or Supplier Purchase Matrix data are assigned to that combination of Standard Settlement Configuration and Profile Class.

9.15 Define/Browse Threshold Parameters

9.15.1 Screen layout



9.15.2 Screen behaviour

This function is invoked by a suitably authorised NHHDA user to allow browsing and maintenance of the threshold parameters.

A list of existing effective from settlement dates and threshold parameters is displayed. The user then selects one of them to amend, delete or creates a new one.

The user has the option of selecting a specific threshold parameter by using the Forms 'enter query' mode option or via a list of values.

For creation the user must enter the effective from settlement date and the threshold parameter. The settlement date will default to the current date.

For amendment, deletion and browsing, the effective from settlement date and threshold parameter are displayed. The user either amends the threshold parameter and effective from settlement date or deletes the record.

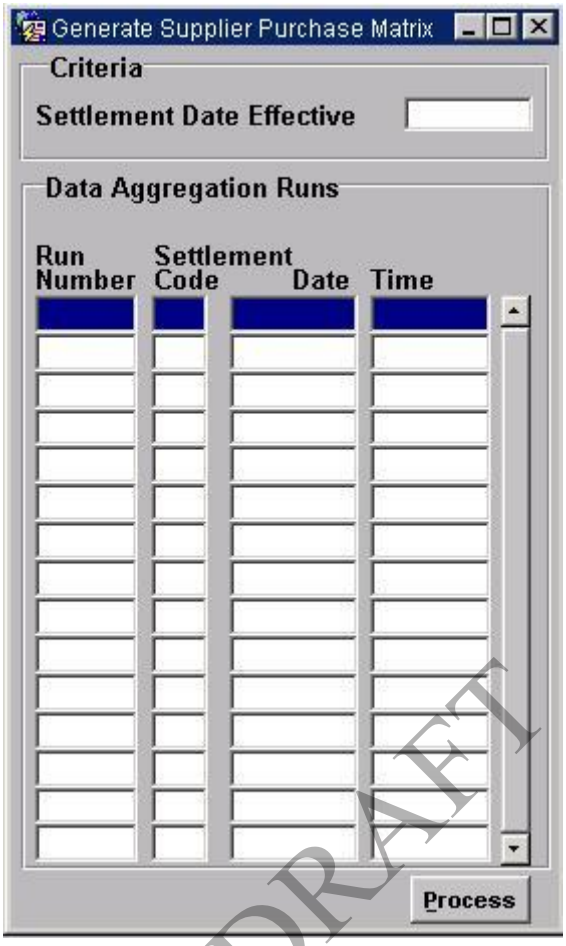
Threshold parameters cannot be negative. A message will be displayed to the user if a negative threshold parameter is displayed.

An error message will be displayed to the user if a new effective from settlement date entered is not unique.

An error message will be displayed if data which has been used in a 'final initial settlement' is attempted to be updated if the user does not have sufficient authority. Any such change is reported to the operator log.

9.16 Generate Supplier Purchase Matrix

9.16.1 Screen layout



9.16.2 Screen behaviour

This function allows the data aggregation administrator to trigger the extract of supplier purchase matrix data for a previously performed data aggregation run.

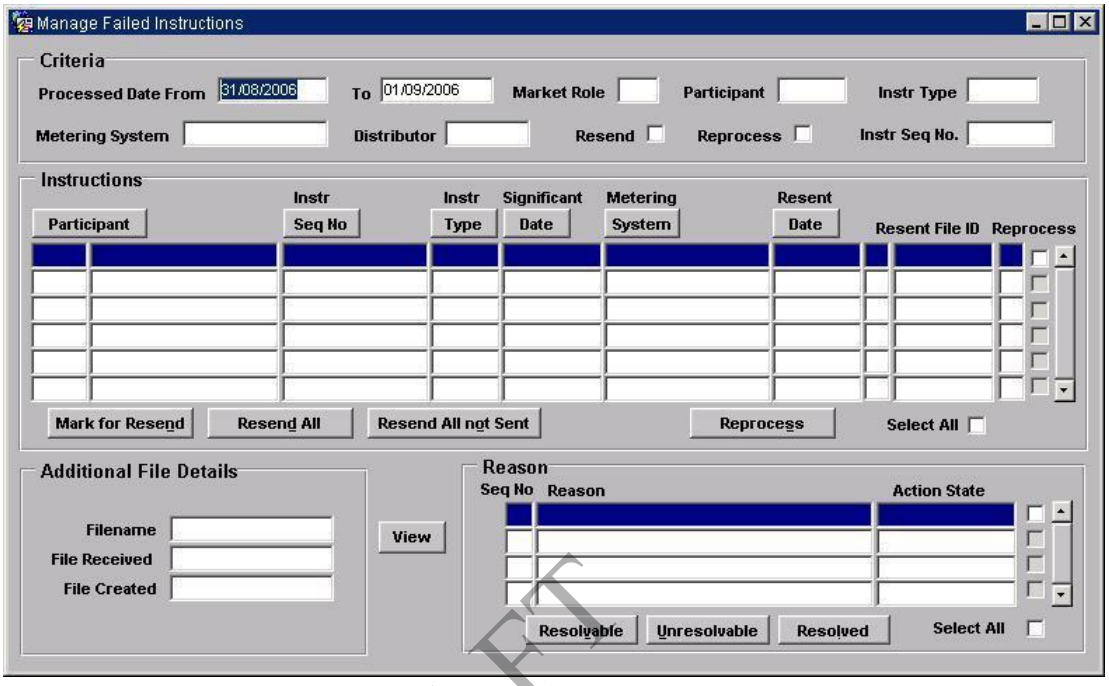
A user will enter a settlement date. For the selected settlement date a list of data aggregation runs is displayed. The user then selects a data aggregation run for which to produce a data file for each GSP Group included in that data aggregation run.

This form has a master/detail relationship. The top criteria section being the master block and the lower GSP Group section being the detail block. Details are only displayed for the corresponding master.

The system will contain controls to ensure that data cannot be sent for a data aggregation run which is not the latest for that settlement day, unless the user explicitly acknowledges and overrides a warning message.

9.17 Manage Failed Instruction

9.17.1 Screen layout



9.17.2 Screen behaviour

This function is invoked by the NHHDA user to allow reprocessing, or returning of failed instructions.

The user can restrict the number of instructions displayed by entering a market role and participant, instruction type, instruction sequence number, processed date from and to, metering system or distributor. Instructions displayed can also be restricted to those flaged for 'Resend' or 'Reprocess' by ticking the check box.

Once the selection criteria has been entered by the user a list of all instructions satisfying the criteria is displayed, sorted by Instruction Sequence number within subject (Metering System Id or PRS Agent). The user can change sort order by selecting the button above each column. This sorts the block in ascending order of the column selected. Selecting the same button again will resort the block in reverse sort order.

From this list the user may then either

- Select one or more of the Instructions for reprocessing (Reprocess All button)
- Mark one or more Instructions for resend (Mark for Resend button). Saving the changes will set the resend flag for all the instructions selected in the Instructions block .

- Select one or more Instructions for return to their source (Resend button). This option sends all instructions which are marked for resend (resend flag is 'Y') or currently selected (checkbox is 'Y') to their originator. The resent date is set to today, resent file id is populated with the file id of the resent file, resend flag is set to null. It also causes the Aggregator Action State to be set to "Unresolvable" for any Instruction Status Reasons whose Aggregator Action State is not set to any value. However, if the Aggregator Action State has been set before it remains its current value. It also causes a D0023 "Failed Instructions" report to be generated for each different PRS and DC listed. Upon pressing this button a warning message is displayed to inform that not only the records displayed on the screen will be resent. A final message is displayed once processing is complete, this displays a count of the number of non refresh records and refresh records resent.
- Resend one or more instructions to the originator (Resend All not Sent button). This option sends all instructions with a null file resent date (i.e has never been sent), those marked for resend (resend flag is 'Y') or currently selected (checkbox is 'Y'). The resent date is set to today, resent file id is populated with the file id of the resent file and the resend flag is set to null. It also causes the Aggregator Action State to be set to "Unresolvable" for any Instruction Status reason whose Aggregator Action State is blank. A D0023 "Failed Instructions" report is generated for each different PRS and DC listed. If there are no records displayed in the instruction section of the screen, all marked for resend PRS failed refresh instructions are resend to their originator. Upon pressing the 'Resent All not Sent button a warning message is displayed to inform that not only the records displayed on the screen will be resent. A final message is displayed once processing is complete, this displays a count of the number of non refresh records and refresh records resent.

Following a resend of instructions the Operator Log contains a count of Refresh and Non-refresh instructions resent.

Again when making these selections, the user has the fast path option of 'select all' and 'deselect all'.

The 'View' button allows the user to display the file containing the selected instruction

For each Instruction Status Reason, the user may change the Aggregator Action State by making use of the Resolvable, Unresolved or Resolved buttons.

Again when making these selections, the user has the fast path option of 'select all' and 'deselect all'.

The user may request that the enquiry be repeated (using the same selection criteria) and the display is refreshed.

This form has a master/detail relationship. The master block is the Instructions block with the detail records being the Reasons associated with the Master instruction.

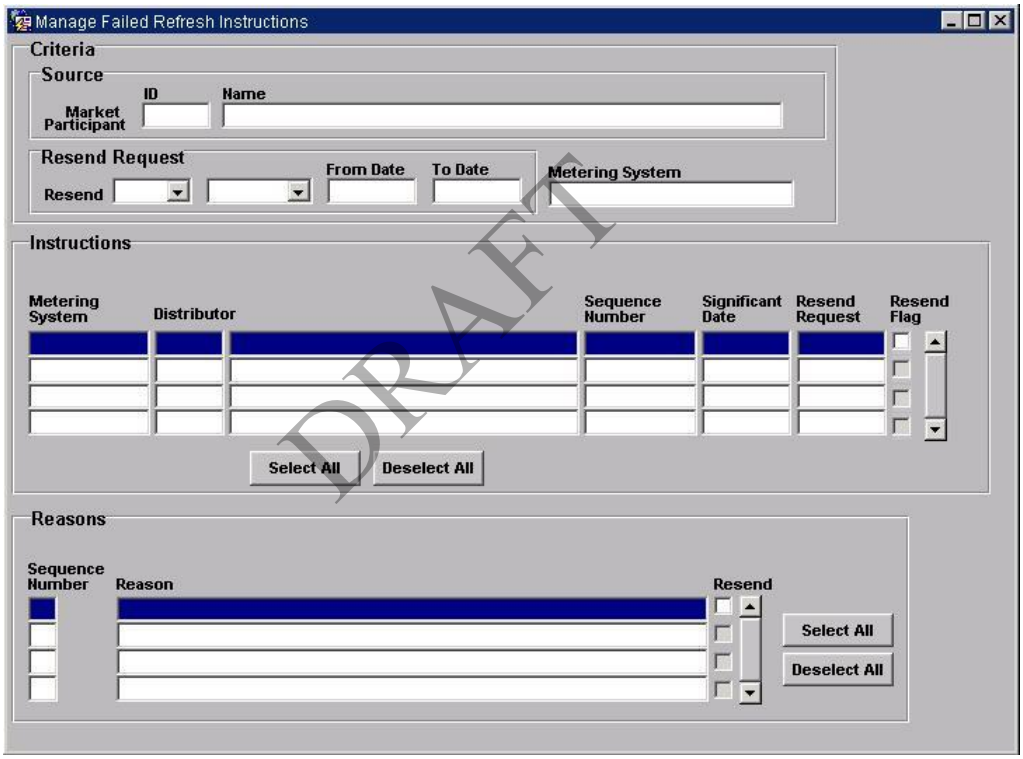
A master/detail relationship also exist between the Instructions block (the master block) and the file reference block which displays the additional file details which include the file name, received time and creation time.

As the user scrolls between master records, their corresponding detail records are displayed.

When instructions are marked for reprocessing a confirmation is issued indicating the number of instructions marked by the user (i.e. the count of checked records), how many of those were actually updated and how many could not be updated because they were marked as 'cannot reprocess'.

9.18 Manage Failed Refresh Instructions

9.18.1 Screen layout



9.18.2 Screen behaviour

This form provides facilities for users to select failed Refresh Instructions and then mark them and their associated reasons for failure for return to the Instruction's originator on a per Metering System basis.

On entry to the form, the user may select a Refresh Instruction source (a PRS Agent). A list of values will be used.

The user may also specify the subject Metering System Id., the status of the Resend Request Flag (selected via a drop-down menu) and whether to include or exclude Refresh Instruction Failures with a Resend Request Date between two dates.

Once the user has entered the selection criteria, a list of all Refresh Instruction Failures satisfying the criteria is displayed, sorted by Instruction Sequence Number and then subject Metering System Id.

The user may select Refresh Instruction Failures from this list for inclusion or exclusion when Instruction failures are reported to the originator.

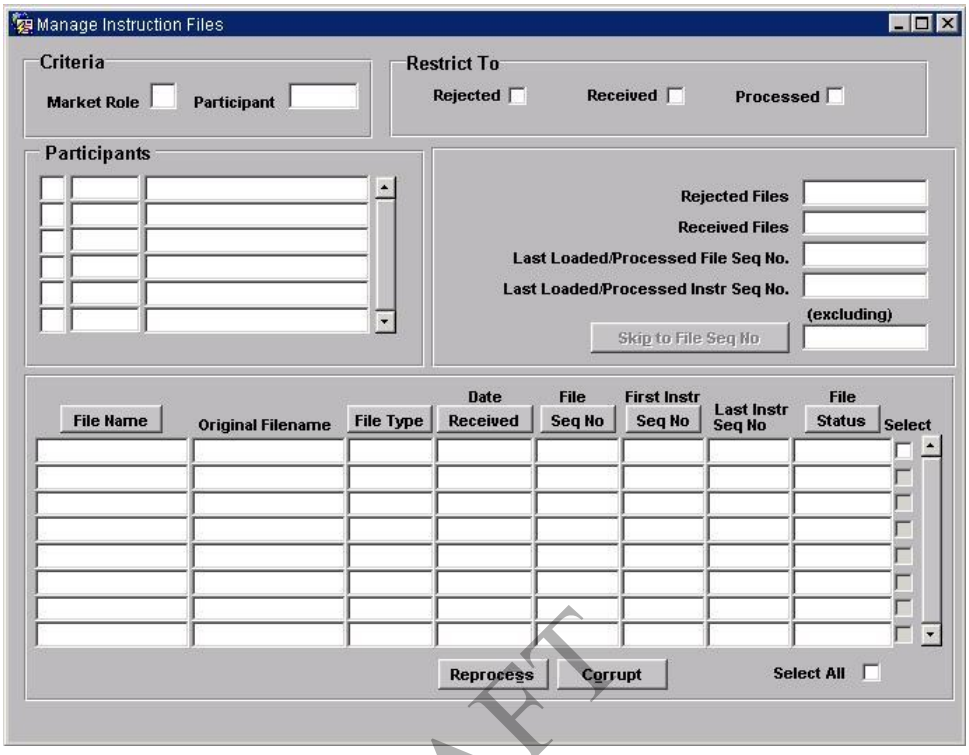
A list of Refresh Instruction Failure Reasons for the selected Refresh Instruction Failure is displayed below the Refresh Instruction Failure list. The user may select individual Refresh Instruction Failure Reasons for inclusion or exclusion when Instruction failures are reported to the originator.

The user may request that the enquiry be repeated (with the same selection criteria) and the display is refreshed.

This form has a master/detail relationship. The master block is the Refresh Instruction Failure block and the detail block is the Refresh Instruction Failure Reasons block showing the failure reason records associated with the master Refresh Instruction Failure record.

9.19 Manage Instruction Files

9.19.1 Screen layout



9.19.2 Screen behaviour

This function is invoked by an NHHDA user to resolve failures of Instruction files.

The user may enter a specific role (D or P) or a specific market participant id or a combination of both market role and participant id to restrict the displayed list of participants and their associated Instruction files

Instruction files can also be restricted to 'Rejected', 'Received' or 'Processed' by ticking the check box.The user invokes Execute Query.

A list of all participants (matching the criteria if entered) is displayed.

Selecting each participant displays instruction file details associated with that participant.

The user may choose how to resolve the error:

- attempt to reprocess the file as if it had arrived again - set the file status to Received so that instruction processing will regard the file as newly arrived and (re)apply validation checks
- mark the file as corrupt - set the file status to Corrupt so that instruction processing will ignore the file and therefore look for a replacement

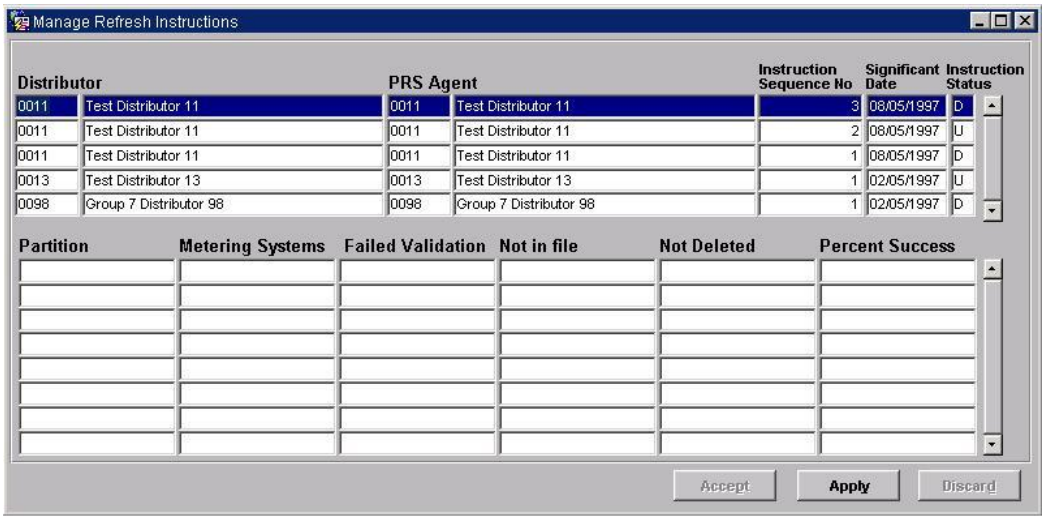
- tell the system to skip the file, and which other files to skip;

To skip a file, a market participant (both market role and participant id) can be entered in the criteria bevel or a participant selected from the list of participants. The user then enters the Instruction Sequence Number of the next file to be processed in the box next to the 'Skip to File Seq No' button. For each Instruction File Sequence Number from the current file up to but not including the number entered by the user, if there is an Instruction File, set File Status to "Skipped" otherwise, create an empty Instruction File with a File Status of "Skipped". Instruction processing will treat all skipped files as if they contained no instructions. If a file from the same source with the sequence number specified as "Skip To" already exists and has a status of Loaded or Processed the Skip will not be allowed. If the "Skip To" sequence number is not greater than the selected file, the Skip will not be allowed. Note that when a file arrives where there is already an entry for the same sequence number/source which is set to skipped, the new file will also be set to skipped.

When the user clicks on the Skip to File Seq No button, an activity is submitted to carry out the requested updates. When that activity completes, the form refreshes the display.

9.20 Manage Refresh Instructions

9.20.1 Screen layout



Instructions are ordered by Distributor, and by Instruction Sequence Number (descending) within each distributor).

9.20.2 Screen behaviour

This module is invoked by an NHHDA user to allow application of a "PRS Refresh" instruction.

All Refresh Instructions which have an Instruction Status of "Unprocessed" are displayed (these are the ones which have not been applied); all Refresh Instructions with an Instruction Status of "Validation Errors" are displayed (these are the ones which have been attempted but for which there were validation errors preventing all Metering Systems from being updated); also all Refresh Instructions which have an Instruction Status of "Discarded" and which are not flagged as "cannot reprocess" are also displayed (these are the ones which have failed or been manually discarded but which may still legally by applied.

The user selects one Instruction and chooses whether to attempt to apply the instruction (if currently Unprocessed or Discarded), to mark it as "Discarded" (if currently Unprocessed) or to accept the validation errors and mark it as "Applied" (if currently has Validation Errors).

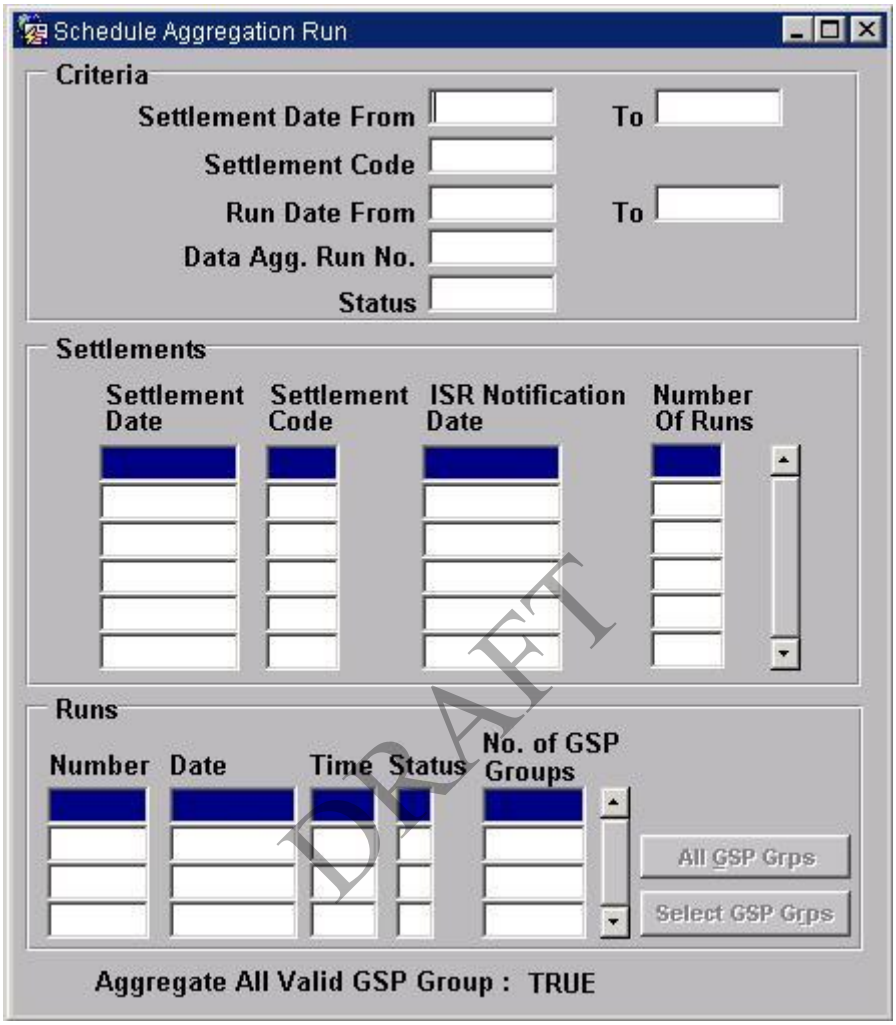
If the selected Instruction has a status of "Validation Errors", the second block on the form is populated with summary information detailing for the whole Instruction, and for each partition, the numbers of Metering Systems contained in the Instruction, the number of those which failed validation, the number of Metering Systems on the database which were *not* in the Instruction, the number of those which were not updated due to the validation rules, and finally the percentage of Metering Systems which were updated out of those considered for updated.

Note that a backup must be taken prior to applying a refresh. The user is asked whether such a backup exists before processing starts. If a refresh fails with Validation Errors, the user has the choice of restoring from the database backup (and then discarding the refresh) or of accepting the refresh despite the errors.

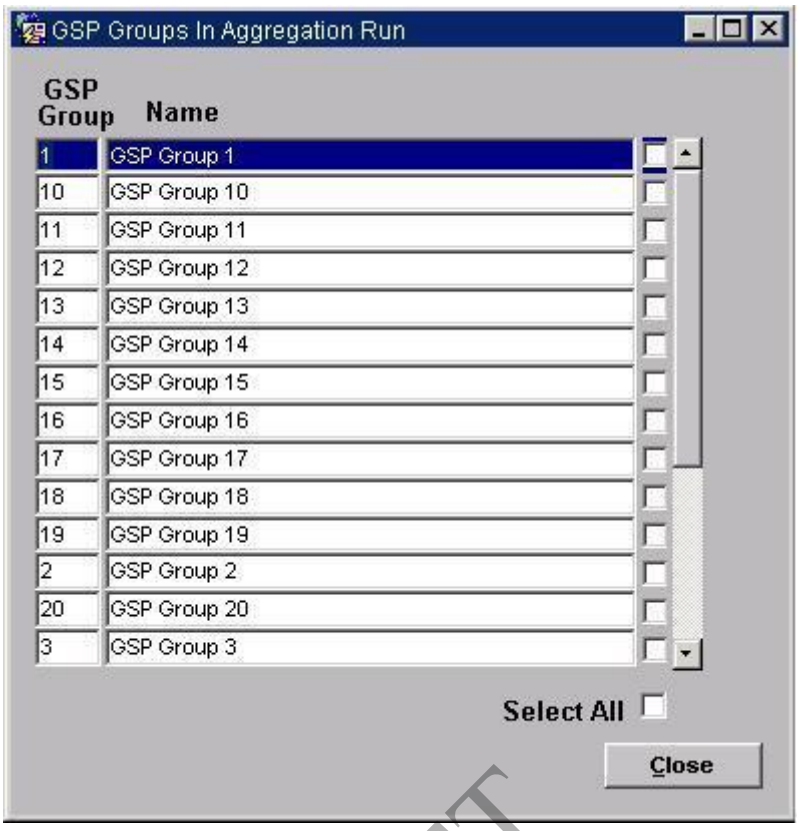
The user is informed when a refresh activity has been submitted and the form is closed.

