NETA
Electronic Data Transfer (EDT)
Interface Specification

CT/24.12.0002

Issue 4, 18 December 2000

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CONTENTS

1   INTRODUCTION

1.1   Overview

EDT is the principal mechanism by which participants in the existing Pool submit their offer data to NGC.

EDT is the means by which a BSC party or their agent submits data to NGC for use in the Balancing Mechanism. Any BSC party or their agent who should submit Physical Notifications for any of their Balancing Mechanism Units (BMUs) to NGC as required by the BSC must have an EDT link to NGC. Furthermore any BSC party or their agent who wishes to submit bids and offers on any of their BMUs must have an EDT link to NGC. An overview of the interfaces with NGC under NETA was given in a DISG paper 19/01.

1.2   Purpose and Scope

The purpose of this document is to specify, in an unambiguous way, Electronic Data Transfer (EDT) communications between Trading Agents and NGC.

This document is intended only to cover submissions made via EDT. Other transfer mechanisms such as EDL are described in document reference 4.

The scope of this issue is to provide documentation of the high level method by which submission files shall be communicated between NGC and Trading Agents. To this end, the document contains a description of the file transfer method, directory structure, and details pertaining to electronic file header formats and the format of the data therein.

This document does not cover the validation rules, which shall be applied to data, or the default data rules applied in the case of the absence of data. These shall be covered in the document reference 2.

This document does not cover low level aspects of connecting to NGC systems. An electronic link between the Trading Agent and National Grid Company computer systems is implied but not defined here. Security measures are mentioned although the document is not intended to be a comprehensive procedural guide to connecting Trading Agent and National Grid Company computer systems. These subjects will be further defined in the document reference 3.

1.3 Definitions

BMU	Balancing Mechanism Unit
BOD	Bid / Offer pair data
BSC	Balancing and Settlement Code
Client	Trading Agent's computer system, which connects to the NGC Host.
Client Connection	An electronic connection between Host and Client machines.
Download	The process of transfer of data from the Host to the Client.
EDL	Electronic Dispatch Logging. A mailbox transfer system between Host and Client. (Not further defined in this document).
EDT	Electronic Data Transfer. Flat file transfer of submissions, between Client and Host systems.
FPN	Final Physical Notification
FTP	File Transfer Protocol.
Gate Closure Time	The last time for which PN and BOD data may be accepted for the next settlement period, as defined by the Host System Clock.
Host	National Grid's File Server.
IPN	Initial Physical Notification
NETA	New Electricity Trading Arrangements
NGC	National Grid Company.
Operational Day	Defined as starting at 05:00 (local time) through until 05:00 the following day.
PN	Physical Notification
SO	System Operator
Trading Agent	The Balancing Mechanism Lead Party or their Agent, registered as submitting data to or receiving data from NGC, in respect of BMUs assigned to them.
Upload	The process of transfer of data from the Client to the Host.

1.4 Related Documents

1. The New Electricity Trading Arangements – A draft specification for the Balancing Mechanism and Imbalance Settlement version 1.2, The Office of Gas & Electricity Markets.

2. NETA Data Validation, Consistency and Defaulting Rules CT/24.12.0003.

3. NETA Interface Standards OF/CS.KBC.NETA.007.

4. NETA Project EDL Message Interface Specification CT/24.13.0013.

5. DISG 19 - 12 October 1999 - Information exchange with the system operator

2   BACKGROUND TO EDT

Details of which data items are transferred via EDT are given in later sections. EDT (Electronic Data Transfer) defines one of the methods by which information is transferred electronically between Trading Agent Client systems (hereafter referred to as the Client) to the NGC Host server system (hereafter referred to as the Host).

Data shall be held in electronic documents, the formats of which are defined in section 7. These files are then transferred to the NGC host via FTP (File Transfer Protocol). The details of the file transfer protocol are further defined in the document reference 3.

Note:

The client push of submission data and pull of notification data is a marked change in the EDT process from the mechanism in place under the "Pool and Settling agreement", where the System Operator was pulling submission information from the Trading Agents machines, and pushing notification information.

3   TRANSFER MECHANISM

Each Trading Agent shall be issued with their own username and password (client connection) enabling them to make submissions and collect acknowledgements and failure messages via the FTP service. The sub-directory structure for each client connection shall only be visible to NGC and the Trading Agent to which it was issued.