9.21 Schedule Aggregation Run

9.21.1 Screen layout



Pop up window displaying GSP Group information:



9.21.2 Screen behaviour

The default schedule is prepared by the settlement timetable, which is automatically loaded (N0024). This function is invoked by the data aggregation administrator to allow data aggregation runs to be re-scheduled, new runs scheduled or the status of a scheduled run to be changed. No run will actually start until thestatus of the run is set to released (through a DAST file load or a manual operator action) . For data aggregation runs of the correct status the system will perform data aggregation run during the next invocation of NAR with a 'run date' on or after the date requested (note that when running overnight, the run date is taken to be the next day if the run starts before midnight).

Before a run has started the user will have the option of modifying the status, rescheduling or cancelling the run, and adding or removing the GSP Groups to be included in the run.

On entry a user will have the option of entering a settlement date range, a run date range, settlement code, status, or data aggregation run number. A list of settlements and runs is then displayed based on the criteria date information which has been entered by the user.

For the settlement information displayed to the user the settlement date, settlement code, ISR notification date and the number of runs is displayed. The user can add, remove or edit these records.

For the run information displayed to the user, the number, date, time (only for runs which have occurred), status and number of GSP Groups is displayed.

If the user wishes to view the GSP Groups relating to a run, this can be achieved by pressing the Select GSP Group button. For GSP Groups, the GSP Group Id and GSP Group name is displayed. The user can add or remove these records selecting or deselecting the check box. The user then saves the changes. (The user has the option of selecting all GSP Groups by selecting the 'All GSP Group button.) When the changes are saved the 'No of GSP Groups' displayed on the screen changes to the new value

The Data Aggregation Administrator will have the option of scheduling a new Data Aggregation Run (i.e.: Inserting a new row) or rescheduling, modifying the Status, cancelling or browsing an existing one.

When inserting a new Settlement, the Settlement Date will default to today's date and the Settlement Code will default to 'Initial Settlement'.

When inserting a new Aggregation Run the Run Number will be allocated automatically by the system and the user may not change it. The settlement date and code will be those for the currently selected row in the Settlement block; the Status will default of 'Provisional', the Aggregation Date will default to today's date. All defaults may be changed by the user. The new run must be saved before GSP groups are assigned to it.

If adding or modifying a Data Aggregation Run, the user may also select GSP groups to add or remove from the run. This is achieved by selecting or deselecting rows from the GSP Group data block.

The date for a Data Aggregation Run to occur must not be earlier than the current date.

The system will not allow a Data Aggregation Run to be cancelled or rescheduled if it has already taken place.

The status of a run may only be changed from provisional, provisional (default), approved or released to approved, released or provisional.

GSP Groups may only be added or removed from aggregation runs and run date may only be changed for runs which are provisional.

The user may query Data Aggregation run by any combination of Settlement Date, Settlement Code, Run Number, Aggregation Date, and Status.

Once a Aggregation Run has been selected the user may restrict the GSP groups displayed by GSP Group but not but GSP Name.

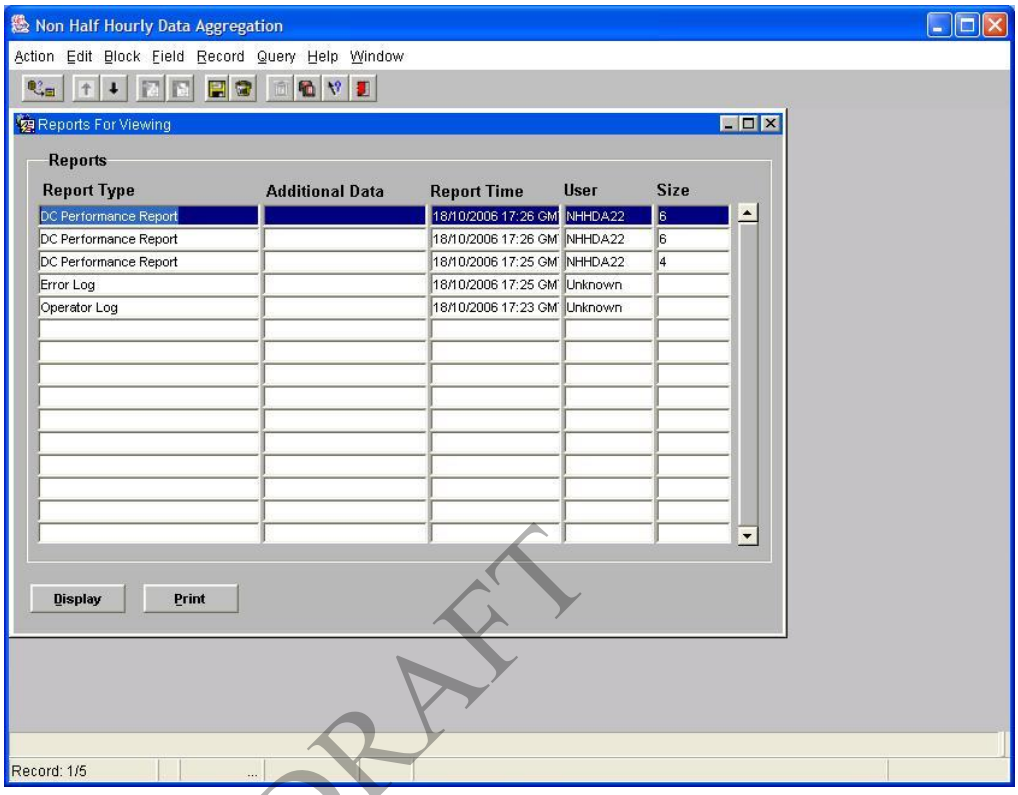
A settlement may not be deleted if there are any data aggregation runs scheduled for that settlement.

If the System Parameter "Aggregate All Valid GSP Groups" is set to FALSE and the user has not included any GSP Groups, then a warning message is displayed. If the run is a dispute run and the user has not included any GSP Groups, then a warning message is displayed regardless of the value of the System Parameter "Aggregate All Valid GSP Groups".

9.22 Select Reports

9.22.1 Screen layout

The screen layout, excluding the standard menu and toolbar is as shown in the following figure:



9.22.2 Screen behaviour

The form displays a selection of reports that have been completed on the server as well as the operator and error logs. This selection only contains report types which the user has been authorised to view. These are displayed in reverse order of creation (i.e., the most recently created reports are displayed at the top of the list).

The user can move through the list but cannot change the data displayed. The row on which the cursor is placed is treated as the currently selected report when any of the buttons on the form are pressed.

With a report selected, the user can press a button to:

- display the report - invoking the web browser to view the specified file. A check is carried out to verify that the rep size does not exceed the allowed size set in system parameters. If the size is exceeded, the user is given the option to proceed or cancel. It is also possible to view multiple reports at a time.
- print the report - sending the selected file to the default printer

If the report has not previously been formatted into human-readable form, the report will first be formatted. Snapshots of the operator and error logs

will be transferred to the application server when the user requests that the logs be displayed or printed.

Note that, with the exception of the operator and error logs, only files with types included in 'cdb_report_type' and have a status of 'completed' will be displayed.

Authorisation to view particular report types is checked using the Oracle view 'user_role_privs'. By joining this with 'cdb_report_access', a list of report types which the current user may access is produced. The current user is determined by retrieving the user who submitted the activity that produces the underlying machine readable report.

The 'additional data' field displays information about the criteria used to generate the report.

The 'size' field give an indication of the report size by showing the number of records in the machine readable report file. The field will be left blank if this information is unavailable.

9.22.3 Description

This form is provided to satisfy the requirements to display and print human-readable versions of certain reports. It provides a mechanism for selecting one of the completed reports on the server and obtaining a copy of that report on the application server for viewing or printing.

Note that deletion of the created files on the client is considered a separate, user operation - see System Management Guide.

9.22.4 Form structure

Field Name	Description
Block: TOOLBAR	Contains standard buttons as described in [CTSPEC] section 10.5.1
Block: REPORTS	Block contains a table of all reports available for viewing
Field Report Type	cdb_report_type.report_name
Field Additional Data	cdb_file_refrence.additional_information
Field Report Time	cdb_file_reference.creation_time
Field User	cdb_activity.username
Field Size	cdb_file_reference.number_records
Button Display	Triggers the display action described below
Button Print	Triggers the print action described below

9.22.5 Action on Form Query

Displays a list of all reports match the query criteria, eg:

```
SELECT    DISTINCT p.username, t.report_name,
```

```
          f.creation_time, f.number_records, f.file_id,
     f.additional_information
FROM      cdb_file_reference f, cdb_report_type t,
          cdb_activity p, cdb_report_access a,
          USER_ROLE_PRIVS u
WHERE     t.report_name matches any criteria specified
AND       f.creation_time matches any criteria specified
AND       p.username matches any criteria specified
AND       f.file_type = t.file_type
AND       f.status = completed
AND       p.activity_id = f.activity_id
AND       f.file_type = a.file_type
AND       a.user_role = u.granted_role
ORDER BY  f.creation_time DESC
```

Note that only file types which are included in cdb_report_type will be included in the list of reports. Furthermore, only reports that have status 'completed' will be included. The reports displayed are further limited to those for which the user is authorised.

The authorisation check uses the Oracle View "USER_ROLE_PRIVS", which contains all the roles granted to the current user. By joining this to cdb_report_access, a list of report types which the current user may access is determined. Since a user may have multiple roles assigned, with more than one of these allowing access to a particular report, "SELECT DISTINCT" is used to remove duplicate result rows.

The user who initiated the report is determined by looking up the user who submitted the activity which caused the underlying machine readable report to be created.

The size field gives a "relative" indication of the likely report size, based on the number of records in the underlying machine readable file. Where no size information is available (i.e.: the database field is null), this field will be left blank.

Implementation of this form may be simplified by defining a database view for the underlying query (i.e.: without the criteria specified).

9.22.6 Action on Button Display

```
SELECT    r.file_id
FROM      cdb_report_file r
WHERE     source_file_id = selected row file_id
IF a record is not found (i.e.: not yet formatted)
     CALL CRP.FORMAT_REPORT to format the report
END IF

Call CRP_FETCH.IS_FILE_TOO_BIG to check if report size exceed
value set in system parameter.

CALL CRP.DISPLAY_REPORT for human-readable report file_id to
bring the report up for display
```

9.22.7 Action on Button Print

```
SELECT    r.file_id
FROM      cdb_report_file r
WHERE     source_file_id = selected row file_id
IF a record is not found (i.e.: not yet formatted)
```

```
        CALL CRP.FORMAT_REPORT to format the report
    END IF
    CALL CRP.PRINT_REPORT to queue the report to the local
    default printer
```

10 NFR Forms and Reports Subsystem Specification

10.1 Overview

All NHHDA human readable reports will be based on report templates as discussed in the following section.

All NHHDA machine readable reports include a table showing all fields included in that report, all fields are mandatory unless otherwise stated.

Selection Criteria includes User requesting report, which will always be present, other criteria depend on user specification.

The structure of the report is described using BNF format as per [CTSPEC]

Type decimal (n,d) means n digits of which d are after the decimal point

When the REPORT button is pressed, a process is queued on the server to generate a machine readable report. The user subsequently views the report output using the Select Reports option from the menu which invokes the CRP Select Reports form (see [CTSPEC]).

10.2 Report Templates

10.2.1 Description

There is a standard template which will be used by NHHDA reports.

10.2.1.1 Template Items

All NHHDA reports will use this template.

The items which appear on each report are as follows:

Template Item	Description
Date and Time of Report Request	The Date and Time the report was produced. Format DD/MM/YYYY HH:MM GMT For example, 02/11/1998 17:34 is equivalent to 2 November 1998 at 5:34pm
Name of User Running Report	The application user's id who invoked the report, for example BLOGGSJ
Name of Organisation	The name of the organisation producing the report. This will be denoted by showing the organisation's participant name, for example: Eastern Electricity Board
Report Title	This is the main title of the report, for example: Data Aggregation Run
Page Number	Page numbering will be shown on the footer of the page and will show the current page, for example: Page 3
Report Criteria	These are the lines of the report body, appropriate to the report type.

Figure 8 shows how template items will appear on reports.

The fields Report Title, Name of Organisation and Date and Time of Report Request will be displayed on every page, whereas Name of User Running Report and Report Criteria fields will only be displayed on the first page.


XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

User:
XXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

The following indicates what appears in each of the above fields.

<Report Title> <Organisation> <Date and Time of Report Request>

User:
<username>
<Report Criteria 1 name >
<Report Criteria 1 value>
<Report Criteria 2 name >
<Report Criteria 2 value>
<Report Criteria 3 name >
<Report Criteria 3 value>

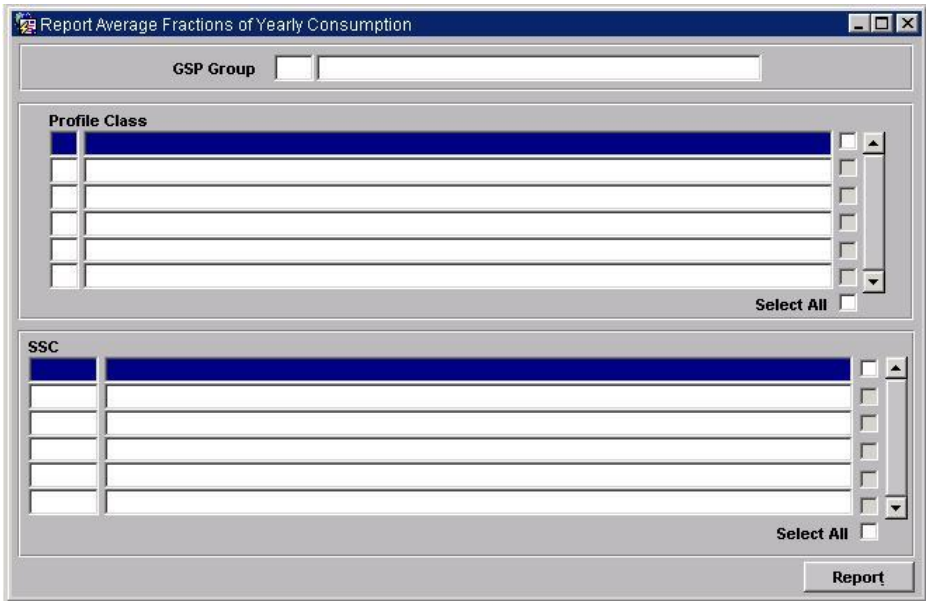
Page X

Figure 8: Standard Report Template

10.3 Report Average Fraction of Yearly Consumption

10.3.1 Form

10.3.1.1 Screen layout



10.3.1.2 Screen behaviour

This function allows reporting of a set of average fractions of yearly consumption.

A list of GSP Group Ids and descriptions is displayed. The user selects one GSP Group to report on.

Specific GSP Groups to be reported on are identified by using Forms 'enter query' mode or via a list of values.

Next a user will select one, a range or all of the Profile Classes to report on.

As Profile Classes and Standard Settlement Configuration records have a many-many relationship, when the user scrolls between profile class records its associated valid Standard Settlement Configuration records change. Upon querying the database all profile class records and their corresponding detail records will be displayed.

Finally the user selects one, a range, or all of the Standard Settlement Configurations to report on.

10.3.2 Report

10.3.2.1 Description

This report is invoked by an NHHDA user to allow reporting of a set of Average Fractions Of Yearly Consumption.

10.3.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
GSP Group Id	Single Id

Parameter	Parameter Type
	Mandatory
Profile Class	Range of Profile Class Ids Non-Mandatory
Standard Settlement Configuration Id	Range of Standard Settlement Configuration Ids Non-Mandatory

10.3.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_gsp_groups	gsp_group_id gsp_group_name
ndb_profile_classes	profile_class_id profile_class_desc
ndb_std_sett_cfgs	std_sett_config_id configuration_desc
ndb_av_frac_y_cons	av_frac_y_cons effective_from_sett_date effective_to_sett_date t_p_regime_id gsp_group_id profile_class_id

10.3.2.4 Physical Design

This report will use the standard report template.

A list of existing GSP Group Ids and descriptions is displayed. The user selects one of them to report.

A list of Profile Class Ids and descriptions is displayed and the user selects one, a range, or all.

A list of existing Standard Settlement Configuration Ids and descriptions is displayed for the selected Profile Class (as recorded in Valid Settlement Configuration Profile Class). The user selects one, a range, or all of them to report.

A list of all the Time Pattern Regime Ids is Reported for the selected Profile Class and Standard Settlement Configurations (as recorded in Valid Settlement Requirement Profile Class) together with their Average Fraction of Yearly Consumption, Effective From Settlement Date {AFYC}s and Effective To Settlement Date {AFYC}s for the selected GSP Group, if any (from entity Average Fraction of Yearly Consumption).

The report will be ordered by GSP Group Id for GSP Groups, Profile Class Id, SSC Id, Effective From Date (descending) and Time Pattern Regime for the main body of the report.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.3.2.5 User Roles

Exception Administrator, Auditor.

10.3.3 Structure

10.3.3.1 Human Readable Report Layout

```
Ave Fract Yearly Consumption                XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
GSP Group
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Profile Class
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
SSC
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

GSP Group
== ==============================
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Profile Class
== ==============================
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                          From            To              Time           Average Fraction of
Standard Settlement Configuration         Settlement Date Settlement Date Pattern Regime Yearly Consumption
==== ================================== ============== ============== =============- ====================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY     DD/MM/YYYY     XXXXX                     0.999999
                                                                       XXXXX                     0.999999
                                          DD/MM/YYYY     DD/MM/YYYY     XXXXX                     0.999999
                                                                       XXXXX                     0.999999
                                          DD/MM/YYYY     DD/MM/YYYY     XXXXX                     0.999999
                                                                       XXXXX                     0.999999
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY     DD/MM/YYYY     XXXXX                     0.999999
                                                                       XXXXX                     0.999999
                                          DD/MM/YYYY     DD/MM/YYYY     XXXXX                     0.999999
                                                                       XXXXX                     0.999999
```


10.3.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0013001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
3	Criteria value	text(80)	

VPC - GSP Group header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=VPC
2	GSP Group Id	text(2)	
3	GS P Group Name	text(30)	

PRC - Profile Class			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=PRC
2	Profile Class Id	integer(2)	
3	Profile Class Name	text(30)	

AFC - Average Fraction of Yearly Consumption			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=AFC
2	SSC Id	text(4)	Optional - null if SSC and Profile Class same as previous record
3	SSC Description	text(50)	Optional - null if SSC and Profile Class same as previous record
4	Effective From Settlement Date	date	Optional - null if SSC, Profile Class and Effective From Settlement Date same as previous record
5	Effective To Settlement Date	date	Optional - null if SSC, Profile Class and Effective From Settlement Date same as previous record
6	Time Pattern Regime Id	text(5)	
7	Average Fraction of Yearly Consumption	decimal (7,6)	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR AFYC  ::= ZHD SEL {SEL} VPC {PRC {AFC}} ZPT
```

Sorting:

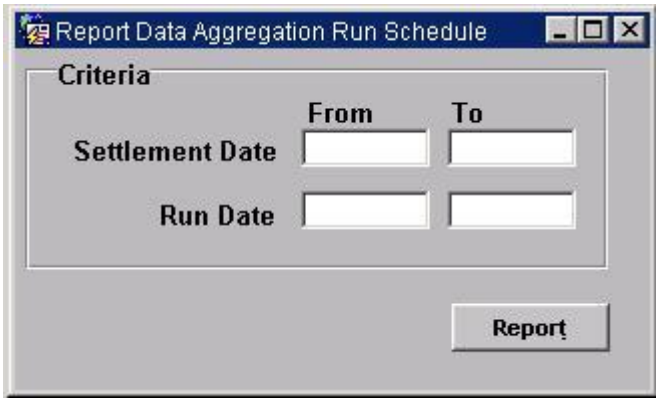
The records in the file are sorted by:

1. Profile Class Id
2. Standard Settlement Configuration Id
3. Effective From Settlement Date (descending)
4. Time Pattern Regime Id

10.4 Report Data Aggregation Run Schedule

10.4.1 Form

10.4.1.1 Screen layout



10.4.1.2 Screen behaviour

This function is invoked by an NHHDA user to allow reporting of settlements and associated data aggregation runs for each GSP Group listed for that aggregation run.

The user will select either a range of settlement dates or a range of data aggregation run dates.

For each data aggregation run selected the run details are output along with the GSP Groups included in each run.

10.4.2 Report

10.4.2.1 Description

This report is invoked by an NHHDA user to allow reporting of Settlements and associated Data Aggregation Runs for each GSP Group listed for that Aggregation Run.

10.4.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Settlement Date From	Settlement Date
Settlement Date To	Settlement Date
Run Date From	Run Date
Run Date To	Run Date
	Note: Mandatory to have either Settlement Date From Settlement Date To or Run Date From Run Date To

10.4.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_settlements	settlement_code settlement_date
ndb_data_agg_runs	settlement_date settlement_code data_agg_run_stat data_agg_run_no data_agg_run_date
ndb_gsp_groups_run	gsp_group_id data_agg_run_no
ndb_gsp_groups	gsp_group_id gsp_group_name

10.4.2.4 Physical Design

This report will use the standard report template.

The user will enter a Settlement Date which will return all Settlements for that Settlement Date.

The user may then select either a single Settlement, or all Settlements for the Settlement Date. If a single Settlement is selected, all Aggregation Runs for that Settlement are listed and the user may select a single run or all runs for that Settlement.

For each settlement selected, the settlement details are output and for each aggregation run selected, the run details and the GSP Groups for each Aggregation Run will also be output.

The report will be ordered by Run Code (descending).

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.4.2.4.1 User Roles

Exception Administrator, Market Domain Data Administrator

10.4.3 Structure

10.4.3.1 Human Readable Report Layout

```
Data Aggregation Run                                XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                        DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
Settlement Date From
DD/MM/YYYY
Settlement Date To
DD/MM/YYYY

Settlement
Date
===========
DD/MM/YYYY
                                ISR Notification Data Aggregation Data Aggregation                                Number of
Settlement Code                 Date                   Run Number Run Date   Time     Status                     GSP Groups
== ============================ ================ ================ ========== ======== = ============================ ==========
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY               9999999 DD/MM/YYYY HH:MM:SS X XXXXXXXXXXXXXXXXXXXXXXXXXXXX         99

GSP Group
== ==============================
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

10.4.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0017001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

SHD - Settlement Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SHD
2	Settlement Date	date	

SCD - Settlement Code			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SCD
2	Settlement Code	text(2)	
3	Settlement Code Description	text(30)	
4	ISR Notification Date	date	
5	Run Number	integer(7)	may be null if range is on Settlement
6	Run Date	date	Date and there is a Settlement
7	Run Time	time	Date/Code combination but there are no
8	Run Status Code	text(1)	runs scheduled for that combination
9	Run Status Description	text(30)	
10	Number of GSP Groups in run	integer(2)	

GSP - GSP Groups in Aggregation Run			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=GSP
2	GSP Group Id	text(2)	
3	GSP Group Name	text(30)	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR Data Aggregation Run Schedule ::=
                        ZHD SEL {SEL} {SHD {SCD {GSP}}} ZPT
```

Sorting:

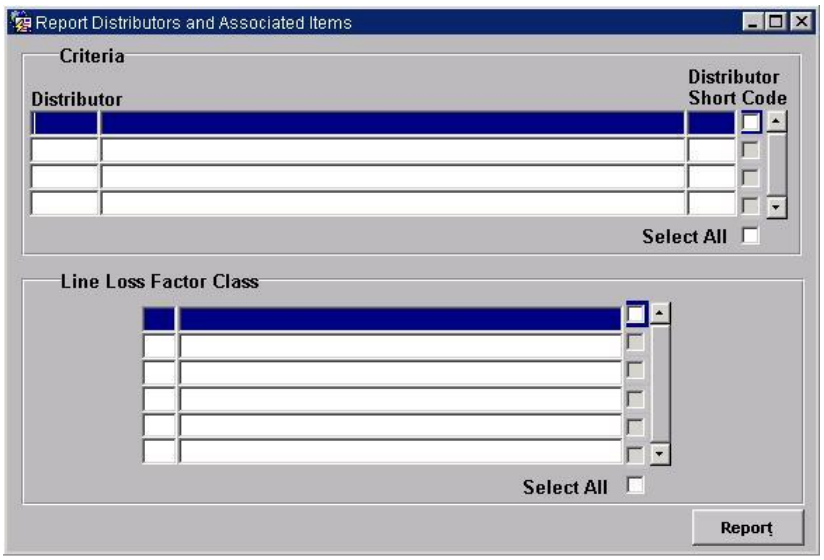
The records in the file are sorted by:

1. Settlement Date
2. Settlement Code
3. Run Date (ascending)
4. Data Aggregation Run Number

10.5 Report Distributors and Associated Items

10.5.1 Form

10.5.1.1 Screen layout



10.5.1.2 Screen behaviour

This function is invoked by a NHHDA user to allow reporting of the set of valid distributors, their Line Loss Factor Classes, GSP Groups and PRS Agent Appointments.

A list of Distributor Ids, names and short codes is displayed. The user selects one, a range, or all of them to report.

Specific Distributors to be reported on are identified by using Forms 'enter query' mode.

For each Distributor displayed, the second block is enabled, allowing the user to restrict the report to a subset of line loss factor classes for that distributor.

10.5.2 Report

10.5.2.1 Description

This report is invoked by a NHHDA user to allow reporting of Distributors and their associated Line Loss Factor Classes, GSP Groups and PRS Agent Appointments.

10.5.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Distributor Id	Range of Distributor Ids Mandatory
Line Loss Factor Class Id	Range of Line Loss Factor Class Ids Non-Mandatory

10.5.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_m_participants	participant_id participant_name dist_short_code dist_flag prs_ag_flag
ndb_llf_classes	llf_class_id llf_class_desc dis_participant_id
ndb_gsp_groups_dis	gsp_group_id dist_participant_id eff_from_sett_date eff_to_sett_date prs_participant_id

10.5.2.4 Physical Design

This report will use the standard report template.

The report will display the set of Distributors and their associated PRS Agent Appointments.

The output will consist of Distributor Id, Distributor Name and Distributor Short Code for each Distributor followed by PRS Agent Id, PRS Agent Name, GSP Group ID, GSP Group Name, Effective From Settlement Date and Effective To Settlement Date for GSP Groups.

This report will be ordered by Distributor Id, Line Loss Factor Class Id, GSP Group and Effective From Settlement Date.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.5.2.5 User Roles

Exception Administrator, Auditor

10.5.3 Structure

10.5.3.1 Human Readable Report Layout

```
Distributors                XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  DD/MM/YYYY HH:MM GMT
User
XXXXXXXX
Distributor
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Line Loss Factor Class
XXXX

Distributor                                 Short Code
==== ========================================== ==========
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XX

Line Loss Factor Classes
==== ==============================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX

PRS Agent Appointment Details
PRS Agent
==== ========================================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

GSP Group Details
GSP Group                                   From Calendar Date To Calendar Date
==== ========================================== ================== ================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY         DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY         DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY         DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY         DD/MM/YYYY
```

10.5.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	= L0014001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

DIS - Distributor			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= DIS
2	Distributor Id	text(4)	
3	Distributor Name	text(40)	
4	Distributor Short Code	text(2)	

LLF - Line Loss Factor Class			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=LLF
2	Line Loss Factor Class Id	integer(3)	
3	Line Loss Factor Class Description	text(30)	

PAA - PRS Agent Appointments

	Field Name	Type	Comments
1	Record Type	text(3)	= PAA
2	PRS Agent Id	text(4)	
3	PRS Agent Name	text(40)	

GSP – GSP Groups			
	Field Name	**Type**	**Comments**
1	Record Type	text(3)	= GSP
2	GSP Group Id	text(2)	
3	GSP Group Name	text(30)	
4	Effective From Settlement Date	date	
5	Effective To Settlement Date	date	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

```
Repeating Structure of Report File:
DIST      :: = ZHD SEL {SEL} {DIS {LLF} {PAA} {GSP}} ZPT
```

Sorting:

The records in the file are sorted by:

1. Distributor Id
2. Line Loss Factor Class Id (within Distributor)
3. GSP Group Effective From Settlement Date (within Distributor) (descending)

10.6 Report on Batch Output Files

10.6.1 Description

This report is invoked by the NHHDA user to report on output data from batch processing. Output files which may be reported on include the following:

- Supplier Purchase Matrix
- Aggregation Exception Log
- Check Data Collector Data Exception Log

The user selects the file they wish to report on from the form "Report File Extraction and Transmission Statuses.

10.6.2 Supplier Purchase Matrix

10.6.2.1 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Filename	Single File Name Mandatory
Path	Single Path Mandatory
SSC Id	Single Standard Settlement Configuration Id Optional
Line Loss factor Class Id	Single Distributor Id & Line Loss Factor Class Id Optional
Profile Class Id	Single Profile Class Id Optional
Supplier	Single Supplier Id Optional

10.6.2.2 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
N/A as information is stored in an Operating System File.	

10.6.2.3 Physical Design

Using the parameters passed into the report, the process will use Operating System functionality to filter the records required. The filter parameters are Standard Settlement Class, Line Loss Factor Class, profile Class and Supplier.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.6.2.4 User Roles

Exception Administrator, Auditor

10.6.2.5 Structure

10.6.2.5.1 Human Readable Report Layout

```
SPM (Report)                                                 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                        DD/MM/YYYY HH:MM GMT
User
XXXXXXXX
Standard Settlement Configuration
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Distributor
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Line Loss Factor Class
XXX
Profile Class
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Supplier
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Settlement Settlement Run         Run GSP
Date       Code       Code     Number Group
========== ========== ======= ======= =====
DD/MM/YYYY XX           D     9999999 XX

Supplier
========
XXXX

Profile       Line Loss      Time P  Default   Default       AA              AA              EAC      EAC             EAC       EAC
  Class Distr     Class SSC  Regime  Metered Unmetered  Metered   Metered (Mwh)   Metered (Mwh)  Metered Unmetered (Mwh) Unmetered
======= ===== ========= ==== ====== ======== ========= ======== =============== =============== ======== =============== =========
     XX XXXX        XXX XXXX XXXXX  99999999  99999999 99999999 9999999999.9999 9999999999.9999 99999999 9999999999.9999  99999999
     XX XXXX        XXX XXXX XXXXX  99999999  99999999 99999999 9999999999.9999 9999999999.9999 99999999 9999999999.9999  99999999
     XX XXXX        XXX XXXX XXXXX  99999999  99999999 99999999 9999999999.9999 9999999999.9999 99999999 9999999999.9999  99999999
     XX XXXX        XXX XXXX XXXXX  99999999  99999999 99999999 9999999999.9999 9999999999.9999 99999999 9999999999.9999  99999999
     XX XXXX        XXX XXXX XXXXX  99999999  99999999 99999999 9999999999.9999 9999999999.9999 99999999 9999999999.9999  99999999
     XX XXXX        XXX XXXX XXXXX  99999999  99999999 99999999 9999999999.9999 9999999999.9999 99999999 9999999999.9999  99999999
```

10.6.2.5.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0032001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

SPD - Data File Additional Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= SPD
2	Settlement Date	date	copied from ZPD record of SPM file
3	Settlement Code	text(2)	copied
4	Run Type Code	text(2)	copied
5	Run Number	integer(7)	copied
6	GSP Group	text(2)	copied

Supplier Purchase Matrix Body
Supplier Purchase Matrix details can be found in the NAR sub-system

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating Structure of Report File:

```
NBR SPV   ::= ZHD SEL {SEL} SPD <SPM Body> ZPT
```

Sorting:

The order of data presented in the report will be that in which it appears in the original SPM file.

10.6.3 Check Data Collector Data Exception Log

10.6.3.1 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Filename	Single File Name Mandatory
Path	Single Path Mandatory
Metering System Id	Single Metering System Id Optional
Exception Type	Single Exception Type Optional

10.6.3.2 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
N/A as information is stored in an Operating System File.	

10.6.3.3 Physical Design

Using the parameters passed into the report, the process will use Operating System functionality to filter the records required. The filter parameters are Metering System and Exception Type.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.6.3.4 User Roles

Exception Administrator, Auditor

10.6.3.5 Structure

10.6.3.5.1 Human Readable Report Layout

```
Data Collector Exception LogXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
Metering System
9999999999999
Exception Type
XXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX

         Data      From            To
Supplier Collector Settlement Date Settlement Date
======== ========= =============== ===============
XXXX     XXXX      DD/MM/YYYY      DD/MM/YYYY

Count of Metering Systems with E01 (no EAC or AA for appointed DC)       999999
Count of Metering Systems with E02 (missing subsequent consumption data) 999999
Count of Metering Systems with E03 (AA with no DAA Appointment)          999999
Count of Metering Systems with E04 (EAC with no DAA Appointment)         999999
Count of Metering Systems with E05 (non-zero AA while de-energised)      999999
Count of Metering Systems with E06 (missing preceding consumption data)  999999
Count of Metering Systems with E07 (Overlapping Meter Advance Periods)   999999
Count of Metering Systems with E08 (Supplier mismatch)                   999999
Count of Metering Systems with E09 (Measurement Class mismatch)          999999
Count of Metering Systems with E10 (GSP Group mismatch)                  999999
Count of Metering Systems with E11 (Profile Class mismatch)              999999
Count of Metering Systems with E12 (Energisation Status mismatch)        999999
Count of Metering Systems with E13 (SSC mismatch)                        999999
Count of Metering Systems with E14 (no PRS registration)                 999999
Count of Metering Systems with any exceptions                            999999

PRS Agent
=========
XXXX

Metering System
===============
9999999999999

E01 Registration From Settlement Date                                    DD/MM/YYYY
    Data Aggregator Appointment From Settlement Date                     DD/MM/YYYY
E02 Registration From Settlement Date                                    DD/MM/YYYY
    Data Aggregator Appointment From Settlement Date                     DD/MM/YYYY
    First date with no data                                              DD/MM/YYYY
E03 Meter Advance Period From Settlement Date                            DD/MM/YYYY
E04 EAC From Settlement Date                                             DD/MM/YYYY
E05 Meter Advance Period From Settlement Date                            DD/MM/YYYY
E06 First date with no data                                              DD/MM/YYYY
E07 Meter Advance Period From Settlement Date                            DD/MM/YYYY
    Other Data Collector                                                 XXXX
    Other Data Collector's Meter Advance Period From Settlement Date     DD/MM/YYYY
E08 Supplier according to Data Collector                                 XXXX
    PRS Data From Settlement Date                                        DD/MM/YYYY
    Data Collector From Settlement Date                                  DD/MM/YYYY
E09 Measurement Class according to PRS                                   X
    Measurement Class according to Data Collector                        X
    PRS Data From Settlement Date                                        DD/MM/YYYY
    Data Collector From Settlement Date                                  DD/MM/YYYY
E10 GSP Group according to PRS                                           XX
    GSP Group according to Data Collector                                XX
    PRS Data From Settlement Date                                        DD/MM/YYYY
    Data Collector From Settlement Date                                  DD/MM/YYYY
E11 Profile Class according to PRS                                       XX
    Profile Class according to Data Collector                            XX
    PRS Data From Settlement Date                                        DD/MM/YYYY
    Data Collector From Settlement Date                                  DD/MM/YYYY
E12 Energisation Status according to PRS                                 X
    Energisation Status according to Data Collector                      X
    PRS Data From Settlement Date                                        DD/MM/YYYY
    Data Collector From Settlement Date                                  DD/MM/YYYY
E13 SSC according to PRS                                                 XXXX
    SSC according to Data Collector                                      XXXX
    PRS Data From Settlement Date                                        DD/MM/YYYY
    Data Collector From Settlement Date                                  DD/MM/YYYY
E14 Supplier according to PRS Agent                                      XXXX
    PRS Data From Settlement Date                                        DD/MM/YYYY
    Data Collector From Settlement Date                                  DD/MM/YYYY
```


10.6.3.5.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0033001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant	text(4)	null

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
	Code		
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

Check Data Collector Data Exception Log
Check Data Collector Data Exception Log details can be found in the NCD sub-system

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	


```
Repeating Structure of File:
NBR CDV   ::= ZHD SEL {SEL} <Check DC Data Log> ZPT
```

Sorting:

The order of records in the file will be that in which they appear in the Data Collector Exception file from which they are extracted. Additionally, note that the EXH record will always contain totals for all exception types and all metering systems regardless of any selection criteria specified.

10.6.4 Aggregation Exception Log

10.6.4.1 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Filename	Single File Name Mandatory
Path	Single Path Mandatory

10.6.4.2 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
N/A as information is stored in an Operating System File.	

10.6.4.3 Physical Design

Using the parameters passed into the report, the process will use Operating System functionality to create a machine readable file of the Aggregation Exception Log. This report will contain exception data across all partitions for the selected Aggregation run, and not just the exceptions contained in the selected exceptions file.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.6.4.4 User Roles

Exception Administrator, Auditor

10.6.4.5 Structure

10.6.4.5.1 Human Readable Report Layout

```
Aggregation Exception Log-Rpt XXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
Metering System
XXXXXXXXXXXX
Exception Type
XXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Settlement Settlement Run         Run
Date       Code       Code     Number
========== ========== ======= =======
DD/MM/YYYY XX               D 9999999

Metering System
===============
XXXXXXXXXXXX

A01 Appointed Data Collector                                          XXXX
    Registration From Settlement Date                                 DD/MM/YYYY
    Data Collector Appointment From Calendar Date                     DD/MM/YYYY
A02 Data Collector                                                    XXXX
    Data Collector Data From Settlement Date                          DD/MM/YYYY
A03 Data Collector                                                    XXXX
    Meter Advance Period From Settlement Date                         DD/MM/YYYY
A04 Meter Advance Period From Settlement Date                         DD/MM/YYYY
    Data Collector                                                    XXXX
A05 Data Collector                                                    XXXX
    Supplier according to PRS                                         XXXX
    Supplier according to Data Collector                              XXXX
    PRS Data From Settlement Date                                     DD/MM/YYYY
    Data Collector From Settlement Date                               DD/MM/YYYY
A06 Data Collector                                                    XXXX
    Measurement Class according to PRS                                X
    Measurement Class according to Data Collector                     X
    PRS Data From Settlement Date                                     DD/MM/YYYY
    Data Collector From Settlement Date                               DD/MM/YYYY
A07 Data Collector                                                    XXXX
    GSP Group according to PRS                                        XX
    GSP Group according to Data Collector                             XX
    PRS Data From Settlement Date                                     DD/MM/YYYY
    Data Collector From Settlement Date                               DD/MM/YYYY
A08 Data Collector                                                    XXXX
    Profile Class according to PRS                                    XX
    Profile Class according to Data Collector                         XX
    PRS Data From Settlement Date                                     DD/MM/YYYY
    Data Collector From Settlement Date                               DD/MM/YYYY
A09 Data Collector                                                    XXXX
    Energisation Status according to PRS                              X
    Energisation Status according to Data Collector                   X
    PRS Data From Settlement Date                                     DD/MM/YYYY
    Data Collector From Settlement Date                               DD/MM/YYYY
A10 Data Collector                                                    XXXX
    SSC according to PRS                                              XXXX
    SSC according to Data Collector                                   XXXX
    PRS Data From Settlement Date                                     DD/MM/YYYY
    Data Collector From Settlement Date                               DD/MM/YYYY
A11 Data Collector                                                    XXXX
    Meter Advance Period From Settlement Date                         DD/MM/YYYY
A12 Metering System Excluded                                          XXXXXXXXXXXXX
A12 Supplier                                                          XXXX
A12 Supplier effective from settlement date                           DD/MM/YYYY
A12 Data Aggregator Appointment effective from settlement date        DD/MM/YYYY
A13 GSP Group ID                                                      XX
    Profile Class ID                                                  XX
    SSC ID                                                            XXXX
    Time Pattern Regime Id                                            XXXXX
    Metering System Default Count                                     XXXXXXX
A14 GSP Group ID                                                      XX
    Profile Class ID                                                  XX
    Metering System Default Count                                     XXXXXXX
```


10.6.4.5.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0034001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

SPD - Data File Additional Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= SPD
2	Settlement Date	date	copied from ZPD record of Aggregation Exception Log file
3	Settlement Code	text(2)	copied
4	Run Type Code	text(2)	copied
5	Run Number	integer(7)	copied
6	GSP Group	text(2)	copied

Aggregation Exception Log
Aggregation Exception Log details can be found in the NAR sub-system

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

```
Repeating Structure of Report File:
NBR CDV  ::= ZHD SEL {SEL} SPD <Aggregation Exception Log> ZPT
```

Sorting:

For reports which only include exception type A12 (“Metering System Excluded due to missing DC or PRS details”):The order of records in this file will be sorted by Supplier ID.

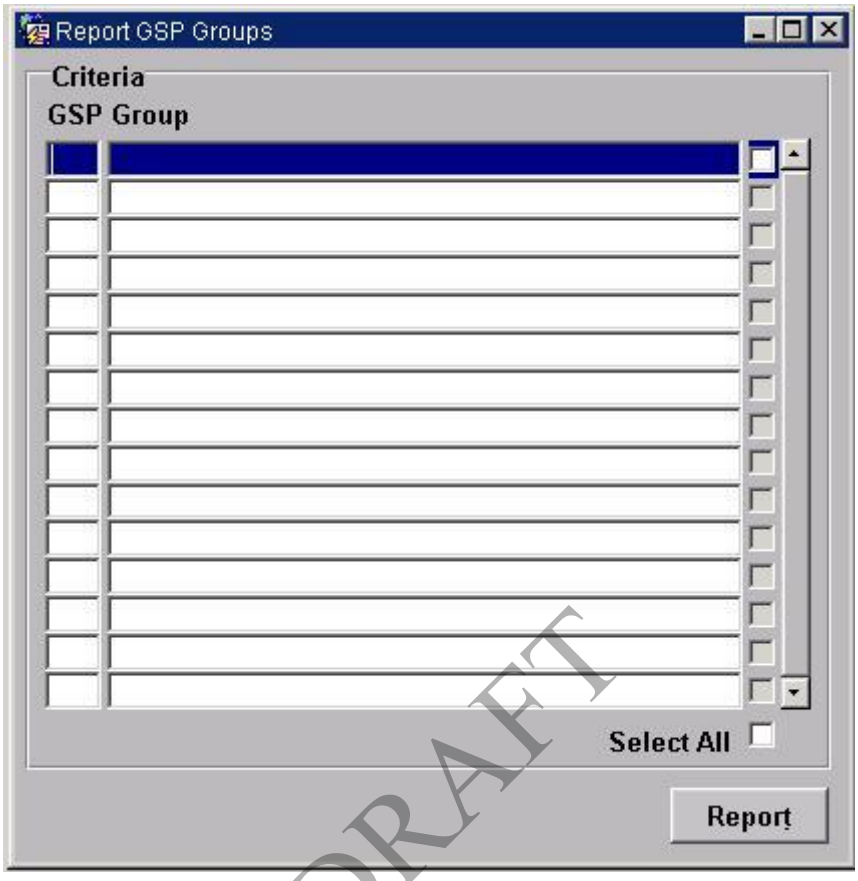
For all other reports:

The order of records in this file will be that of the original log.

10.7 Report GSP Groups

10.7.1 Form

10.7.1.1 Screen layout



10.7.1.2 Screen behaviour

A list of GSP Group Ids and Names is displayed. The user selects one, a range, or all of them to report. The GSP Group Id and name are reported along with the associated Distribution Businesses and appointed ISR Agents.

Specific GSP Groups to be reported on are identified by using Forms 'enter query' mode or via a list of values.

10.7.2 Report

10.7.2.1 Description

This report is invoked by an NHHDA user to allow reporting of the set of valid GSP Groups and their associated Distributor details and ISR Agent Appointments.

10.7.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
GSP Group Id	Range of GSP Group Ids Non-Mandatory

10.7.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_gsp_groups	gsp_group_id gsp_group_name
ndb_isr_agent_apps	isr_participant_id gsp_group_id eff_from_date eff_to_date
ndb_gsp_groups_dis	dis_participant_id gsp_group_id eff_from_settlement_date eff_to_settlement_date
ndb_m_participants (for Distributor, ISR Agent, PRS Agent)	participant_id participant_name

10.7.2.4 Physical Design

This report will use the standard report template.

A list of GSP Group Ids is displayed. The user selects one, a range, or all of them to report.

The GSP Group Id and Name are reported along with all associated Distributor Details and ISR Agent Appointment Details.

The report will be ordered on GSP Group Id for GSP Groups, Effective From Settlement Date (descending) for Distributors and Effective From Date (descending) for ISR Agent Appointments.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.7.2.5 User Roles

Exception Administrator, Auditor

10.7.3 Structure

10.7.3.1 Human Readable Report Layout

```
GSP Groups and Ass Items    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  DD/MM/YYYY HH:MM GMT

User
XXXXXXXX

GSP Group
== ==============================
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Distributor Details
Distributor                                 From Settlement Date To Settlement Date
==== ======================================= =================== ------------------
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY           DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY           DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY           DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY           DD/MM/YYYY

ISR Agent Appointments
ISR Agent                                   From Calendar Date To Calendar Date
==== ======================================= ================== ================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY          DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY          DD/MM/YYYY
```

10.7.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0011001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

GSP - GSP Group			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=GSP
2	GSP Group Id	text(2)	
3	GSP Group Name	text(30)	

DIS - Distributor			
Field	**Field Name**	**Type**	**Comments**

DIS - Distributor			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=DIS
2	Distributor Id	text(4)	
3	Distributor Name	text(40)	
4	Effective From Settlement Date	date	
5	Effective To Settlement Date	date	

ISR - ISR Agent Appointments			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=DIS
2	ISRA Id	text(4)	
3	ISRA Name	text(40)	
4	Effective From Settlement Date	date	
5	Effective To Settlement Date	date	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR GSP Groups      ::= ZHD SEL {SEL} GSP_set {GSP_set} ZPT
GSP_set             ::= GSP {DIS} {ISR}
```

Sorting:

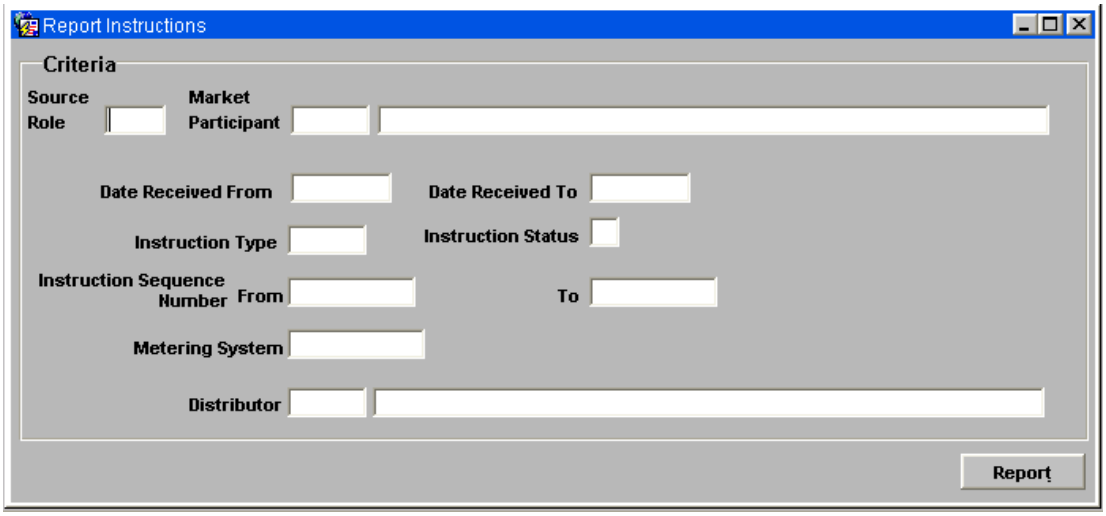
The records in the file are sorted by:

1. GSP Group Id
2. Distributor Effective From Settlement Date (within GSP Group) (descending)
3. ISR Appointment Effective From Settlement Date (within GSP Group) (descending)

10.8 Report Instruction

10.8.1 Form

10.8.1.1 Screen layout



10.8.1.2 Screen behaviour

This form is invoked by an NHHDA user to allow reporting of instructions received by the system. The user will enter the appropriate query criteria and press the report button to invoke the "Report Instructions" Report.

The user may select any combination of the following:

- Instruction Source and sequence number range
- Received date range
- Instruction type
- Instruction Subject (instruction subjects are all metering systems, except for the "PRS Refresh" instruction which acts on a Distribution Business)
- Instruction Status

Enterable fields are:-

- Source (id) which must be a valid market participant id, the Source name is automatically completed by the system. A list of valid values is available.
- Sequence Number which must be a valid positive number
- Date Received range which must be equal to or earlier than today's date and in standard date format
- Instruction type which must be a valid type, a lists of valid values is provided.
- Instruction status which must be selected from the drop down list.
- Metering system which must be a valid metering system id.

- Distributor id which must be a valid distributor id.

The user has the option of entering a Metering System Id or a Distributor Id since they are both mutually exclusive in this context (Note that if both a Metering System and a Distribution Business are entered, only non-refresh instructions will be included, furthermore the report will be empty if the metering system is not associated with the specified Distribution Business).

To run the report the user presses the Report button.

10.8.2 Report

10.8.2.1 Description

This report is invoked by a NHHDA user, reporting instructions and any related instruction reasons associated with that instruction.

10.8.2.2 Input Parameters

The following parameters will be passed to the report using the generic parameter entry Form:

Parameter	Parameter Type
Instruction Source	Single Instruction Source Non-Mandatory
Instruction Sequence Number	Range of Sequence Numbers Non-Mandatory
Received Date	Range of Dates Non-Mandatory
Instruction Type	Single Instruction Type Non-Mandatory
Instruction Subject	Single Instruction Subject Non-Mandatory
Instruction Status	Single Instruction Status Non-Mandatory

10.8.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_instructions	instr_seq_no file_id instr_stat metering_system_id instr_type dist_participant_id significant_date
cdb_ref_values	description domain_code
cdb_file_reference	file_id received_time market_role participant_id
ndb_instruction_status_reason	instr_seq_no instr_stat_reason instr_stat_data data_agg_action_state

10.8.2.4 Physical Design

This report will use the standard report template.

For each instruction meeting the selection criteria, the following items are displayed: date received, source, sequence number, instruction type, subject (metering system id or distributor Id and name), significant date and instruction status (note: instruction type and instruction state codes will be translated to meaningful names).

Also all instruction reasons will be displayed for each instruction, this will include instruction status reason, instruction status date, data aggregation action state (note: instruction status reason codes will be translated to meaningful names).

The report will be ordered by Date Received (descending).

The report header will only be displayed on the first page of the report. Column headings for repeating groups and context information will be displayed on each page of the report.

10.8.2.5 User Roles

Exception Administrator, Auditor

10.8.3 Structure

10.8.3.1 Human Readable Report Layout

```
Instructions                                        XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                                DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
Instruction Source
XXX XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Date Received From
DD/MM/YYYY
Date Received To
DD/MM/YYYY
Instruction Type
XXXXXXXXXX
Instruction Status
XXXXXXXXXX
Instruction Sequence From
XXXXXXXXXXXX
Instruction Sequence To
XXXXXXXXXXXX
Metering System
XXXXXXXXXXXXX
Distributor
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Date       Source                                Sequence Type       Status     Significant Date Subject
========== ================================= ============ ========== ========== ================ ===========
DD/MM/YYYY XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXX XXXXXXXXXX DD/MM/YYYY       XXXXXXXXXXX
Status Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Action State XXXXXXXXXXXXXXXXXXXXXXXXX
Status Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Action State XXXXXXXXXXXXXXXXXXXXXXXXX
Status Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Action State XXXXXXXXXXXXXXXXXXXXXXXXX
Status Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Action State XXXXXXXXXXXXXXXXXXXXXXXXX
```

10.8.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0016001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

INS - Instructions			
Field	**Field Name**	**Type**	**Comments**
1	Record type	text(3)	=INS
2	date received	date	
3	source	text(33)	
4	sequence no	integer(12)	
5	Instruction Type	text(10)	
6	Instruction Status	text(10)	
7	Significant Date	date	
87	Subject	text(11)	Metering System Id or Distributor Id and Name

INR - Instruction Reasons			
Field	**Field Name**	**Type**	**Comments**
1	Record type	text(3)	=INR
2	Instruction Status Reason	text(40)	Description of instruction status reason from cdb_ref_values (INSR)

INR - Instruction Reasons			
Field	**Field Name**	**Type**	**Comments**
3	Instruction Status Data	text(40)	If database field exceeds 40 a second INR record is required - this will contain the additional text. In this case the other fields in this record will be null
4	Data Aggregation Action State	text(50)	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR IP ::= ZHD SEL {SEL} {INS {INR}} ZPT
```

Sorting:

The records in the file are sorted by:

1. Market Role (DC / PRS)
2. Participant Id
3. Instruction Sequence Number (descending)

10.9 Report Line Loss Factor Class (obsolete)

Note that this report has been combined with Report Distributors and Associated Items (see Section 10.5)

10.10 Report Metering System and Associated Items

10.10.1 Form

10.10.1.1 Screen layout

10.10.1.2 Screen behaviour

This function is invoked by the NHHDA user to allow reporting of all the information held about a Metering System for a selected settlement date.

The user enters a Metering System and Settlement Date for which they wish to see the information.

The supplier Registration in effect for the Metering System on the entered date is determined and a list of all the Data Collectors appointed during the Registration is displayed and the user selects one to report.

A report is produced when the user presses the report button reporting the items associated to the Metering System on the Date according to the PRS Agent and the specified Data Collector. (Report Metering Systems and Associated Items).

Once a list of Data Collectors has been retrieved the user is allowed to select only one Data Collector to report on.

10.10.2 Report

10.10.2.1 Description

This function is invoked by the NHHDA user to allow reporting of all the information held about a Metering System for a selected settlement date.

A report is produced reporting the items associated to the Metering System on the Date according to the PRS Agent and the specified Data Collector.

10.10.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Metering System Id	Single Metering System Mandatory

Parameter	Parameter Type
Date (for Supplier Registration)	Single Date Mandatory
Data Collector Id	Single Data Collector Mandatory

10.10.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_std_sett_cfgs	std_sett_config_id configuration_desc
ndb_vsscpcs	profile_class_id std_sett_config_id
ndb_profile_classes	profile_class_id profile_class_desc
ndb_measure_reqs	std_sett_config_id t_p_regime_id
ndb_gsp_groups	gsp_group_id gsp_group_name
ndb_av_frac_y_cons	av_frac_y_cons eff_from_sett_date gsp_group_id profile_class_id std_sett_config_id t_p_regime_id

10.10.2.4 Physical Design

This report will use the standard report template.

A list of Metering System Ids is displayed, and the user selects one to report. (The use of wildcards is available to limit the number of Metering System Ids returned).

The user also enters the date for which they wish to see the information.

The supplier Registration in effect for the Metering System on the entered date is determined and a list of all the Data Collectors appointed during the Registration is displayed and the user selects one to report.

The output consists of the Metering System Id, Supplier Id and Name and Data Collector Id and Name, together with details of the entities selected below. One occurrence of each of the following entities is selected, where its effective date is the latest one prior or equal to the entered date:

Settlement Configuration & Settlement Configuration (DC) Metering System Profile Class and Metering System Profile Class (DC)

Metering System Line Loss Factor Class

Metering System GSP Group and Metering System GSP Group (DC)

Metering System Energisation Status and Metering System Energisation Status (DC)

Metering System Measurement Class and Metering System Measurement Class (DC)

Registration and Registration (DC) (Registration already selected).

Ordering is in alphabetical order for each item, Data Aggregator Appointments and Data Collector Appointments will be in Date Effective From (descending) order.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.10.2.5 User Roles

Exception Administrator, Market Domain Data Administrator

10.10.3 Structure

10.10.3.1 Human Readable Report Layout

```
MS and Associated Items     XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
Metering System
XXXXXXXXXXXXX
Settlement Date
DD/MM/YYYY
Data Collector
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                          Source Item
Item                      Role   Id   Description
========================= ====== ==== ========================================
GSP Group                 PRS    XX   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                          DC     XX   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Supplier                  PRS    XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                          DC     XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Profile Class             PRS    XX   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                          DC     XX   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
SSC                       PRS    XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                          DC     XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Measurement Class         PRS    X    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                          DC     X    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Energisation Status       PRS    X    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
                          DC     X    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Line Loss Factor Class    PRS    XXX  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Distributor               PRS    XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```


10.10.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0015001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

MSD - Metering System Detail			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MSD
2	Item Name	text(25)	Optional - null if same as previous record
3	View	text(3)	"PRS" or "DC"
4	Id	text(4)	of Item
5	Description or Name	text(50)	of Item

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR MS    ::= ZHD SEL {SEL} {MSD} ZPT
```

Sorting:

The records in the file are ordered as follows:

1. GSP Group PRS
2. GSP Group DC
3. Supplier PRS
4. Supplier DC
5. Profile Class PRS
6. Profile Class DC
7. SSC PRS
8. SSC DC
9. Measurement Class PRS
10. Measurement Class DC

11.Energisation Status PRS

12.Energisation Status DC

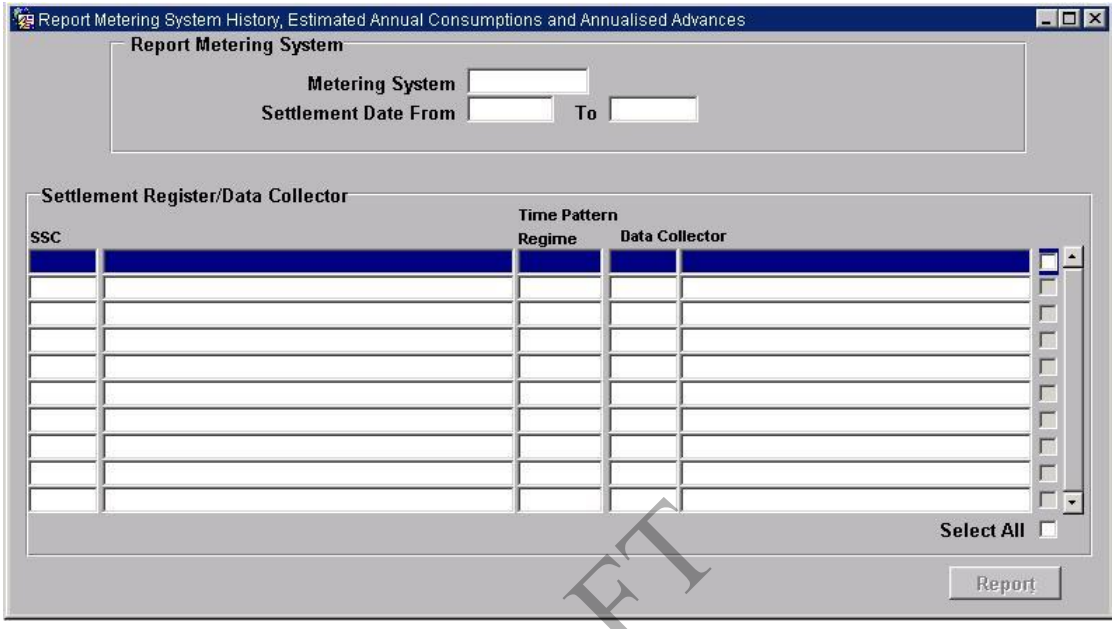
13.Line Loss Factor Class PRS

14.Distributor (second part of key of Line Loss Factor Class)

10.11 Report Metering System History, EACs and AAs

10.11.1 Form

10.11.1.1 Screen layout



10.11.1.2 Screen behaviour

This form allows an NHHDA user to report on Metering System History, Estimated Annual Consumptions and Annualised Advances.

The user enters a Metering System and Settlement Date From and To in the first block which returns a list of Settlement Register and Data Collector combinations for the Metering System entered.

The user then selects one, a range, or all Settlement Register / Data Collector combinations by clicking the corresponding check-box(es) or Select All and then presses the report button which passes parameters to the 'Report Metering System History, EACs and AAs' report. If no Settlement Register/Data Collector details are retrieved, although Metering System History data is present, the report is generated as normal, including the Settlement Register/Data Collector titles. In this instance the Settlement Register/Data Collector titles are shown but without any data.

10.11.1.3 Description

The first block is a Control block which consists of the Metering System item, Settlement Date From and To.

The second block is based on the NDB_REGISTER_CONS table and consists of the following database columns: Standard Settlement Configuration, Time Pattern Regime and Data Collector.

10.11.1.4 Form structure

Field Name	Description
Block: *REG_CONS*	**Table:** NDB_REGISTER_CONS
Standard Settlement Configuration Id	(std_sett_config_id) Base-table, queriable
Configuration Description	Non-base table lookup (NDB_M_PARTICIPANTS) of Standard Settlement Configuration Id. Non-base table, non-updatable
Time Pattern Regime Id	(t_p_regime_id) Base-table, queriable, insert allowed
Data Collector Id	(dc_participant_id) Base-table, queriable
Data Collector Name	Non-base table lookup (NDB_M_PARTICIPANTS) of Data Collector Name Non-base table, non-updatable
Metering System	Number item, Non-Base Table, Number, Mandatory, Enterable, Query disallowed.

10.11.1.5 Action on Form Load

None. Default Forms functionality.

10.11.1.6 Action on Query

Disabled

10.11.1.7 Action on Update

Disabled

10.11.1.8 Action on Insert

Disabled

10.11.1.9 Action on Delete

Disabled

10.11.1.10 Action on Button

Report_But

This button has a WHEN_BUTTON_PRESSED trigger associated with it. This trigger will pass the parameters for reporting to the 'Report Metering System History, EACs and AAs' report.

10.11.2 Report

10.11.2.1 Description

This form allows an NHHDA user to report on Metering System Estimated Annual Consumptions and Annualised Advances.

10.11.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Metering System Id	Metering System for which EACs and AAs will be reported. Mandatory
Settlement date From	Settlement Date (lowest of range) from which to report Mandatory
Settlement date To	Settlement Date (highest of range) to which to report Mandatory
Standard Settlement Configuration Id	Standard Settlement Configuration Id which is part of the Settlement Register selected by the user. Optional
Time Pattern Regime Id	Time Pattern Regime Id which is part of the Settlement Register selected by the user. Optional
Data Collector Id	Data Collector assigned to the chosen Settlement Register Optional

10.11.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_register_cons	Metering System Id
	std_sett_config_id
	t_p_regime_id
	dc_participant_id
	eff_from_sett_date
	eff_to_sett_date
	EAC
	AA
ndb_m_participants	participant_id
	participant_name
	dist_short_code
ndb_metering_sys_x	metering_system_id

Tables	Columns
ndb_ms_prs_dets_x	energisation_stat gsp_group_id llf_class_id measure_class_id profile_class_id std_sett_config_id
ndb_ms_dc_dets_x	energisation_stat gsp_group_id llf_class_id measure_class_id profile_class_id std_sett_config_id
ndb_registrations	eff_from_sett_date metering_system_id sup_participant_id
ndb_gsp_groups	gsp_group_id gsp_group_name
ndb_llf_classes	llf_class_id llf_class_desc dis_participant_id
ndb_profile_classes	llf_class_id llf_class_desc
ndb_data_agg_apps	metering_system_id eff_from_sett_date eff_to_sett_date supp_eff_fr_sett_dt
ndb_dc_apps	sup_eff_fr_sett_dt metering_system_id eff_from_date dc_partition_id

10.11.2.4 Physical Design

This report will use the standard report template.

When reporting only on a metering system's history, the report will display GSP Group, Supplier, Profile Class, Standard Settlement Configuration, Measurement Class, Energisation Status, Line Loss factor Class and Distributor for the Metering System and Settlement Date range entered by the user.

When reporting on EACs and AAs, once the user has entered the report criteria (Metering System Id and Settlement Register / Data Collector combination) the report output will consist of the Metering System's History data as above, and the Settlement Date Effective, Settlement Date To, Annualised Advance and Estimated Annual Consumption.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on

each page of the report.

10.11.2.5 User Roles

Exception Administrator, Auditor

10.11.3 Structure

10.11.3.1 Human Readable Report Layout

```
MS History, EACs and AAs                XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
Metering System
XXXXXXXXXXXXX
Settlement Date From
DD/MM/YYYY
Settlement Date To
DD/MM/YYYY

                                                    Time
Standard Settlement Configuration                   Pattern Data Collector
==== ================================================ ======= ==== ========================================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX    XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Settlement Date To                Annualised  Estimated Annual
Effective       Settlement Date Advance (Kwh) Consumption (KWh)
=============== =============== ============= ================
DD/MM/YYYY      DD/MM/YYYY      99999999999.9     99999999999.9
DD/MM/YYYY      DD/MM/YYYY      99999999999.9     99999999999.9
DD/MM/YYYY      DD/MM/YYYY      99999999999.9     99999999999.9
DD/MM/YYYY      DD/MM/YYYY      99999999999.9     99999999999.9

Source                                  From
Role Id   Name                          Settlement Date GSP Group
==== ==== ============================= =============== == ==============================
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Source                                  From
Role Id   Name                          Settlement Date Supplier
==== ==== ============================= =============== ==== ========================================
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Appointments for Registration starting DD/MM/YYYY

Data Aggregator Appointments
From            To
Settlement Date Settlement Date
=============== ===============
DD/MM/YYYY      DD/MM/YYYY
DD/MM/YYYY      DD/MM/YYYY
DD/MM/YYYY      DD/MM/YYYY
DD/MM/YYYY      DD/MM/YYYY

Data Collector Appointments
Data Collector                      From Calendar Date
==== ============================== ==================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY

Source                                  From
Role Id   Name                          Settlement Date Profile Class
==== ==== ============================= =============== == ============================================
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Source                                  From
Role Id   Name                          Settlement Date Standard Settlement Configuration
==== ==== ============================= =============== ==== ============================================
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Source                                  From
Role Id   Name                          Settlement Date Measurement Class
==== ==== ============================= =============== = ============================
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      X XXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      X XXXXXXXXXXXXXXXXXXXXXXXXXXXX

Source                                  From
Role Id   Name                          Settlement Date Energisation Status
==== ==== ============================= =============== = ============================
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      X XXXXXXXXXXXXXXXXXXXXXXXXXXXX
DC   XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY      X XXXXXXXXXXXXXXXXXXXXXXXXXXXX

Source
Role Id   Name
==== ==== =============================
PRS  XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX

Effective
From Date  LL Description                    Distributor
========== == ============================== ==== ==============================
DD/MM/YYYY XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

Note that this report does *not* output any selection criteria in the report header apart from the metering system id. The headings containing Standard Settlement Configuration, Time Pattern Regime Id and Data Collector appear for each selected item and their presence implies that they were selected.

10.11.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0044001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

MEH - Metering EAC/AA Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MEH
2	Standard Settlement Configuration Id	text(4)	
3	Standard Settlement Configuration Description	text(50)	
4	Time Pattern Regime Id	text(5)	
5	Data Collector Id	text(4)	
6	Data Collector Name	text(40)	

MAA - Metering System Annualised Advance or Estimated Annual Consumption			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MAA
2	Effective From Settlement Date	date	Optional - null if same as previous record
3	Effective To Settlement Date	date	null if record is an EAC
4	Annualised Advance	decimal (12,1)	null if record is an EAC
5	Estimated Annual Consumption	decimal (12,1)	null if record is an AA

MGG - Metering System GSP Groups			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MGG
2	Source Role	text(3)	"PRS" or "DC"
3	Source Id	text(4)	
4	Source Name	text(40)	
5	Effective From Settlement Date	date	
6	GSP Group Id	text(2)	
7	GSP Group Name	text(30)	

MSR - Metering System Supplier Registrations			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MSR
2	Source Role	text(3)	"PRS" or "DC"
3	Source Id	text(4)	
4	Source Name	text(40)	
5	Effective From Settlement Date	date	
6	Supplier Id	text(4)	
7	Supplier Name	text(40)	

XXX - Metering System Data Separator			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=XXX

MAH - Metering System Appointments Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MAH
2	Registration Effective From Settlement Date	date	

MDA - Metering System Data Aggregator Appointments			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MDA
2	Data Aggregator Appointment Effective From Settlement Date	date	

MDA - Metering System Data Aggregator Appointments			
Field	**Field Name**	**Type**	**Comments**
3	Data Aggregator Appointment Effective To Settlement Date	date	

MCA - Metering System Data Collector Appointments			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MCA
2	Data Collector Id	text(4)	
3	Data Collector Name	text(40)	
4	Data Collector Appointment Effective From Settlement Date	date	

MPC - Metering System Profile Classes			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MPC
2	Source Role	text(3)	"PRS" or "DC"
3	Source Id	text(4)	
4	Source Name	text(40)	
5	Effective From Settlement Date	date	
6	Profile Class Id	text(4)	
7	Profile Class Description	text(50)	

MSC - Metering System Settlement Configurations			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MSC
2	Source Role	text(3)	"PRS" or "DC"
3	Source Id	text(4)	
4	Source Name	text(40)	
5	Effective From Settlement Date	date	
6	Standard Settlement Configuration Id	text(4)	
7	Standard Settlement Configuration Description	text(50)	

MMC - Metering System Measurement Classes			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MMC
2	Source Role	text(3)	"PRS" or "DC"
3	Source Id	text(4)	
4	Source Name	text(40)	
5	Effective From Settlement Date	date	
6	Measurement Class Id	text(1)	
7	Measurement Class Description	text(30)	

MES - Metering System Energisation Status

Field	Field Name	Type	Comments
1	Record Type	text(3)	=MES
2	Source Role	text(3)	"PRS" or "DC"
3	Source Id	text(4)	
4	Source Name	text(40)	
5	Effective From Settlement Date	date	
6	energisation Status Id	text(1)	
7	Energisation Status Description	text(30)	

MLP - Metering System Line Loss Factor Class PRS Agent			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MLP
2	Source Role	text(3)	"PRS" or "DC"
3	Source Id	text(4)	
4	Source Name	text(40)	

MLL - Metering System Line Loss Factor Classes			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=MLL
2	Effective From Settlement Date	date	
3	Line Loss Factor Class Id	integer(3)	
4	Line Loss Factor Class Description	text(40)	
5	Distributor Id	text(4)	
6	Distributor Name	text(40)	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR MS    ::= ZHD SEL {SEL} ZPT
```

```
NBR MS History::= ZHD SEL {SEL} {MEH {MAA}} {MGG} {MSR}
                  {XXX MAH {MDA} {MCA}} {MPC} {MSC}
                  {MMC} {MES} {MLP {MLL}} ZPT
```

Sorting:

The records in the file are sorted as follows:

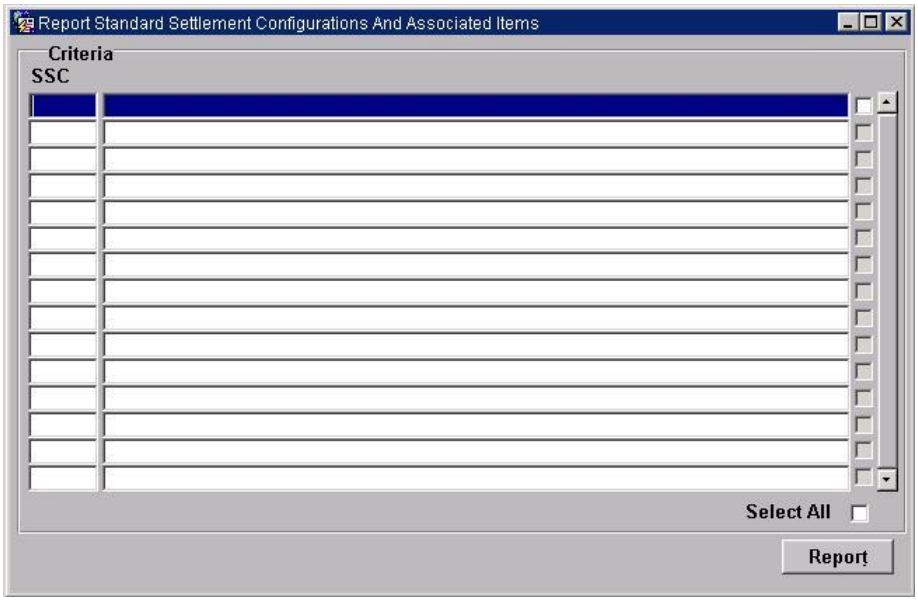
1. Standard Settlement Configuration Id
2. Time Pattern Regime Id
3. Data Collector Id
4. Consumption Effective From Settlement Date (descending)

1.

10.12 Report SSC and Associated Items

10.12.1 Form

10.12.1.1 Screen layout



10.12.1.2 Screen behaviour

This function allows reporting of a set of Standard Settlement configurations with associated measurement requirements, valid settlement configuration profile classes and average fractions of yearly consumptions.

A list of standard settlement configuration Ids and descriptions is displayed. The user selects one, a range, or all of them to report.

Specific standard settlement configurations to be reported on are identified by using Forms 'enter query' mode or via a list of values.

This form is ordered by standard settlement configuration Ids.

10.12.2 Report

10.12.2.1 Description

This report allows an NHHDA user to report a set of Standard Settlement Configurations with associated Measurement Requirements, Valid Settlement Configuration Profile Classes and Average Fractions of Yearly Consumptions.

10.12.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Standard Settlement Configuration Id	Range of Standard Settlement Configuration Ids Non-Mandatory

10.12.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_std_sett_cfgs	std_sett_config_id configuration_desc
ndb_vsscpcs	profile_class_id std_sett_config_id
ndb_profile_classes	profile_class_id profile_class_desc
ndb_measure_reqs	std_sett_config_id t_p_regime_id
ndb_gsp_groups	gsp_group_id gsp_group_name
ndb_av_frac_y_cons	av_frac_y_cons eff_from_sett_date eff_to_sett_date gsp_group_id profile_class_id std_sett_config_id t_p_regime_id

10.12.2.4 Physical Design

This report will use the standard report template.

A list of Standard Settlement Class Ids is displayed. The user selects one, a range, or all of them to report.

For each selected Standard Settlement Configuration, the Id and Description are output. For each Valid Settlement Configuration Profile Class the Profile Class Id and Description are output. For each Measurement Requirement the Time Pattern Regime Id is output. All Average Fractions of Yearly Consumption are output, ordered by Profile Class, GSP Group, Time Pattern Regime and Effective From Settlement Date.

The report will be ordered by SSC Id, Profile Class Id for Valid Profile Classes, Time Pattern Regime for Valid Measurement Requirements and Profile Class Id, GSP Group id, and Effective From Date (descending) for the associated SSC items.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.12.2.5 User Roles

Exception Administrator, Auditor

10.12.3 Structure

10.12.3.1 Human Readable Report Layout

```
Standard Settlement Config  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  DD/MM/YYYY HH:MM GMT

User
XXXXXXXX

Standard Settlement Configuration
==== ==================================================
XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Profile Class
== ================================================
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Measurement Requirements
(Time Pattern Regimes)
========================
XXXXX
XXXXX
XXXXX

Profile                                    Time     From            To
Class   GSP Group                          Pattern  Settlement Date Settlement Date AFYC
======= == ================================ ======== =============== =============== ========
     XX XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX    DD/MM/YYYY      DD/MM/YYYY      0.999999
                                           XXXXX    DD/MM/YYYY      DD/MM/YYYY      0.999999
     XX XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXX    DD/MM/YYYY      DD/MM/YYYY      0.999999
                                           XXXXX    DD/MM/YYYY      DD/MM/YYYY      0.999999
```

10.12.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0012001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

SSC - Standard Settlement Configuration			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SSC
2	SSC Id	text(4)	
3	SSC Description	text(50)	

VPC - Valid Profile Classes			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=VPC
2	Profile Class Id	integer(2)	
3	Profile Class Description	text(50)	

VMR - Valid Measurement Requirements			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=VMR
2	Time Pattern Regime Id	text(5)	

AFY - Average Fraction of Yearly Consumption			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=AFY
2	Profile Class Id	integer(2)	Optional - null if same as previous record
3	GSP Group Id	text(4)	Optional - null if GSP group and Profile Class same as previous record
4	GSP Group Name	text(50)	Optional - null if GSP group and Profile Class same as previous record
5	Time Pattern Regime Id	text(5)	Optional - null if GSP group, Profile Class and Time Pattern Regime same as previous record
6	Effective From Settlement Date	date	
7	Effective To Settlement Date	date	
8	Average Fraction of Yearly Consumption	decimal (7,6)	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR SSC        ::= ZHD SEL {SEL} SSC_set ZPT
SSC_set        ::= SSC {VPC} {VMR} {AFY}
```

Sorting:

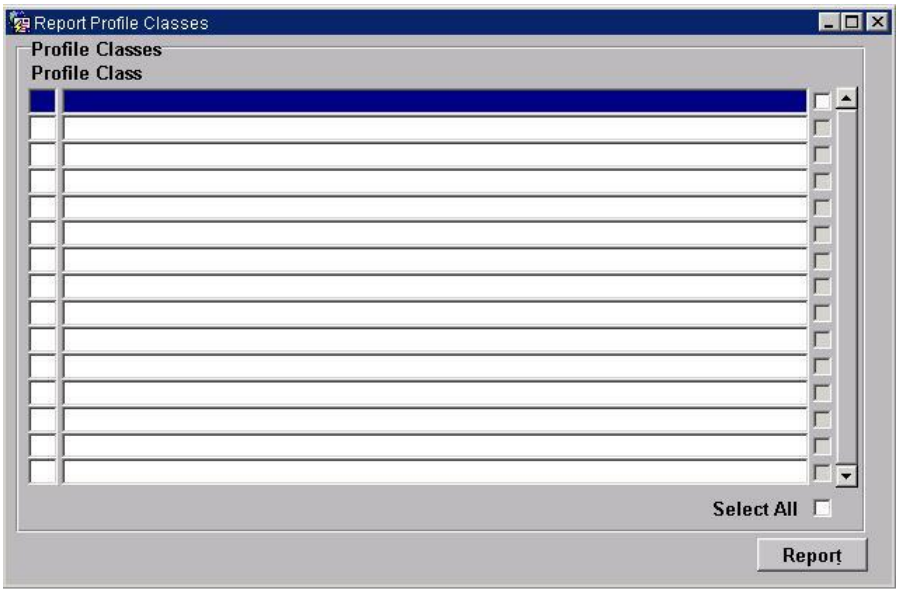
The records in the file are ordered as follows:

1. Standard Settlement Configuration Id
2. Profile Class Id (Profile Class within SSC)
3. Time Pattern Regime Id (Measurement Requirements within SSC)
4. Profile Class Id
5. GSP Group Id
6. Effective From Settlement Date (descending)
7. Time Pattern Regime Id

10.13 Report Profile Class and Associated Items

10.13.1 Form

10.13.1.1 Screen layout



10.13.1.2 Screen behaviour

This screen will allow an NHHDA user to report on Profile Classes and associated GSP group Researched Default EACs (Note that for historical reasons - CR487 - in the report, "Researched Default EAC" is referred to as "Average EAC"). It will invoke the 'Report Profile Classes' report.

The user will select one, a range or all profile classes listed by clicking on the corresponding check-box or by clicking on the 'Select All' check-box to select all Profile Classes.

Once the user is satisfied with their request they will then press the Report button which will invoke the Report Profile Classes report.

10.13.2 Report

10.13.2.1 Description

This report will allow an NHHDA user to report on Profile Classes. The report will display each Profile Class and GSP Group Profile Class Average.

10.13.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Profile Class	The Profile Class the report is based on. Mandatory

10.13.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_profile_classes	profile_class_id
	profile_class_desc
ndb_gspg_pc_av_eac	gsp_group_id
	profile_class_id
	reasearched_av_eac
	eff_from_sett_date
ndb_gsp_groups	gsp_group_id
	gsp_group_name

10.13.2.4 Physical Design

This report will use the standard report template.

This report is based on three tables, NDB_PROFILE_CLASSES, NDB_GSPG_PC_AV_EAC and NDB_GSP_GROUPS. The report will display each Profile Class and Profile Class Description together with each GSP Group, Effective Settlement Date and Researched Default EAC.

The report will be ordered by Profile Class and GSP Group.

The User name and query criteria will only be displayed on the first page of the report. The Report Title, Organisation, Time of Report Run and column headings for repeating groups and context information will be displayed on each page of the report.

10.13.2.5 User Roles

Exception Administrator, Auditor

10.13.3 Structure

10.13.3.1 Human Readable Report Layout

```
Profile Class              XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  DD/MM/YYYY HH:MM GMT

User
XXXXXXXX

Profile Class
== ==================================================
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                 From            Researched Average Estimated
GSP Group                        Settlement Date      Annual Consumption (KWh)
== ============================== =============== ============================
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY                      99999999999.9
                                 DD/MM/YYYY                      99999999999.9
                                 DD/MM/YYYY                      99999999999.9
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY                      99999999999.9
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY                      99999999999.9
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY                      99999999999.9
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY                      99999999999.9
                                 DD/MM/YYYY                      99999999999.9
XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX DD/MM/YYYY                      99999999999.9
```

10.13.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0020001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	market participant id of the non half hourly data aggregator
5	To Role Code	text(1)	null
6	To Participant Code	text(4)	null
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

PCL - Profile Class			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=PCL
2	Profile Class Id	integer(2)	
3	Profile Class Description	text(50)	

PCG - Profile Class GSP Group			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=PCG
2	GSP Group Id		Optional - null if same as previous record
3	GSP Group Name		Optional - null if same as previous record
4	Effective From Settlement Date	date	
5	Researched Average Estimated Annual Consumption	decimal (12,1)	

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR PC    ::= ZHD SEL {SEL} {PCL {PCG}} ZPT
```

Sorting:

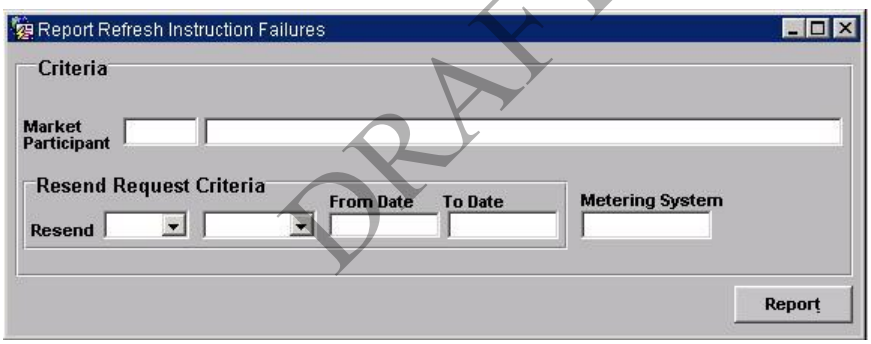
The records in the file are ordered as follows:

1. Profile Class Id
2. GSP Group Id
3. Effective From Settlement Date (descending)

10.14 Report Refresh Instruction Failures

10.14.1 Form

10.14.1.1 Screen layout



10.14.1.2 Screen behaviour

This form allows reporting of Refresh Instruction validation failures which are yet to be resolved.

On entry to the form, the user may enter zero or more of the following selection criteria.

- Refresh Instruction source (a PRS Agent);
- a subject Metering System Id.;
- the status of the Resend Request Flag;
- include or exclude Refresh Instruction Failures with a Resend Request Date between two given dates.

A lists of valid values is available for selecting the Instruction source (a PRS Agent). The Resend Request Flag criteria is set using a list box, as is the include/exclude option of the Resend Request Date criteria.

Having entered the required selection criteria, the user may press the 'Report' button to invoke the 'Refresh Instruction Failures' report.

10.14.2 Report

10.14.2.1 Description

The report details Refresh Instruction validation failures and the reasons for those failures.

10.14.2.2 Input Parameters

The following parameters are passed to the report.

Parameter	Parameter Type
Instruction Source	Single Instruction source (PRS Agent) Optional
Subject Metering System	Single Metering System Id. Optional
Resend Request Flag	Single Resend Request Flag state Optional
Include/Exclude Resend Request Date Range	Single include/exclude flag and a date range Optional

10.14.2.3 Physical Access

The following tables need to be accessed in order to retrieve data for the main body of the report.

Table	Column(s)
cdb_file_reference	file_id market_role participant_id
ndb_refresh_instr_failure	file_id metering_system_id instr_seq_no significant_date resend_request_flag resend_request_date
ndb_refr_instr_failure_reason	file_id metering_system_id seq_no instr_stat_reason instr_stat_data include_flag

10.14.2.4 Physical Design

This report will use the standard report template.

For each Refresh Instruction validation failure meeting the selection criteria, the following items are shown.

- Instruction source.

- Instruction sequence number.
- Significant Date.
- Subject Metering System Id.
- Resend Request Date (if applicable).

This information will be followed by a list of validation failure reasons consisting of the following items.

- Failure reason (translated to meaningful name from internal 2-character code format).
- The failure reason's additional data.
- Include Reason Flag status

The report header will only be displayed on the first page of the report. Column headings for repeating groups and context information will be displayed on each page of the report.

10.14.2.5 User Roles

Exception Administrator

Auditor

10.14.3 Structure

10.14.3.1 Human Readable Report Layout


```
Refresh Instruction Failures             XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                DD/MM/YYYY HH:MM GMT

User
XXXXXXXX
Instruction Source
XXX XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Metering System
XXXXXXXXXXXXX
Resend Request Flag
X
Resend Request Date
XXXXXXX From DD/MM/YYYY To DD/MM/YYYY

Source                                           Sequence     Significant Date Subject       Resend Request Date
=============================================== ============ ================ ============= ===================
XXX XXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX DD/MM/YYYY       XXXXXXXXXXXXX DD/MM/YYYY
Failure Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Include X
Failure Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Include X
Failure Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Include X
Failure Reason XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX Include X
```

10.14.3.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0042001
3	From Role Code	text(1)	=B
4	From Participant Code	text(4)	Market Participant Id of the Non-Half Hourly Data Aggregator
5	To Role Code	text(1)	NULL
6	To Participant Code	text(4)	NULL
7	Creation Time	date/time	Time of file generation

SEL - Selection Criteria			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=SEL
2	Criteria title	text(80)	
3	Criteria value	text(80)	

RIF - Refresh Instruction Failure			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=RIF
2	Instruction Source	text(33)	a PRS Agent
3	Instruction Sequence No.	integer(12)	
4	Significant Date	date	
5	Subject MS	text(11)	Metering System Id.
6	Resend Request Date	date	Resend Request Date (optional)

RFR - Refresh Instruction Failure Reason			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=RFR
2	Failure Reason Code	text(3)	'N' plus instr_stat_reason from ndb_refr_instr_failure_reason.
3	Failure Reason Addtional Data	text(40)	If database field exceeds 40 characters, additional INR records are used - these will contain the additional text. In this case the other fields in this record will be NULL.
4	Include Flag Status	text(1)	Optional.

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of Report File:

```
NBR IP    ::= ZHD SEL {SEL} {RIF {RFR}} ZPT
```

Sorting:

The records in the file are sorted by:

1. Instruction Source
2. Significant Date
3. Instruction Sequence Number (descending)
4. Failure Reason Code
5. Failure Reason Additional Data

10.15 DC Performance Report

10.15.1 Structure

10.15.1.1 Human Readable Report Layout

```
DC Performance Report                          Cognizant                    05/05/2004 14:05 GMT

Settlement Settlement Run         Run
Date       Code       Code     Number
========== ========== ======= =======
01/08/2000 SF         D          1004

Data Collector
==============================
SWEB

Supplier    Def EAC Def Unmetered   Total AA  Total EAC Total Unmetered
            Count   Count           Count     Count     Count
======== ========== ============= ========== ========== ===============
AQES             6             0          4          0               0
BGAS             6             0          2          2               0
FORT             4             0          6          0               0
MANP             4             0          4          2               0
Total           20             0         16          4               0

Data Collector
==============================
YELG

Supplier    Def EAC Def Unmetered   Total AA  Total EAC Total Unmetered
            Count   Count           Count     Count     Count
======== ========== ============= ========== ========== ===============
AQES             2             0          4          2               0
BGAS             2             0          6          2               0
ECON             2             0          2          4               0
Total            6             0         12          8               0


                                    -- End of Report --

                                         Page 1
```

10.15.1.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=L0043001
3	From Role Code	text(1)	=B
4	From Participant Code	text(4)	Market Participant id of the NHHDA
5	To Role Code	text(1)	Null
6	To Participant Code	text(4)	Null
7	Creation Time	date/time	Time of file generation

ZPD - Data File Additional Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPD
2	Settlement Date	date	Settlement Date for Aggregation Run
3	Settlement Code	text(2)	Settlement Code for Aggregation Run
4	Run Type Code	text(2)	= D (Run Type Code for Aggregation Run)
5	Run Number	integer(7)	Run identifier internal to NHHDA
6	GSP Group	text(2)	Null

NDC – Non Half Hourly Data Collector			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= NDC
2	NHHDC id	text(4)	The MSID counts in the subsequent SUP and TOT records are counts of those Metering Systems for which this NHHDC was responsible on the calendar day the report was generated. Mandatory
3	Market Participant Name	text(40)	Mandatory

SUP – Supplier			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= SUP
2	Supplier Id	text(4)	Mandatory
3	SPM Default EAC MSID Count	integer(8)	Mandatory
4	SPM Default Unmetered	integer(8)	Mandatory

SUP – Supplier			
Field	**Field Name**	**Type**	**Comments**
	MSID Count		
5	SPM Total AA MSID Count	integer(8)	Mandatory
6	SPM Total EAC MSID Count	integer(8)	Mandatory
7	SPM Total Unmetered MSID Count	integer(8)	Mandatory

TOT – Total for all Suppliers			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= TOT
2	SPM Default EAC MSID Count	integer(8)	Mandatory
3	SPM Default Unmetered MSID Count	integer(8)	Mandatory
4	SPM Total AA MSID Count	integer(8)	Mandatory
5	SPM Total EAC MSID Count	integer(8)	Mandatory
6	SPM Total Unmetered MSID Count	integer(8)	Mandatory

ZPT - File Trailer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZPT
2	Record count	integer(10)	Number of records in file, including the headers and footer
3	Checksum	integer(10)	

Repeating structure of File:

NHHDC Performance ::= ZHD ZPD { NDC SUP {SUP} TOT } ZPT

Sorting:

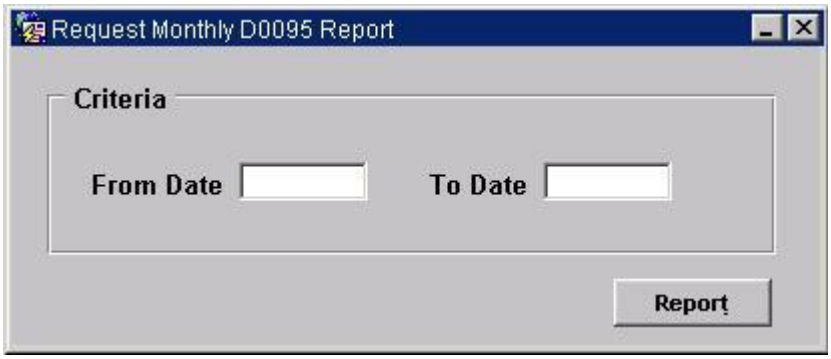
The records in the file are sorted by:

1. Non Half Hourly Data Collector;
2. Supplier.

10.16 Request Monthly D0095 Report

10.16.1 Form

10.16.1.1 Screen Layout



10.16.1.2 Screen behaviour

This form is invoked by the NHHDA user to enter a date restriction criteria for the D0095 exception report monthly summary.

The user enters a creation date range and clicks on the report button.

10.16.2 Report

10.16.2.1 Description

The report produces a monthly summary of the D0095 exception report based on the date range entered.

10.16.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
From Date	File creation From Date Mandatory
To Date	File creation To Date Mandatory

10.16.2.3 Physical Access

The following tables will need to be accessed in order to retrieve data for the main body of the report:

Tables	Columns
ndb_exception_data	supp_id dc_id from_sett_date to_sett_date exception_type file_creation_date msid_count

10.16.2.4 Physical Design

For each Data Collector Exception the following items are shown:

- Supplier Id
- Data Collector Id
- From Settlement Date
- To Settlement Date
- File Creation Date

This information will be followed by a Summary of Metering Systems Ids with D0095 Exception consisting of the following items:

- Type
- Description
- MSID Count

The summary concludes with:

- Total Metering System ID Exceptions

10.16.2.5 User Roles

Exception Administrator, Auditor.

10.16.2.6 Structure

10.16.2.6.1 Human Readable Layout


```
D0095 Summary Report                   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                   DD/MM/YYYY HH:MM GMT

Supplier    Data Collector  From Settlement  To Settlement    File Creation
Id          Id              Date             Date             Date
========    ==============  ===============  =============    ==============
XXXX        XXXX            DD/MM/YYYY       DD/MM/YYYY       DD/MM/YYYY HH:MM

Summary of Metering System Ids with D0095 Exceptions
====================================================

Type    Description                                 MSID Count
====    ===========                                 ==========
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999
XXXX    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              999

        Total Metering System ID Exceptions                999
```

10.16.2.6.2 Machine Readable Layout

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	=ZHD
2	File Type	text(8)	=P0147001
3	From Role Code	text(1)	=B (Non half hourly data aggregator)
4	From Participant Code	text(4)	ID of NHHDA
5	To Role Code	text(1)	=Z(Non-Core – PA Administrator
6	To Participant Code	text(4)	POOL
7	Creation Time	date/time	Time of file generation

10.16.2.6.3

EXH – Exception Header			
1	Record Type	Text(3)	*=EXH*
2	Supplier ID	text(4)	
3	Data Collector ID	text(4)	
4	From Settlement Date	date	
5	To Settlement Date	date	
6	Count of metering System with at least 1 exception of type 01	int(7)	
7	Count of metering System with at least 1 exception of type 02	int(7)	
8	Count of metering System with at least 1 exception of type 03	int(7)	
9	Count of metering System with at least 1 exception of type 04	int(7)	
10	Count of metering System with at least 1 exception of type 05	int(7)	
11	Count of metering System with at least 1 exception of type 06	int(7)	
12	Count of metering System with at least 1 exception of type 07	int(7)	
13	Count of metering System with at least 1 exception of type 08	int(7)	
14	Count of metering System with at least 1 exception of type 09	int(7)	

EXH – Exception Header			
15	Count of metering System with at least 1 exception of type 10	int(7)	
16	Count of metering System with at least 1 exception of type 11	int(7)	
17	Count of metering System with at least 1 exception of type 12	int(7)	
18	Count of metering System with at least 1 exception of type 13	int(7)	
19	Count of metering System with at least 1 exception of type 14	int(7)	
19	Count of metering System with at least 1 exception	int(7)	

Backus – Naur Form

D0095 Summary::=ZHD {EXH} ZPT

Sorting:

The records are sorted by:

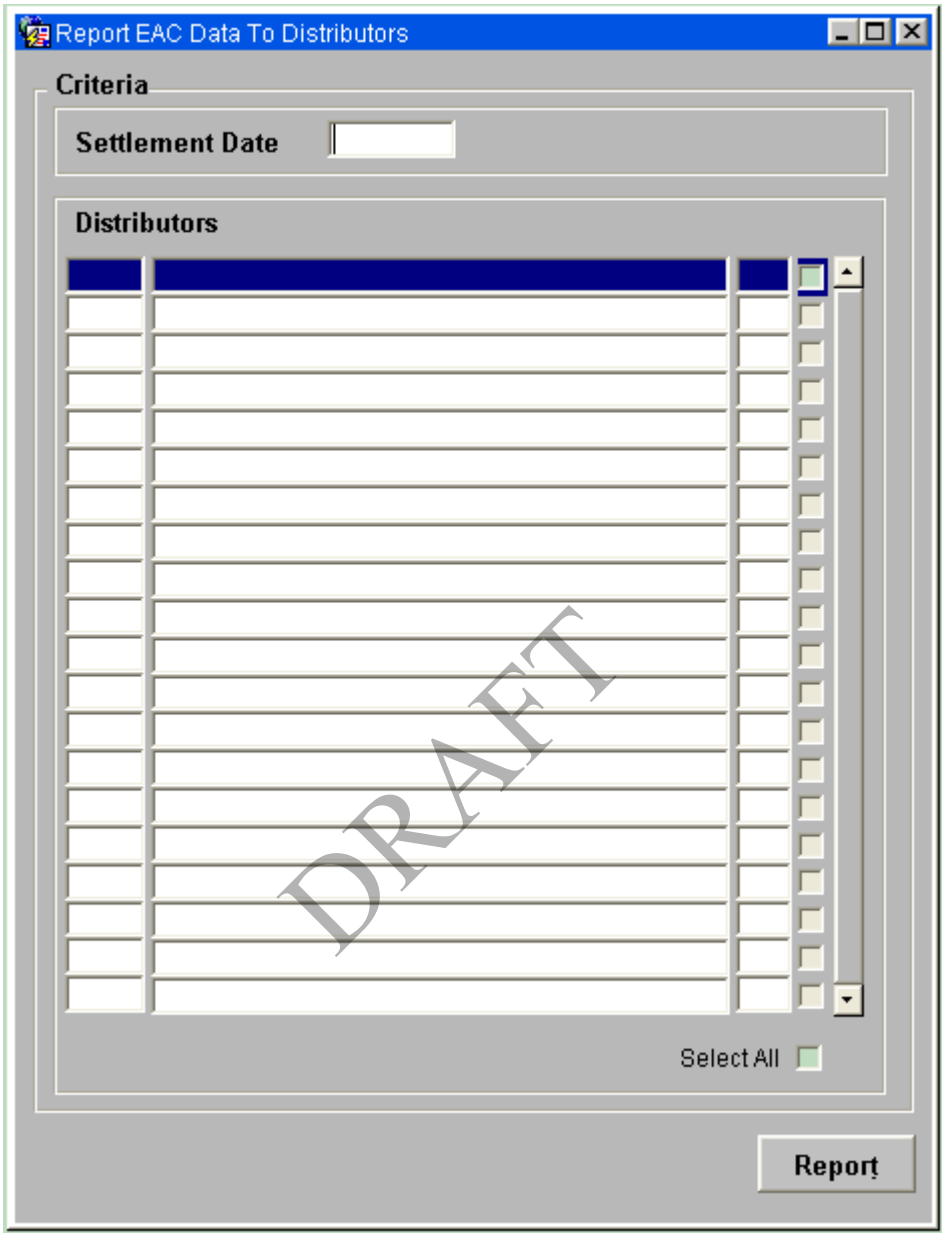
1. Supplier Id

Data Collector

10.17 Request Report On EAC Data For Distributors

10.17.1 Form

10.17.1.1 Screen layout



10.17.1.2 Screen behaviour

A list of participants who have been assigned the role of Distributor is displayed. Each row lists the following details for a Distributor: Id, name and short code. The NHHDA user specifies the date for which data will be reported, and selects one or more Distributors to indicate which Distributors are to receive the EAC Data report.

The report date will default to the current date, and can be changed to date a few days before the current day. The maximum number of days in the past that the report date can be set to is defined by the system parameter "Previous days request limit".

Once the report date and one or more records have been selected the report button will allow the report to be requested. Pressing the report button will result in a message being displayed warning that the report runs on the same exclusive queue as NAR aggregation, and the message gives the option to continue or cancel the report submission. If the user chooses to run the report a request will be submitted scheduling the NDP Report EAC Data for Distributors.

10.17.2 Report

10.17.2.1 Description

The NDP subsystem will produce the P0222 EAC To Distributor Data report and the L0053 EAC To Distributor Exceptions. Only the L0053 will be available to view as a human readable report.

10.17.2.2 Input Parameters

The following parameters will be passed to the report using the parameter entry Form:

Parameter	Parameter Type
Settlement Date	Date
Participant Ids	Range of Participant Ids Mandatory

10.17.2.3 Physical Access

Refer to NDP subsystem Report EAC Data to Distributors.

10.17.2.4 Physical Design

Refer to NDP subsystem Report EAC Data to Distributors.

10.17.2.5 User Roles

Data Aggregation Administrator, Exception Administrator.

10.17.2.6 Structure

10.17.2.6.1 Human Readable Layout

```
Distributor EAC Exception Log   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                DD/MM/YYYY HH:MM GMT

Activity          XXXXXXXX
Settlement Date DD/MM/YYYY
Run Number          XXXXXX

Distributor MSID      Filename
Id          Count
=========== ========= ===============
XXXX        XXXXXXXX  XXXXXXXXXXXXXX
XXXX        XXXXXXXX  XXXXXXXXXXXXXX
XXXX        XXXXXXXX  XXXXXXXXXXXXXX

Metering System
===============
XXXXXXXXXXXX

A01 Appointed Data Collector                                        XXXX
    Registration From Settlement Date                               DD/MM/YYYY
    Data Collector Appointment From Calendar Date                   DD/MM/YYYY
A05 Data Collector                                                  XXXX
    Supplier according to PRS                                       XXXX
    Supplier according to Data Collector                            XXXX
    PRS Data From Settlement Date                                   DD/MM/YYYY
    Data Collector From Settlement Date                             DD/MM/YYYY
A06 Data Collector                                                  XXXX
    Measurement Class according to PRS                              X
    Measurement Class according to Data Collector                   X
    PRS Data From Settlement Date                                   DD/MM/YYYY
    Data Collector From Settlement Date                             DD/MM/YYYY
A07 Data Collector                                                  XXXX
    GSP Group according to PRS                                      XX
    GSP Group according to Data Collector                           XX
    PRS Data From Settlement Date                                   DD/MM/YYYY
    Data Collector From Settlement Date                             DD/MM/YYYY
A08 Data Collector                                                  XXXX
    Profile Class according to PRS                                  XX
    Profile Class according to Data Collector                       XX
    PRS Data From Settlement Date                                   DD/MM/YYYY
    Data Collector From Settlement Date                             DD/MM/YYYY
A09 Data Collector                                                  XXXX
    Energisation Status according to PRS                            X
    Energisation Status according to Data Collector                 X
    PRS Data From Settlement Date                                   DD/MM/YYYY
    Data Collector From Settlement Date                             DD/MM/YYYY
A10 Data Collector                                                  XXXX
    SSC according to PRS                                            XXXX
    SSC according to Data Collector                                 XXXX
    PRS Data From Settlement Date                                   DD/MM/YYYY
    Data Collector From Settlement Date                             DD/MM/YYYY
A12 Metering System Excluded                                        XXXXXXXXXXXXX
    Supplier                                                        XXXX
    Supplier effective from settlement date                         DD/MM/YYYY
    Data Aggregator Appointment effective from settlement date      DD/MM/YYYY

Metering System
===============


A13 GSP Group ID                                                    XX
    Profile Class ID                                                XX
    SSC ID                                                          XXXX
    Time Pattern Regime Id                                          XXXXX
    Metering System Count                                           XXXXXXXX
A14 GSP Group ID                                                    XX
    Profile Class ID                                                XX
    Metering System Count                                           XXXXXXXX
```


10.17.2.6.2 Machine Readable Layout

Refer to NDP subsystem Report EAC Data to Distributors.

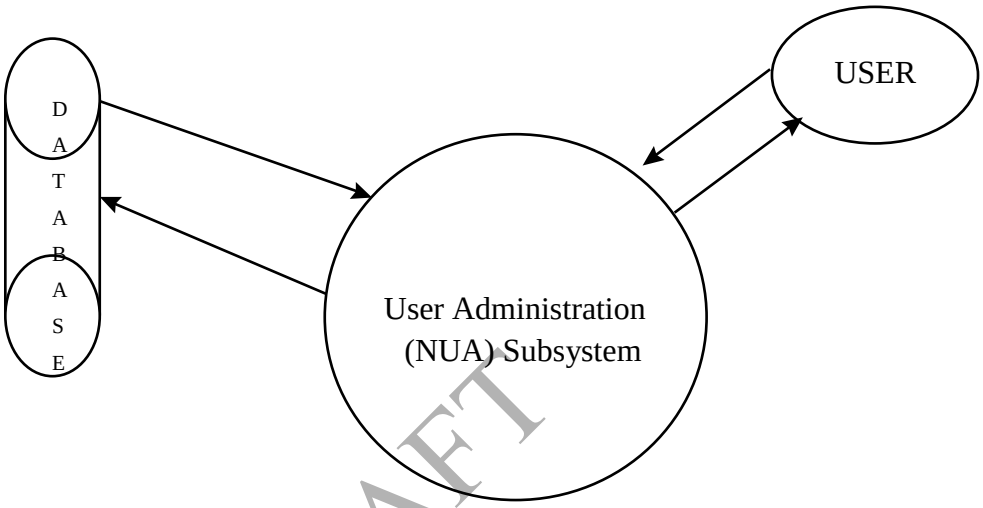
11 Subsystem NUA Specification

11.1 Introduction

This subsystem provides two Oracle forms. One provides a facility for a user to change his own password. The other one provides the NHHDA System Manager with a facility to manage users.

The forms work on standard Oracle database tables. No application database tables are involved. All the work is done directly from the form. No batch process is involved.

11.2 Subsystem Context



11.2.1 User Interface

The interaction between the NHHDA user and the User Administration (NUA) subsystem is achieved via the forms NUA_MSS and NUA_UPC.

The form NUA_MSS is used by the System Manager for database administration and the form NUA_UPC is used by users to change their own passwords.

11.2.2 Database Interface

The interaction between the various forms in this subsystem with the database are handled by Oracle SQL*Net. The data passed to the forms by the user will be defined in the form specification section.

11.2.3 Audit Log Interface

Certain actions performed using the form NUA_MSS will be logged for audit purposes: creation of users; removal of users; granting roles to users; revoking roles from users.

This will be achieved by the form, which will call the common CLG subsystem database procedures ONLINE_AUDIT and AUDIT_DETAIL to write the alterations to the data to an online audit log database table, which periodically get unloaded into audit log files. The details of the user who made the change and the date and time of the amendment are also written to this audit log. The records created by the NUA_MSS forms are identified in the audit log by the “table code” ‘NUR’.

For each audited operation, there will be the following two log entries:

<audit_id>|<timestamp>|'NUR'|<modification_type>|<user id>

<audit_id>|1|<username>

where <audit_id> is a sequence allocated by the system (same in each record); <timestamp> identifies the time when the change was mode;<modification-type> is 'I' (insert), 'U' (update) or 'D' (delete); <user id> is the user who made the change; and <username> is the username of the user being created, modified or deleted.

If the operation is a user creation or modification where roles were changed, there will follow a further record for each role changed:

<audit_id>|<role_seq_num>|<role_op>:<role_name>

where <role_seq_num> is 2 for the first role and increments for each record;<role_op> is 'G' (grant) or 'R' (revoke); and <role_name> is the name of the role being granted or revoked.

11.3 Subsystem Processing

There are no interfaces within this subsystem to discuss.

11.4 Data Usage

The System Data section provides a cross reference for the components of the subsystem and their mode of access.

The Local Data section contains the details of the audit data maintained by this subsystem.

11.4.1 System Data

The details of the standard Oracle tables accessed by this subsystem are as follows:

Form / Procedure	Table / View	Insert	Modify	Delete	Read
FORM NUA_MSS	dba_users	X	X	X	X
	dba_role_privs		X		X
FORM NUA_UPC	dba_users		X		

11.4.2 Local Data

The form NUA_MSS logs certain actions as described in section 11.2.3.

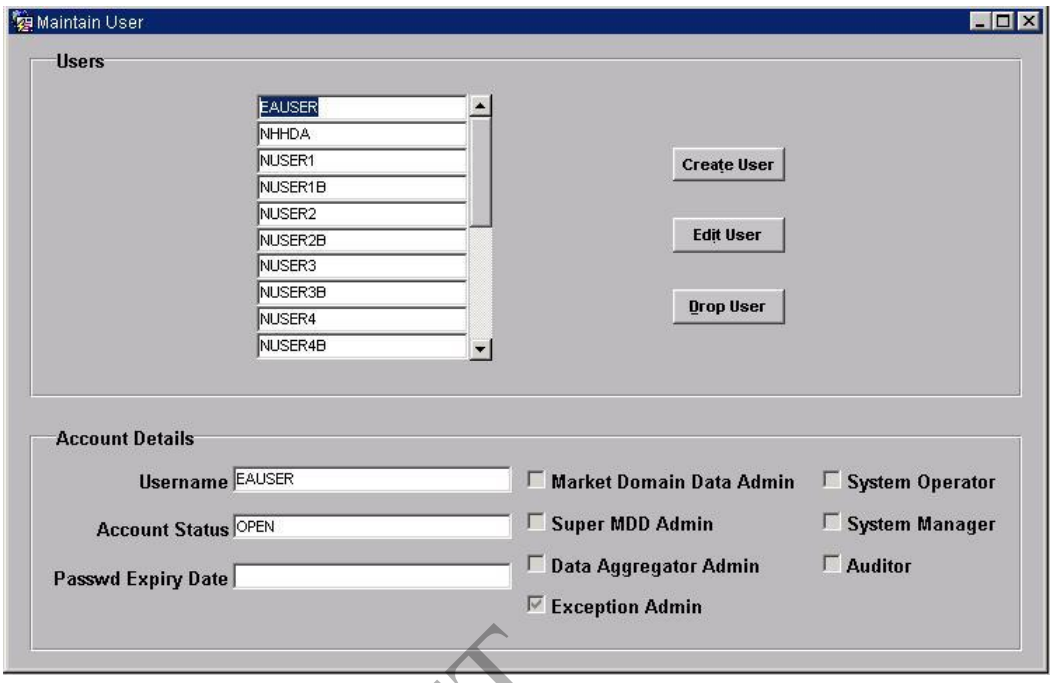
11.5 Procedure Details

The details of the forms and report contained within this subsystem are given in the following sections.

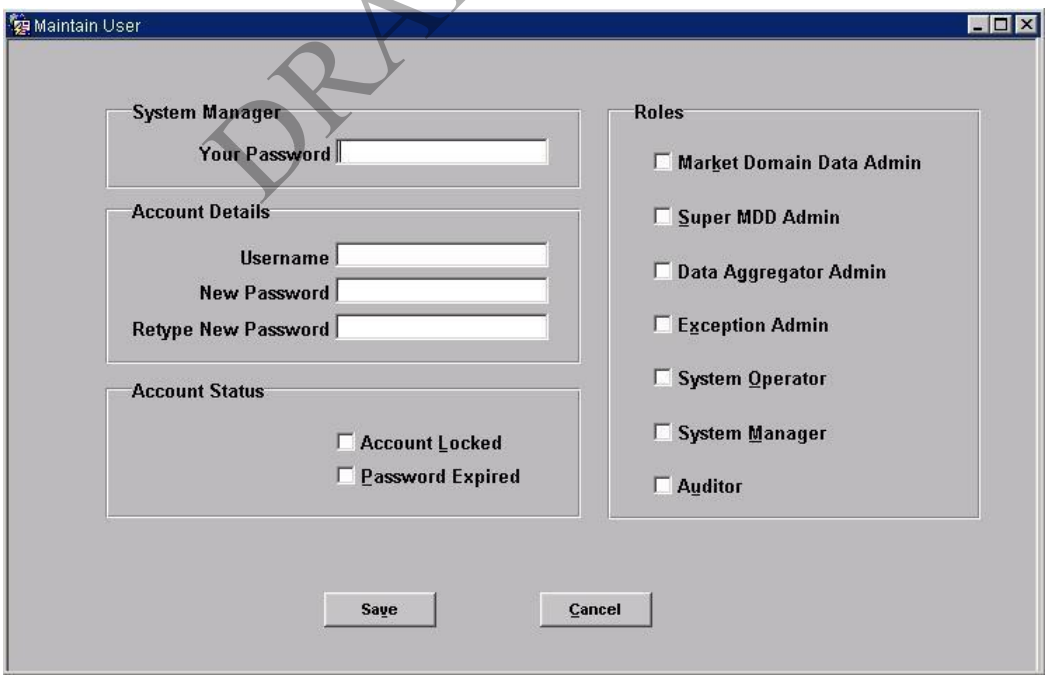
11.5.1 FORM NUA_MSS

11.5.1.1 Screen Layout

The form NUA_MSS is activated from the Maintain System Security menu item.



When the Create User or Edit User button is pressed, a second canvas is displayed:



11.5.1.2 Screen Behaviour

The form NUA_MSS allows NHHDA System Manager users to manage the NHHDA user accounts. Only NHHDA users with the System Manager role can use this form.

The table below outlines all the possible actions associated with the form NUA_MSS:

Form Action On	Form Response
Selection of Form	Display the first three blocks of the form (View Users canvas), and execute a query in the VIEW_USER_MASTER_BLK Block.
Selecting a Row	Populate the VIEW_USER_DETAIL_BLK block with the details for this user.
Moving to Next Record	Move to the next displayed row.
Moving to Previous Record	Move to the previous displayed row.
Tabbing	If on the Add/Edit User canvas, move the cursor to the next field, validating the field just entered as described in the Form Structure section.
Clicking On Scroll Bar	Highlight the record corresponding to the position of the scroll bar.
Function Key	Display mapping of logical functions to physical keys.
Help Key	Invokes NHHDA System help.
Clicking on Create User Button	Display the Add/Edit User canvas, with all the fields blank, and the cursor in the Your Password field.
Clicking on Edit User Button	Display the Add/Edit User canvas, with the fields populated for the user being edited, and the cursor in the Your Password field.
Clicking on Drop User Button	Ask the user to confirm that he wants to drop this user. If the confirmation is made, then drop the user and redisplay the list of users. If the User is one of the standard Oracle users SYS, SYSTEM, OUTLN, DBSNMP or PERFSTAT, then do not allow the user to be dropped.
Clicking on Save Button	Carries out the Add User or Edit User operation, and returns from the Add/Edit User canvas to the View Users canvas, and requeries. Writes entries to the Audit Log if necessary.
Clicking on Cancel Button	Abandons the Add User or Edit User operation, and returns from the Add/Edit User canvas to the View Users canvas.

11.5.1.3 Description

This form allows an NHHDA System Manager user to manage the NHHDA user accounts.

It contains six blocks:

- Tool Bar Block, this block contains short cut buttons, simplifying the selection of allowed functionality of the form.

On the “View Users” canvas:

- VIEW_USER_MAST_BLK Block contains a list of usernames;
- VIEW_USER_DTL_BLK contains details of the user selected on the list;
- VIEW_USER_CTL_BLK contains buttons to add, drop or edit the user selected on the list.

On the "Add/Edit Users" canvas:

- ADD_EDIT_USER_BLK Block contains the details of the user being added or edited;
- ADD_EDIT_USER_CTL_BLK contains Save and Cancel buttons.

Only the NHHDA System Manager user role can access this form.

Form Structure

Field Name	Description
Block: VIEW_USER_MAST_BLK	Block contains a list of users, which is read-only.
Field USER_NAME	dba_users.username
Block: VIEW_USER_DTL_BLK	Block contains details of the selected user. All fields are read-only.
Field USER_NAME	dba_users.username : must be less than or equal to 8 characters long in NHHDA
Field ACCOUNT_STATUS	dba_users.account_status
Field EXPIRY_DATE	dba_users.expiry_date (Note that a user can continue to log on to his account after the expiry date for the number of days given by the grace period, which is defined in the user's profile).
Field MARKET_DOMAIN_DATA_ADMIN	dba_privs.granted_role : ticked if the user selected has the mkt_dmn_data_admin role
Field SUPER_MDD_ADMIN	dba_privs.granted_role : ticked if the user selected has the sup_mkt_dmn_data_admin role
Field DATA_AGGREGATOR_ADMIN	dba_privs.granted_role : ticked if the user selected has the data_agg_admin role
Field EXCEPTION_ADMIN	dba_privs.granted_role : ticked if the user selected has the exception_admin role
Field SYSTEM_OPERATOR	dba_privs.granted_role : ticked if the user selected has the system_operator role
Field SYSTEM_MANAGER	dba_privs.granted_role : ticked if the user selected has the system_manager role
Field AUDITOR	dba_privs.granted_role : ticked if the user selected has the auditor role
Block: VIEW_USER_CTL_BLK	Block contains buttons to add, drop or edit the selected user.
Button CREATE_USER	Displays the Add/Edit Users canvas, with all the fields blank.
Button EDIT_USER	Displays the Add/Edit Users canvas, with all the fields populated with the values for the user being edited.
Button DROP_USER	Asks the user to confirm then drops the user and requeries on the

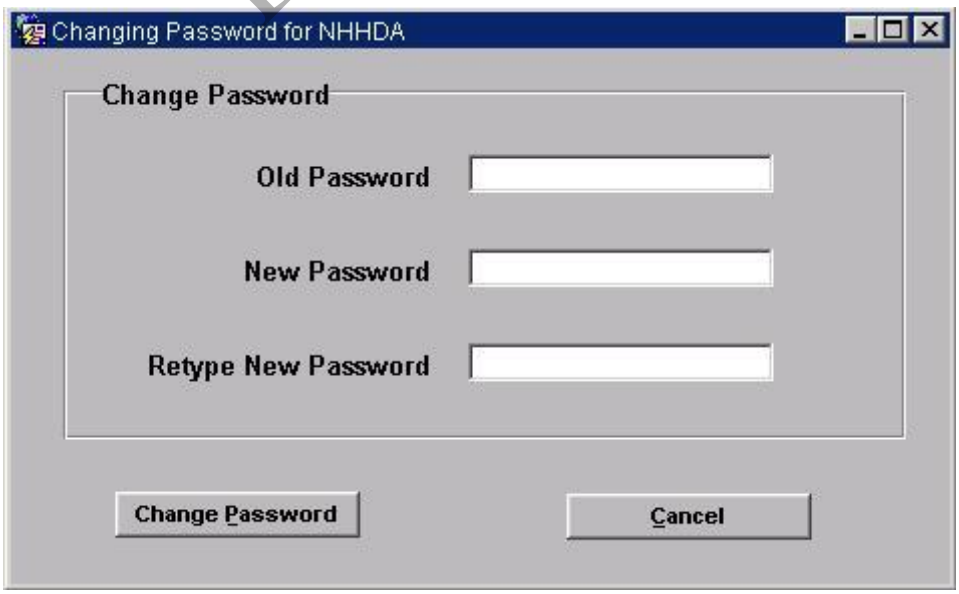
	VIEW_USER_MAST_BLK. An entry is written to the Audit Log. Users may not drop their own accounts.
Block: ADD_EDIT_USER_DTL_BLK	Block contains details of the user being added or edited. Fields are writeable.
Field YOUR_PASSWORD	dba_users.password – for the System Manager user who is carrying out the change – this field is concealed with asterisks
Field USER_NAME	dba_users.username – this field can only be entered if a new user is being added. It must be at least 4 characters long, but no more than 8 charactesr long.
Field NEW_PASSWORD	dba_users.new_password – this field is concealed with asterisks and must be at least 6 characters long
Field RE_ENTER_NEW_PASSWORD	dba_users.new_password – this field is concealed with asterisks and must match the NEW_PASSWORD field
Field MARKET_DOMAIN_DATA_ADMIN	dba_privs.granted_role : ticked if the user selected has the mkt_dmn_data_admin role
Field SUPER_MDD_ADMIN	dba_privs.granted_role : ticked if the user selected has the sup_mkt_dmn_data_admin role
Field DATA_AGGREGATOR_ADMIN	dba_privs.granted_role : ticked if the user selected has the data_agg_admin role
Field EXCEPTION_ADMIN	dba_privs.granted_role : ticked if the user selected has the exception_admin role
Field SYSTEM_OPERATOR	dba_privs.granted_role : ticked if the user selected has the system_operator role
Field SYSTEM_MANAGER	dba_privs.granted_role : ticked if the user selected has the system_manager role
Field AUDITOR	dba_privs.granted_role : ticked if the user selected has the auditor role
Field ACCOUNT_LOCKED	dba_users.account_status :ticked if status is locked.
Field ACCOUNT_EXPIRED	dba_users.account_status :ticked if status is expired (this includes where the expiry date has passed but the current date is still within the grace period). An expired account can only be change to unexpired if a new password has been entered.
Block: ADD_EDIT_USER_CTL_BLK	Block contains Save and Cancel buttons
Button SAVE	Does the validation specified for the individual fields, and makes sure that the user has at least one of the four roles granted. Carries out the user creation or user edits, returns to the View Users canvas and requeries the VIEW_USER_MAST_BLK.

	If a user has been created, or roles have been granted or revoked, appropriate entries are written to the Audit Log. New users created are assigned the profile PROF_EACAA.
Button Cancel	Returns to the View Users canvas without making any edits.
Block: TOOLBAR	Block contains shortcut buttons, simplifying the selection of allowed functionality of the form
Button NEXT_RECORD	Moves the cursor to the next row of the "VIEW_USER_MAST_BLK" Block, highlighting the row.
Button PREVIOUS_RECORD	Moves the cursor to the previous row of the "VIEW_USER_MAST_BLK Block, highlighting the row.
Button FUNCTION_KEYS	Invokes standard Oracle function to display mapping of logical functions to physical keys.
Button HELP	Invokes NHHDA System help.
Button EXIT	Invokes standard Oracle function to exit the form.

11.5.2 FORM NUA_UPC

11.5.2.1 Screen Layout

The form NUA_UPC is activated from the Change Password menu item on the File menu.



11.5.2.2 Screen Behaviour

The form behaves as though it was a modal dialogue box. All NHHDA users can use this form.

The table below outlines all the possible actions associated with the form NUA_UPC:

Form Action On	Form Response
Selection of Form	Display the two blocks of the form and puts the cursor in the Old Password field
Clicking on Change Password Button	Alters the user's password and exits the form
Clicking on Cancel Button	Exits the form without altering the password

11.5.2.3 Description

This form allows NHHDA users to change their passwords.

It contains one block, the CHANGE_PASSWORD_BLK.

Form Structure

Field Name	Description
Block: CHANGE_PASSWORD_BLK	
Field OLD_PASSWORD	dba_users.password – this is validated to ensure it does match the password in the database – field is concealed with asterisks
Field NEW_PASSWORD	dba_users.password – must be at least 6 characters long – field is concealed with asterisks
Field NEW_PASSWORD_CONFIRM	dba_users.password – must match NEW_PASSWORD – field is concealed with asterisks
Button CHANGE_PASSWORD	Validates the fields as described under the individual fields. Alters the user's password, puts up a confirmation box with the text "Password Changed Successfully" and exits the form
Button CANCEL	Exits the form without altering the password

12 NDP EAC Data For Distributors Subsystem Specification

12.1 Introduction

The NDP subsystem retrieves the metering system data for the specified Distributors on the settlement day and generates files to send to the Licensed Distribution System Operator (LDSO).

The NDP subsystem performs the following actions:

- Removal of previous intermediate files from failed runs;
- activation of multiple sub-processes to retrieve metering system data;
- reading of meter system data, optimised for the database partitioning;
- generation of EAC To Distributor reports.

The subsystem is initiated by the CSC Scheduler process, and runs in batch mode.

The facilities of the common subsystems are used for process control, file management and file export. Communication between separate executables of the subsystem is done using the common scheduling functions.

12.2 Subsystem Context

12.2.1 Subsystem Context Diagram

The context diagram for this subsystem is shown in Figure 9:

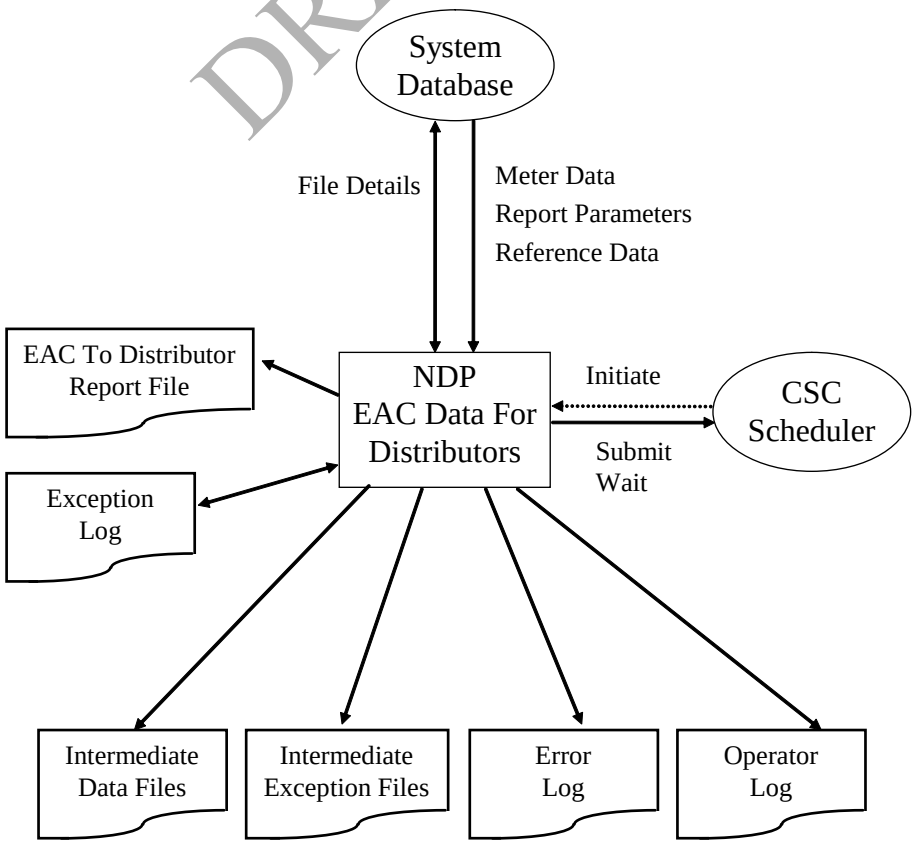


Figure 9: Context Diagram for EAC Data For Distributors

12.2.2 Interfaces

12.2.2.1 CSC Scheduler

This process activates the NDP subsystem in response to user submitted events scheduled using the *Request Report On EAC Data For Distributors*. All data for the run will be passed as parameters via the database.

The Scheduler is responsible for ensuring that the NDP process does not run at the same time as other processes submitted on the Exclusive queue.

The main NDP process keeps an active entry on the Exclusive queue, while submitting multiple sub-processes to non-exclusive queues to retrieve the metering system data. The wait functions of CSC Scheduler are used to synchronise the stages of the processing.

12.2.2.2 Database

A number of database tables are accessed and written within the subsystem. The exact identities are specified in the Data Usage section of this document.

The high level data flows are as follows:

Flow Name	Direction	Description
Meter Data	Input	The meter appointments, details and EACs/AAs which contribute to the SPMs.
Reference Data	Input	Fixed Pool data definitions (for example, Metered |Unmetered flags). Also AFYCs and thresholds, which are not assigned to individual meters.

12.2.2.3 Output Files

The table below lists the files which are created during the NDP processing. Multiple instances of each file type may be created.

Flow Name	Direction	Description
EAC To Distributor Data Report	Output	These are structured files, holding metering system and EAC data for a Distributor. One file will be created for each Distributor where metering system data was found.
EAC To Distributor Exception Log	Output	This file holds details of EAC To Distributor Data Report files created, and records of predefined exceptions encountered during the run; for audit purposes. One file will be created containing details for all partitions.
EAC To Distrib Intermediate Data	Input Output	These are temporary files created for each 'calculate increments' process initiated by CSC - i.e. each file contains the metering system data for one partition. They are deleted during the later stages of the NDP processing.
EAC To Distrib Intermediate Exceptions	Input Output	These are temporary files created for each 'calculate increments' process initiated by CSC - i.e. each file contains the exceptions for one partition. They are deleted during the later stages of the NDP processing.
Error Log	Output	This file records unexpected processing errors

Flow Name	Direction	Description
		encountered during NDP processing. The file will be written using CLG functions.
Operator Log	Output	This file records major events during the NDP processing, as is written using CLG functions

Only the *EAC To Distributor Data (Report) Files* are part of the external NHHDA interface (see Section 3.)

The *EAC To Distributor Exception Log* and the intermediate files are specified in the following sections.

12.2.3 EAC To Distrib Intermediate Data File

12.2.3.1 File Specification

The following record types appear in the files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= L0051001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA
5	To Role Code	text(1)	Null
6	To Participant Id	text(4)	Null
7	Creation Time	date/time	Time of file generation

RPH – Distributor Partition Log Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= RPH
2	Activity Id	integer(10)	Id of activity creating file
3	Partition Id	integer(2)	Partition processed by activity
4	Settlement Date	date	Mandatory
5	Run Number	integer(7)	Run identifier internal to NHHDA

RLM - Metering System			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= RLM
2	Metering System Id	integer()	Mandatory
3	Data Collector Id	text(4)	The Data Collector supplying the consumption used; null if no consumption available
4	Supplier Id	text(4)	
5	Profile Class Id	integer(2)	
6	Distributor Id	text(4)	
7	Line Loss Factor Class Id	integer(3)	
8	Standard Settlement Configuration Id	text(4)	
9	GSP Group Id	text(2)	
10	Measurement Class	text(1)	
11	Energisation Status	text(1)	
12	Consumption Type	text(1)	E = EAC for metered U = EAC for unmetered D = default for metered V = default for unmetered S = No AFYC found to calculate default EAC split for TPRs X = No default EAC available

RLQ - Consumption Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= RLQ
2	Time Pattern Regime Id	text(5)	Mandatory
3	Consumption	decimal (14,1)	kWh

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	mandatory

Repeating structure of File:

```
Intermediate Data File  ::= ZHD RPH Meter Data ZPT
Meter Data              ::= RLM {RLQ}
```

Sorting:

The file is not explicitly ordered, but as the processing currently reads Metering System Ids in order, the files for partitions will be sorted on Metering System. Note that this ordering may not be retained following future code revisions. There is no ordering performed by the code when deriving defaults, so the defaults log will not be ordered.

12.2.4 EAC To Distrib Intermediate Exceptions File

12.2.4.1 File Specification

The following record types appear in the files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= L0052001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA
5	To Role Code	text(1)	null
6	To Participant Id	text(4)	null
7	Creation Time	date/time	Time of file generation

RPH – Distributor Partition Log Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= RPH
2	Activity Identifier	integer(10)	Id of activity creating file
3	Partition Identifier	integer(3)	Partition processed by activity
4	Settlement Date	date	Settlement Date for the Run
5	Run Number	integer(7)	Run identifier internal to NHHDA

EXM - Metering System Identifier			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= EXM
2	Metering System Id	integer(13)	mandatory (Except with exceptions A13 and A14 where this will be NULL)

A01 - Exception Details (no EAC or AA for Metering System)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A01
2	Appointed Data Collector Id	text(4)	mandatory
3	Registration Effective From Settlement Date	date	mandatory
4	Data Collector	date	mandatory

A01 - Exception Details (no EAC or AA for Metering System)			
	Appointment Effective From Settlement Date		

A05 - Exception Details (Supplier incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A05
2	Data Collector Id	text(4)	mandatory
3	Supplier Id (PRS)	text(4)	mandatory
4	Supplier Id (DC)	text(4)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of Data Collector Data	date	mandatory

A06 - Exception Details (Measurement Class incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A06
2	Data Collector Id	text(4)	mandatory
3	Measurement Class Id (PRS)	text(1)	mandatory
4	Measurement Class Id (DC)	text(1)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A07 - Exception Details (GSP Group incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A07
2	Data Collector Id	text(4)	mandatory
3	GSP Group Id (PRS)	text(2)	mandatory
4	GSP Group Id (DC)	text(2)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A08 - Exception Details (Profile Class incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A08
2	Data Collector Id	text(4)	mandatory
3	Profile Class Id (PRS)	integer(2)	mandatory
4	Profile Class Id (DC)	integer(2)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A09 - Exception Details (Energisation Status incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A09
2	Data Collector Id	text(4)	mandatory
3	Energisation Status (PRS)	text(1)	mandatory
4	Energisation Status (DC)	text(1)	mandatory
5	Effective From Settlement Date of PRS Data	date	mandatory
6	Effective From Settlement Date of DC Data	date	mandatory

A10 - Exception Details (Standard Sett Config incorrect)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A10
2	Data Collector Id	text(4)	mandatory
3	SSC Id (PRS)	text(4)	mandatory
4	SSC Id (DC)	text(4)	mandatory
5	Effective From Settlement Date of Last PRS Data	date	mandatory
6	Effective From Settlement Date of Last DC Data	date	mandatory

A12 - Exception Details (Metering System Excluded)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A12
2	Metering System Id	integer(13)	The MSID of the excluded Metering System
3	Supplier	text(4)	The ID of the Supplier; will be null if no Registration record exists for Data Aggregator Appointment
4	Effective From Settlement Date of Registration	date	Will be null if no Registration record exists for Data Aggregator Appointment
5	Effective From Settlement Date (data aggregator appointment)	date	mandatory

A13 - Exception Details (Missing AFYC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A13
2	GSP Group Id	text(2)	mandatory
3	Profile Class Id	integer(2)	mandatory
4	SSC Id	text(4)	mandatory
5	Time Pattern Regime Id	text(5)	mandatory
6	Metering System Default Count	integer(7)	mandatory

A14 - Exception Details (Missing Default EAC)			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= A14
2	GSP Group Id	text(2)	mandatory
3	Profile Class Id	integer(2)	mandatory
4	Metering System Default Count	integer(7)	mandatory

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	mandatory

Note:

The “Effective From Settlement Date of DC Data” date field of Exceptions A05 to A09 refers to the Effective From Settlement Date of the latest Data Collector details record in the database before the Run Settlement Date, as

does the "Effective From Settlement Date of Last DC Data" date field of Exception A10.

Repeating structure of File:

```
Intermediate Exceptions File ::= ZHD RPH {Meter_Set} ZPT
Meter_Set                ::= EXM Ex_Record { Ex_Record }
Ex_Record                ::= A01 | A05 | A06 | A07 |
                                 A08 | A09 | A10 | A12 |
                                 A13 | A14
```

Sorting:

The file is not explicitly ordered, but written as exceptions are encountered. All exceptions for a single metering system will appear within one Meter_Set, but not in any particular order. Additionally as the processing currently reads Metering System Ids in order, the file will be sorted on Metering System. Note that this ordering may not be retained following future code revisions.

12.2.5 EAC To Distributor Exceptions Log

12.2.5.1 File Specification

The following record types appear in the files:

ZHD - File Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZHD
2	File Type	text(8)	= L0053001
3	From Role Code	text(1)	= B
4	From Participant Id	text(4)	Id of NHHDA
5	To Role Code	text(1)	null
6	To Participant Id	text(4)	null
7	Creation Time	date/time	Time of file generation

RXH – Distributor Log Header			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= RXH
2	Activity Identifier	integer(10)	Id of activity creating file
3	Settlement Date	date	Settlement Date for the Run
4	Run Number	integer(7)	Run identifier internal to NHHDA

RXF – Distributor Report Files			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= RXF
2	Distributor Participant Id	text(4)	
3	Metering System	integer()	

RXF – Distributor Report Files			
	Count		
4	Filename	text(14)	Blank if no metering systems were found.

RXM - Metering System			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= RXM
2	Metering System Id	integer(13)	mandatory (Except with exceptions A13 and A14 where this will be NULL)

Axx - Exception Details			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= Axx

ZPT - File Footer			
Field	**Field Name**	**Type**	**Comments**
1	Record Type	text(3)	= ZPT
2	Record count	integer(10)	Number of records in the file, including headers and footer.
3	Checksum	integer(10)	mandatory

Note:

The record "Axx - Exception Details" indicates where the exceptions from the "EAC To Distrib Intermediate Exceptions File" will be located. For a full list of exceptions refer to the file specification in section 12.4.2.1.

This file aggregates together all the exceptions details from EAC To Distrib Intermediate Exceptions File along with details of EAC To Distributor Data (Report) files created. Refer to file specification for the EAC To Distrib Intermediate Exceptions File for details of the exceptions.

Repeating structure of File:

```
Exceptions Log::= ZHD RXH RXF {RXF} {Meter_Set} ZPT
Meter_Set ::= RXM Ex_Record { Ex_Record }
Ex_Record ::= A01 | A05 | A06 | A07 | A08 |
          A09 | A10 | A12 | A13 | A14
```

Sorting:

The file is not explicitly ordered, but written as exceptions have been aggregated from the *EAC To Distrib Intermediate Exceptions File* created for each partition. All exceptions for a single metering system will appear within one Meter_Set, but not in any particular order.

12.2.6 Special Considerations

The same consideration relating to the *NAR Aggregation Run Subsystem* will apply here as well.

12.3 Subsystem Processing

12.3.1 Major Components

The separate modules provided by the subsystem are identified in Figure 10. *NDP Report EAC To Distributor* will be invoked from the user interface.

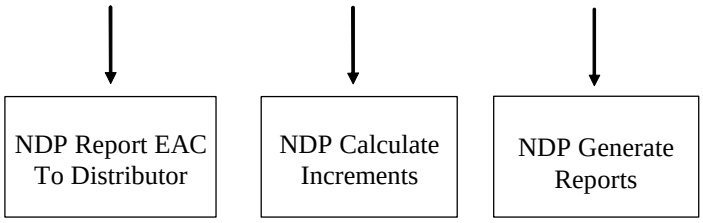


Figure 10: Subsystem Decomposition for NDP

The processing performed by each module is described in 12.3.3.

12.3.2 Flow Control

The *NDP Report EAC To Distributor* module is the main controlling process and Figure 11 shows the modules it calls to perform the processing. The subsystem may run multiple instances of the *NDP Calculate Increments* simultaneously, and this is controlled by the top-level functions of this subsystem using the facilities of CSC Scheduler.

Note that *NDP Report EAC To Distributor* and *NDP Generate Reports* are implemented in a single activity (NDP_PC) which is the main controlling process.

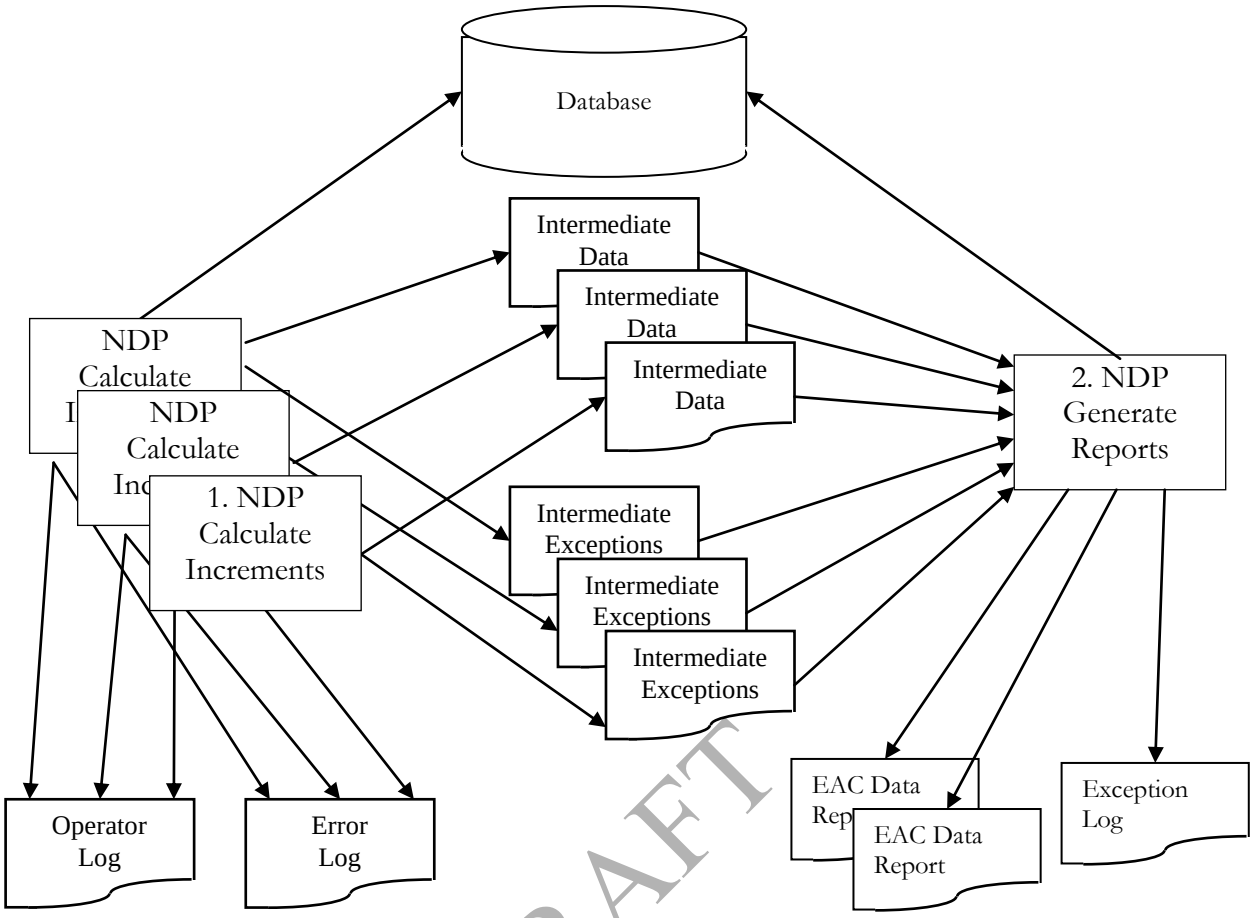


Figure 11: NDP Processing Flow

The numbers against the processes indicate the order in which the processes will be activated. The number of concurrent processes of each type is tuneable, according to the hardware configuration.

Note that each instance of *NDP Calculate Increments* runs against a single Metering System partition.

All the *NDP Calculate Increments* processes must complete successfully before *NDP Generate Reports* is invoked.

12.3.3 Detailed Process Descriptions

12.3.3.1 NDP Report EAC To Distributor

Figure 12 shows the structure of the controlling process, and process that will have several instances are indicated with *.

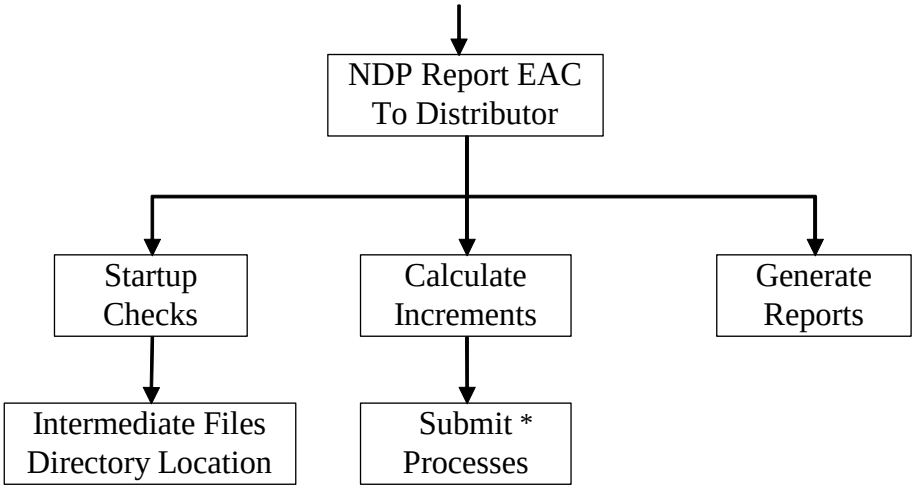


Figure 12: NDP Aggregate EACs and AAs

This process provides the external subsystem interface to process N1055 of [NFUNDEF]. It initialises the report run and performs the following actions:

- Startup Checks performs any actions necessary to recover from previous failed runs (including deletion of intermediate files and database entries), and check that the destination directory matches the *Directory Path For EAC To Distributor Report* (NDPD) Domain;
- Generate parameter lists for *Calculate Increments* sub-processes;
- Submit calls to the NDP_CI using CSC Scheduler;
- Wait for the sub-processes to complete;
- Call *Generate Reports* to create the *EAC To Distributor Reports* and the *Exception Log*;
- The *EAC To Distributor Reports* will be manually distributed and the status will be set to archived; indicating the system will perform no further processing.
- Remove the intermediate files and database entries;
- Return success or fail code.

12.3.3.2 NDP Calculate Increments

This process accepts a parameter list which defines the meters to be processed. It initialises the database reads and creates output files to hold intermediate metering system data.

It then loops through each metering system in turn, within the range given by the activation parameters. For each of the meter's measurement requirements it creates a record for the settlement date. Failure to identify

consumption values will result in the average fraction of yearly consumption and GSP Group Profile Class Default EAC being used to calculate a default value.

Each set of metering system data is checked for the defined exception conditions. Any exceptions found are written to an exception report file.

The resulting records will be written directly to a file on disk.

Failure at this stage will require restarting the report run, and the report will start from beginning again and will delete all temporary files from the failed run.

12.3.3.3 NDP Generate Reports

This module uses the input report parameters to determine which distributors requested reports, and will process the intermediate files to identify the metering system records for each Distributor. The module will create an *EAC To Distributor Data Report* for each Distributor, provided metering system data is found, and a single *EAC To Distributor Exceptions Log* will be created.

12.4 Data Usage

12.4.1 System Data

12.4.1.1 Database

The following NHHDA database tables are accessed directly. Where a table is partitioned, access will use generic read and write functions. Selects from these tables will be optimised according to the partition structure to control disk reading in multiple disk systems.

- ndb_av_frac_y_cons (read);
- ndb_data_agg_apps (read);
- ndb_dc_apps (read);
- ndb_gsp_groups_run (read);
- ndb_gspg_pc_av_eac (read);
- ndb_isr_agent_apps (read);
- ndb_measure_reqs (read);
- ndb_metering_sys (read);
- ndb_ms_dc_dets (read);
- ndb_ms_prs_dets (read);
- ndb_register_cons (read);
- ndb_registrations (read);

Where possible, common tables will be accessed using the common functions provided for this purpose. The common tables accessed directly by this subsystem are:

- cdb_activity (read);

- cdb_file_reference (read);
- cdb_system_parameter (read).

The shutdown_requested global process variable will be read at regular intervals by each main process, to detect requests to terminate the process.

12.4.2 Local Data

12.4.2.1 Meter System Data

This data item holds data from the database which defines a single metering system. The exact contents of this storage area will be determined when the algorithms for each process are defined.

12.4.2.2 Intermediate Data Files

This is a set of files which contain metering system data, and will contain data from a single partition.

12.4.2.3 Intermediate Exception Files

This is a set of files which contain exceptions encountered during retrieval of metering system data, and will contain exceptions for a single partition.

12.5 Procedure Details

12.5.1 Procedure NDP Report EAC To Distributors Specification


```
Procedure Name:    NDP Report EAC To Distributors
Inputs:              Distributors requesting the report
                     Settlement Date
Outputs:           None
```

This procedure provides an external interface to the NDP subsystem.

```
Check the cdb_file_reference table for any files created by
the process with a status of new. Remove the files and
database entries as these files would be from a failed run.

Retrieve the Directory Path For EAC To Distributor Report
(NDPD Domain) from cdb_ref_values table, and compare against
the directory associated with completed EAC To Distributor
Data Reports from cdb_file_directory table. If the
directories differ then create the directory defined by the
NDPD Domain, and update the default directory for completed
reports to use the directory.

FOR each metering system partition:
   CALL Calculate Increments passing Distributor and
   Settlement Data parameters
END FOR

IF all Calculate Increments process were successful THEN
   CALL Generate Reports
END IF

IF Generate Reports was successful THEN
   Move the completed EAC To Distributor Report files to
   named sub-directories which correspond to the recipient of
   the report; ready for manual distribution.
```

```
   Update all the completed EAC To Distributor Report files
   to indicate they are archived.
END IF

Delete the intermediate data and exception files and remove
them from the database.
```

The identities and parameter lists for the scheduled sub-processes are calculated using system constants and the database partitioning of metering systems.

This procedure will be implemented using Pro*C.

12.5.2 Procedure NDP Calculate Increments

```
Procedure Name:    NDP Calculate Increments
Inputs:              Partition Id
                     Distributors requesting the report
                     Settlement Date
Outputs:           None
```

This procedure implements the detailed functionality required to gather metering system data required for the report. It results in a number of disk files holding data for each partition.

```
CALL Read Meter to initialise tables for Partition Id;
Create working disk files using common library routines;
FOR each metering system in this partition for the specified
distributors DO
   Get PRS DA appointments for the report date
   IF DA appointment exists THEN
      Get PRS metering system data, supplier registration and
      DC appointment for the report date;
      Report an exception if any of the data cannot be found
      and go onto the next metering system;

      Get Current EAC to be used [see NFUNDEF]

      IF value found THEN
         Read DC metering system data;
         Report exception for differences between DC and PRS
         metering system data;
         Add details to data file;
      ELSE
         Report exception for the metering system;
         Read measurement requirements for the metering
         system;
         Get AFYC data & Researched Default EAC for SPM;

         IF data found for AFYC & Researched Default EAC THEN
            Calculate default value;
            Add details to data file;
         ELSE
            Update exception for default count in file;
         END IF
      END IF
   END IF
DONE
```

This procedure will be implemented using Pro*C.

12.5.3 Procedure NDP Generate Report Specification

```
Procedure Name:     Generate SPMs
Inputs:               Distributors requesting the report
Outputs:            Status
```

This procedure implements the detailed functionality required to create the *EAC To Distributor Report* files and *EAC To Distributor Exceptions Log* file. This is achieved by aggregating together the data in the files generated by Calculate Increments for each partition.

```
FOR each intermediate data file:
   Open the file
      FOR each metering system record:
         Identify the Distributor

         IF a file does not exist for the Distributor THEN
             Use common library routines to create an EAC To
             Distributor Report file
         END IF

         Write all the records for the metering system to the
         file, and increment the metering system count for
         the Distributor
      END FOR
   Close the file
END FOR

Close all the EAC To Distributor Report files.

Use common library routines to create an Exception Log file
Record details of metering system counts and files created
for each Distributor who requested the report.

FOR each exception data file:
   Open the file
      Read each exception record:
         Write the record to the file
   Close the file
END FOR

Close the Exception Log file.
```

This procedure will be implemented in Pro*C.

13 Cross Reference

13.1 Requirements Mapping

Req. No.	Logical Design Reference	Physical Design Reference
Functional		
F1	N0001 N0006 N0012 N0013 N0014 N0015 N0019 N0020 LDATA	4.3 9.7 9.9 9.10 9.11 9.12
F2	N0036	8.3
F3	N0016 LDATA	9.8 4.3
F4	N0001 LDATA	9.9 4.3
F5	N0004 N0031 N0032 N0034 NC010	7.3 9.16
F6	N0032 N0034 LDATA	7.3 9.16 4.3
F7	Requirement removed as a result of LCR030	
F8	Requirement removed as a result of LCR030	
F9	Requirement removed as a result of LCR030	
F10	Requirement removed as a result of LCR030	
F11	N0004 N0031 N0032 N0034 N1032 N1033 NC010	7.3 9.14 9.16 10.8
F12	Requirement removed as a result of LCR030	
F13	N0004	7.3

Req. No.	Logical Design Reference	Physical Design Reference
	N0032 N0034 N0035 N0038	9.14 9.15 9.16 9.17
F14	N0004 N0031 N0032 N0033 N0034 NC010	7.3 9.14 9.16 9.18
F15	Requirement removed as a result of LCR030	
F16	Requirement removed as a result of LCR030	
F17	N0031 NC010	7.3
F18	N0032 N0034	7.3
F19	N0032 N0034	7.3
F20	Requirement removed as a result of LCR030	
F21	Requirement removed as a result of LCR030	
F22	Requirement removed as a result of LCR030	
F23	Requirement removed as a result of LCR030	
F24	N0034	7.3
F25	N0031 NC010	7.3
F26	N0032	7.3
F27	N0032	7.3
F28	N0010 N1054	6.3 10.16
F29	N0008	5.3
F30	N0022 LDATA	9.19 4.3
F31	N0024	8.3
F32	N0008 N0024	5.3 CTSPEC Section 6
F33	N0008 N0026	5.3 CTSPEC Section 8
F34	N0008	5.3
F35	N0008	5.3

Req. No.	Logical Design Reference	Physical Design Reference
F36	N0005 N0008 N0026	5.3 CTSPEC Section 8
F37	N0008 N0026	5.3
F38	N0005	5.3
F39	LDATA	4.3
F40	LDATA	4.3
F41	N0032	7.3
F42	LDATA	4.3
F43	N0005 N0026	5.3
F44	N0036	8.3
P222	N1055	12.3
Non Functional		
N1	N0036 N0024 N0031 N1011 NC010	8.3 7.3 9.4 CTSPEC Section 5
N2	N0026 N0010 N0005 N1040 N0033 N0038	5.3 7.3 3 6.3 CTSPEC Section 8
N3	N0026 N0010 N0005 N1040 N0033 N0038	5.3 7.3 3 6.3 CTSPEC Section 8
N4	N0031 NC009	7.3
N5		2.8 2.10 4.4 4.5
N6		CTSPEC Section 7 CTSPEC Section 8 TSYSARC
N7	N0032 NC003 N0034	4.4
N8	N0009	4.5

Req. No.	Logical Design Reference	Physical Design Reference
N9	N0008 N0026 N0005	3 5.3
N10	N0008 N0026 N0005	3 5.3
N11	N0008	2.11
N12	N0008 N0027 N0028	5.3 10.6
N13	N0008 N0027 N0028 NC003	5.3 10.6
N14	N0008 N0027 N0028	5.3 10.6
N15	N0001 N0036 N0011 N0020 NC006	9.6 9.9 9.12 8.3
N16	N0001 N0036 N0011 N0020 NC006	9.6 9.9 9.12 8.3
N17	N0001E N0006E N0012E N0014E N0004 N0011 N0013E N0015E N0016E N0019E N0020E N0027 N0028 N0038 N1001 N1002 N1003 N1004 N1005 N1006	9 10

Req. No.	Logical Design Reference	Physical Design Reference
	N1007 N1008 N1009 N1011 N1014 N1015 N1016 N1018 N1021 N1023 N1025 N1026 N1027 N1028 N1029 N1030 N1031 N1032 N1033 N1036 N1037 N1038 N1039 N1040 N1042 N1045 N1046 N1047 N1052	
N18	N0028 N0033 N0038 N1014 N1015 N1016 N1018 N1023 N1025 N1026 N1027 N1028 N1029 N1030 N1031 N1033 N1037 N1039 N1042	10

Req. No.	Logical Design Reference	Physical Design Reference
	N1045 N1046 N1047 NC009 N1052	
N19	N0028 N0033 N0038 N1014 N1015 N1016 N1018 N1023 N1025 N1026 N1027 N1028 N1029 N1030 N1031 N1033 N1037 N1039 N1042 N1045 N1046 N1047 N1052	10
N20	N0028 N0033 N0038 N1014 N1015 N1016 N1018 N1023 N1025 N1026 N1027 N1028 N1029 N1030 N1031 N1033 N1037 N1039 N1042 N1045	10

Req. No.	Logical Design Reference	Physical Design Reference
	N1046 N1047 N1052	
N21	N0028 N0033 N0038 N1014 N1015 N1016 N1018 N1023 N1025 N1026 N1027 N1028 N1029 N1030 N1031 N1033 N1037 N1039 N1042 N1045 N1046 N1047 N0028 N1052	10
N22	N0023 NC006	2.10
N23	NC006 NC009	2.10 4.4
N24	N0035 N0038 NC002 NC003	4.4 CTSPEC Chapter 7 11
N25	NC006 NC009	2.10
N26	N0008 N0009	4.5 4.6 4.7
N27	N0008 N0009 N0003	5.3 4.5
N28	N0009	2.8 4.5
N29	N0003	2.8 4.5

Req. No.	Logical Design Reference	Physical Design Reference
N30	N0009	4.5
N31		2.8 CTSPEC 2.8
N32		2.8 2.9
N33		5.3 6.3 7.3
N34		2.11 5.3
N35		2.9
N36	N0008	5.3
N37		10.1 10.2
Operational Requirements		
O1	see O3	
O2	see O3	
O3	N0008	5.3 4.6 4.7
O4	see O5	
O5		4.6
O6	see O7	
O7		4.6
O8		7.3
O9		5.3 9.13
O10	see O12	
O11	see O12	
O12		5.3 8.3 4.6 4.7
O13		4.6
O14	see O15	
O15		5.3 7.3 8.3 4.6
O16	N0008 N0010	7.3 4.6 4.7
O17		7.3

Req. No.	Logical Design Reference	Physical Design Reference
		4
O18		4.5 4.6 2.11
O19		2.11 5.3
O20		2.4
O21	N1049 N1050	9.3 9.4
O22	N1051	9.23
O23	N0008	5.3
O24	N0008	5.3
Design Constraints		
D1		Compliant with Technical Systems Architecture
D2		3.1

13.2 Usage of Data

The following table gives the data usage mapping for the NHHDA subsystems, excluding most common database table accesses which are made through the common library functions. Where a common database table access is made, via a common library function, which has a material effect on a subsystem's functionality, it is shown in brackets. An example of the distinction made is that the update of file status would be included but not the manipulation of the cdb_queue table.

Table	NAR Access	NCD Access	NMI Access	NLD Access	NGF Access	NFR Access
cdb_activity	R	R			R	
cdb_data_file				R	R	
cdb_file_reference	R	R	RU	R(M)	R	
cdb_instruction_file			R			
cdb_report_file						C
cdb_ref_values				R		
cdb_resend_access	R				R	
cdb_system_parameter				R		R
ndb_av_frac_y_cons	R			RCU	CRUD	R
ndb_check_dc_data_runs		RUD				
ndb_data_agg_apps	R	R	CRUD			R
ndb_data_agg_runs	RU			RCD	CRUD	R
ndb_dc_apps	R	R	CRUD			R
ndb_exception_data		C				R
ndb_gsp_groups				R	CRUD	R
ndb_gsp_groups_dis				RCU	CRUD	R
ndb_gsp_groups_run	R			RDC	CRD	R
ndb_gspg_pc_av_eac	R				CRUD	R

Table	NAR Access	NCD Access	NMI Access	NLD Access	NGF Access	NFR Access
ndb_isr_agent_apps	R			RCU	CRUD	R
ndb_instruction_status_reason			CRUD			
ndb_instructions			CRU		R	R
ndb_llf_classes				RCU	CRUD	R
ndb_m_participants			R	RCU	CRUD	R
ndb_measure_reqs	R			RC		R
ndb_metering_sys	R	RU	CR			R
ndb_ms_dc_dets	R	R	CRUD			R
ndb_ms_exceptions		CRD				
ndb_ms_prs_dets	R	R	CRUD			R
ndb_nar_file_location	R					
ndb_nar_files	CRUD					
ndb_profile_classes				RCU	CRUD	R
ndb_refresh_instr_failure			CRUD		RU	RU
ndb_refr_instr_failure_reason			CRUD		RU	RU
ndb_register_cons	R	R	CRUD			R
ndb_registrations	R	R	CRUD			R
ndb_report_agg_exceptions						CDR
ndb_report_parameters						CDR
ndb_settlements				RCU	CRUD	R
ndb_spmatrix	CRUD					

Table	NAR Access	NCD Access	NMI Access	NLD Access	NGF Access	NFR Access
ndb_std_sett_cfgs				RCU	CRUD	R
ndb_t_p_regimes				RCU		
ndb_threshold_pars	R			RCU	CRUD	
ndb_vsscpcs				RC	CRUD	R

13.3 Logical - Physical mapping

Logical Function	Heading in NTSPEC
N0001 Define Profile Classes	Define Profile Classes
N0001E Browse Profile Classes	Define Profile Classes
N0003 Restore	Database
N0004 Manage Failed Instructions	Manage Failed Instructions (includes Resend and Return Failed Instructions)
N0004 Manage Failed Instructions	NMI
N0005 Generate Supplier Purchase Matrix	Generate Supplier Purchase Matrix
N0006 Define Suppliers	Maintain Market Participant
N0006E Browse Suppliers	Maintain Market Participant
N0008 Aggregate EACs and AAs	NAR
N0009 Archive Settlement Data	Database
N0010 Check Data Collector Data	Check Data Collector Data
N0010 Check Data Collector Data	NCD
N0011 Define Average Fraction Of Yearly Consumption	Define Average Fraction Of Yearly Consumption
N0011E Browse Average Fraction Of Yearly Consumption	Define Average Fraction Of Yearly Consumption
N0012 Define Data Collectors	Maintain Market Participant
N0012E Browse Data Collectors	Maintain Market Participant
N0013 Define Distributors and PRS Agents	Maintain Market Participant
N0013E Browse Distributors and PRS Agents	Maintain Market Participant
N0014 Define GSP Groups	Define GSP Groups
N0014E Browse GSP Groups	Define GSP Groups
N0015 Define ISR Agents	Maintain Market Participant
N0015E Browse ISR Agents	Maintain Market Participant
N0016 Define Line Loss Factor Classes	Define Line Loss Factor Classes
N0016E Browse Line Loss Factor Classes	Define Line Loss Factor Classes
N0019 Define Standard Settlement Configuration	Define Standard Settlement Configuration
N0019E Browse Standard Settlement Configuration	Define Standard Settlement Configuration
N0020 Define Threshold Parameters	Define Threshold Parameters
N0020E Browse Threshold Parameters	Define Threshold Parameters
N0022 Schedule Aggregation Run	Schedule Aggregation Run
N0023 Specify Data Accessible to Ad-Hoc Reports	Database
N0024 Load Pool Settlement Timetable	NLD
N0026 Automatically Send Supplier Purchase Matrix	NAR
N0027 Browse Exception Data	Browse File Extraction And Transmission Statuses
N0027 Browse Exception Data	Report Exceptions
N0028 Report Exception Data	Browse File Extraction And Transmission Statuses

Logical Function	Heading in NTSPEC
N0028 Report Exception Data	Report Exceptions
N0029 Maintain System Configuration Data	Common
N0030 System Initialisation	Database
N0031 Instruction File Arrival	NMI
N0032 Process Instructions	NMI
N0034 Manage Refresh Instructions	Manage Refresh Instructions
N0035 Manage Instruction Files	Manage Instruction Files
N0036 Load Pool Market Domain DataN0007 Load Standard Settlement Configurations	NLD
N0037 Manage Refresh Instruction Failures	Manage Failed Refresh Instructions
N1001 Browse MS Energisation Statuses (PRS and DC)	Report MS History, EAC and AAs
N1002 Browse MS Settlement Configurations (PRS and DC)	Report MS History, EAC and AAs
N1003 Browse MS Profile Classes (PRS and DC)	Report MS History, EAC and AAs
N1004 Browse MS Regns (PRS and DC) & DC & DA Appts	Report MS History, EAC and AAs
N1005 Browse MS GSP Groups (PRS and DC)	Report MS History, EAC and AAs
N1006 Browse MS Measurement Classes (PRS and DC)	Report MS History, EAC and AAs
N1007 Produce Ad-Hoc Reports	Oracle Report
N1008 Produce Ad-Hoc Audit Reports	Operating System Tools
N1008 Produce Ad-Hoc Audit Reports	Oracle Report
N1009 Browse Data Aggregation Run Schedule	Schedule Aggregation Run
N1011 Browse File Loading Statuses	Browse File Loading Statuses
N1014 Report GSP Groups	Report GSP Groups
N1015 Report Profile Classes	Report Profile Class and Associated Items
N1016 Report SSC and Associated Items	Report SSC and Associated Items
N1018 Report Average Fractions Of Yearly Consumption	Report Average Fractions Of Yearly Consumption
N1021 Browse MS and Associated Items	Report MS and Associated Items
N1023 Report Line Loss Factor Classes	Report Distributor and Associated Items
N1025 Report MS and Associated Items	Report MS and Associated Items
N1026 Report MS Energisation Statuses (PRS and DC)	Report MS History, EAC and AAs
N1027 Report MS Profile Classes (PRS and DC)	Report MS History, EAC and AAs
N1028 Report MS Regns (PRS and DC) & DC & DA Appts	Report MS History, EAC and AAs
N1029 Report MS GSP Groups (PRS and DC)	Report MS History, EAC and AAs
N1030 Report MS Measurement Class	Report MS History, EAC and AAs

Logical Function	Heading in NTSPEC
(PRS and DC)	
N1031 Report MS Settlement Configurations (PRS and DC)	Report MS History, EAC and AAs
N1032 Browse Instructions	Report Instructions
N1033 Report Instructions	Report Instructions
N1036 Browse MS Line Loss Factor Classes	Report MS History, EAC and AAs
N1037 Report MS Line Loss Factor Classes	Report MS History, EAC and AAs
N1038 Browse MS EAC's and AA's	Report MS History, EAC and AAs
N1039 Report MS EAC's and AA's	Report MS History, EAC and AAs
N1040 Browse File Extraction And Transmission Statuses	Browse File Extraction And Transmission Statuses
N1042 Report Settlements	Report Data Aggregation Run Schedule
N1045 Report GSP Group Distributors	Report GSP Groups
N1046 Report ISR Agent Appointments	Report GSP Groups
N1047 Report PRS Agent Appointments	Report Distributors and Associated Items
N1048 Report Refresh Instruction Failures	Report Refresh Instruction Failures
N1049 Browse Activity Schedule	Browse Activity Statuses
N1050 Browse Activity Queue Statuses	Browse Activity Queue Statuses
N1051 Browse Operator and Error Logs	Select Reports
N1052 Report on NHHDC Performance	DC Performance Report
N1053 Browse Aggregation Files	Browse Aggregation Files
N1054 Monthly report on D0095 Reports	Request Monthly D0095 Report

13.4 Physical - Logical mapping

Heading in NTSPEC	Logical Function
Browse Activity Queue Statuses	N1050 Browse Activity Queue Statuses
Browse Activity Statuses	N1049 Browse Activity Schedule
Browse File Extraction And Transmission Statuses	N0027 Browse Exception Data
Browse File Extraction And Transmission Statuses	N0028 Report Exception Data
Browse File Extraction And Transmission Statuses	N1040 Browse File Extraction And Transmission Statuses
Browse File Loading Statuses	N1011 Browse File Loading Statuses
Check Data Collector Data	N0010 Check Data Collector Data
Common	N0029 Maintain System Configuration Data
Database	N0003 Restore
Database	N0009 Archive Settlement Data
Database	N0023 Specify Data Accessible to Ad-Hoc Reports
Database	N0030 System Initialisation
DC Performance Report	N1052 Report on NHHDC Performance
Define Average Fraction Of Yearly Consumption	N0011 Define Average Fraction Of Yearly Consumption

Heading in NTSPEC	Logical Function
Define Average Fraction Of Yearly Consumption	N0011E Browse Average Fraction Of Yearly Consumption
Define GSP Groups	N0014 Define GSP Groups
Define GSP Groups	N0014E Browse GSP Groups
Define Line Loss Factor Classes	N0016 Define Line Loss Factor Classes
Define Line Loss Factor Classes	N0016E Browse Line Loss Factor Classes
Define Profile Classes	N0001 Define Profile Classes
Define Profile Classes	N0001E Browse Profile Classes
Define Standard Settlement Configuration	N0019 Define Standard Settlement Configuration
Define Standard Settlement Configuration	N0019E Browse Standard Settlement Configuration
Define Threshold Parameters	N0020 Define Threshold Parameters
Define Threshold Parameters	N0020E Browse Threshold Parameters
Generate Supplier Purchase Matrix	N0005 Generate Supplier Purchase Matrix
Maintain Market Participant	N0006 Define Suppliers
Maintain Market Participant	N0006E Browse Suppliers
Maintain Market Participant	N0012 Define Data Collectors
Maintain Market Participant	N0012E Browse Data Collectors
Maintain Market Participant	N0013 Define Distributors and PRS Agents
Maintain Market Participant	N0013E Browse Distributors and PRS Agents
Maintain Market Participant	N0015 Define ISR Agents
Maintain Market Participant	N0015E Browse ISR Agents
Manage Failed Instructions	N0004 Manage Failed Instructions (includes Resend and Return Faailed Instructions)
Manage Failed Refresh Instructions	N0037 Manage Refresh Instruction Failures
Manage Instruction Files	N0035 Manage Instruction Files
Manage Refresh Instructions	N0034 Manage Refresh Instructions
NAR	N0008 Aggregate EACs and AAs
NAR	N0026 Automatically Send Supplier Purchase Matrix
NCD	N0010 Check Data Collector Data
NLD	N0036 Load Pool Market Domain Data
NLD	N0024 Load Pool Settlement Timetable
NMI	N0004 Manage Failed Instructions
NMI	N0031 Instruction File Arrival
NMI	N0032 Process Instructions
Operating System Tools	N1008 Produce Ad-Hoc Audit Reports
Oracle Report	N1007 Produce Ad-Hoc Reports
Oracle Report	N1008 Produce Ad-Hoc Audit Reports
Report Average Fractions Of Yearly Consumption	N1018 Report Average Fractions Of Yearly Consumption
Report Data Aggregation Run Schedule	N1042 Report Settlements

Heading in NTSPEC	Logical Function
Report Distributors and Associated Items	N1023 Report Line Loss Factor Classes
Report Distributors and Associated Items	N1047 Report PRS Agent Appointments
Report Exceptions	N0027 Browse Exception Data
Report Exceptions	N0028 Report Exception Data
Report GSP Groups	N1014 Report GSP Groups
Report GSP Groups	N1045 Report GSP Group Distributors
Report GSP Groups	N1046 Report ISR Agent Appointments
Report Instructions	N1032 Browse Instructions
Report Instructions	N1033 Report Instructions
Report MS and Associated Items	N1021 Browse MS and Associated Items
Report MS and Associated Items	N1025 Report MS and Associated Items
Report MS History, EAC and AAs	N1038 Browse MS EAC's and AA's
Report MS History, EAC and AAs	N1039 Report MS EAC's and AA's
Report MS History, EAC and AAs	N1001 Browse MS Energisation Statuses (PRS and DC)
Report MS History, EAC and AAs	N1002 Browse MS Settlement Configurations (PRS and DC)
Report MS History, EAC and AAs	N1003 Browse MS Profile Classes (PRS and DC)
Report MS History, EAC and AAs	N1004 Browse MS Regns (PRS and DC) & DC & DA Appts
Report MS History, EAC and AAs	N1005 Browse MS GSP Groups (PRS and DC)
Report MS History, EAC and AAs	N1006 Browse MS Measurement Classes (PRS and DC)
Report MS History, EAC and AAs	N1026 Report MS Energisation Statuses (PRS and DC)
Report MS History, EAC and AAs	N1027 Report MS Profile Classes (PRS and DC)
Report MS History, EAC and AAs	N1028 Report MS Regns (PRS and DC) & DC & DA Appts
Report MS History, EAC and AAs	N1029 Report MS GSP Groups (PRS and DC)
Report MS History, EAC and AAs	N1030 Report MS Measurement Class (PRS and DC)
Report MS History, EAC and AAs	N1031 Report MS Settlement Configurations (PRS and DC)
Report MS History, EAC and AAs	N1036 Browse MS Line Loss Factor Classes
Report MS History, EAC and AAs	N1037 Report MS Line Loss Factor Classes
Report Profile Class and Associated Items	N1015 Report Profile Classes
Report Refresh Instruction Failures	N1048 Report Refresh Instruction Failures
Report SSC and Associated Items	N1016 Report SSC and Associated Items
Request Monthly D0095 Report	N1054 Monthly Report on D0095 Reports
Schedule Aggregation Run	N0022 Schedule Aggregation Run
Schedule Aggregation Run	N1009 Browse Data Aggregation Run Schedule

Heading in NTSPEC	Logical Function
Select Reports	N1051 Browse Operator and Error Logs