The directory structure visible to the client will be a submission and notification directory. Any submissions a Trading Agent wishes to make must be FTPed to the 'SUBMISSION' subdirectory. All notifications of receipt and of file errors will be posted to the 'NOTIFICATION' subdirectory.
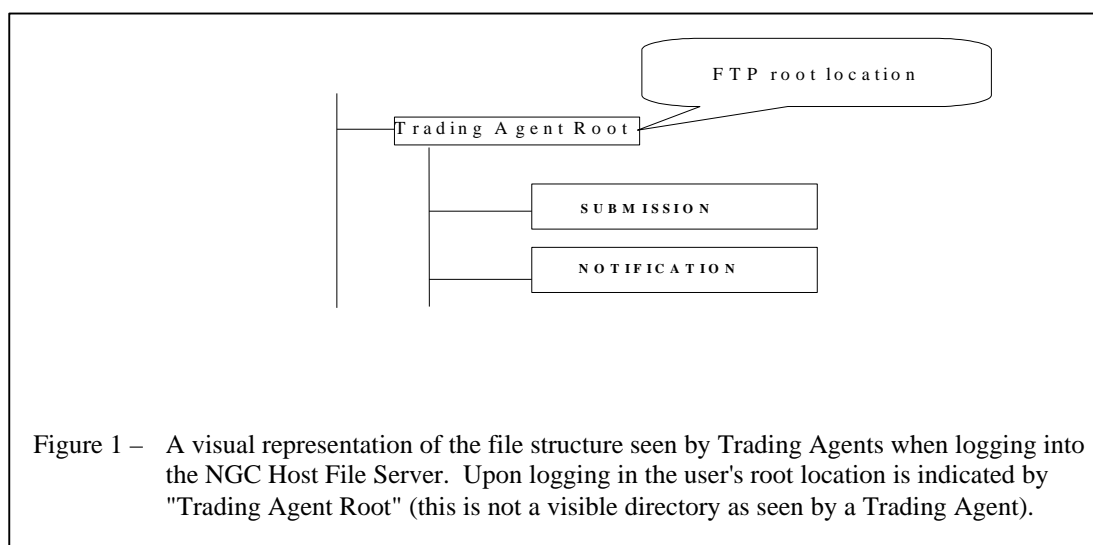

Figure 1 –   A visual representation of the file structure seen by Trading Agents when logging into the NGC Host File Server. Upon logging in the user's root location is indicated by "Trading Agent Root" (this is not a visible directory as seen by a Trading Agent).

File permissions on the Host's sub-directories will be in place. The 'SUBMISSION' directory will have write-only access permissions, as once a submission has been made, it can not be retracted or modified. The 'NOTIFICATION' directory will have read-only restrictions applied to it.

Usernames and Passwords will initially be issued by NGC. It may however be necessary to modify these at a later time. It is intended that after initial implementation the system will be modified such that passwords will expire after a certain time, and users will be required to supply a new password.

NGC is neither responsible for the connection between client and host systems, nor the transfer of data across it. As a consequence NGC will only consider the validity of submissions once they have been successfully transferred to the NGC Host system. An incomplete or incorrectly named submission shall be rejected in its entirety. This is discussed in section 6. Once passed this level of checking, data will be accepted or rejected at BMU level.

Security issues associated with login accounts are described in reference 3.

Once a file has arrived on the Host, it will be acknowledged, validated for file format and data integrity and loaded into the online system. The validation process will accept or reject data on a Balancing Mechanism Unit (BMU) basis. The details of validation rules applied are specified in reference 2.

Any data that fails the validation process will result in a failure notification being generated, informing the Trading Agent of the nature of the fault. This message will be placed in the 'NOTIFICATION' directory.

The 'SUBMISSION' sub-directory shall be emptied as submissions are read; material being archived and removed from the directory as the latest file is read. The files will remain in the 'NOTIFICATION' sub-directory for a minimum of 24 hours after their last-modified time (as indicated by the last-modified time stamp on the file) after which time they will be removed from this location. These files will also be archived by NGC.

Submission file formats are discussed in section 7.

Notification file formats are discussed in section 9.

Note:

At go-live, the NGC FTP server will reside on a VMS machine. The VMS operating system stores directory and files name in upper-case and hence all files down-loaded from NGC's host by clients will have file names in upper-case, regardless of the case mix of the original submission file name.

4   NOTIFICATION TIME

The System Time of the Host shall be in GMT and be kept referenced to a recognised global time base. It is this time, which shall determine gate closure for submissions.

Each file successfully transferred to the Host will be deemed to be a submission. The notification time of this file and hence all data contained within it shall be deemed to be the point in time that the file transfer from the Client to the Host (Upload) is completed. This is indicated by the last modified-time attribute of the file created by the operating system of the Host.

Note:
Specific concerns relating to connection procedures for individual FTP accounts may be issued from time-to-time by NGC. Additional details are also to be found in reference 3.

5   EXPECTED FREQUENCY OF FILES

All data will be submitted using the single file format specified below. All data types for Balancing Mechanism Units (BMUs) assigned to the Trading Agent may be included within the file.

Data within the file will be validated on a record by record basis; full details are available in reference 2.

Note:

Although hypothetically there is no upper limit to the frequency with which data may be submitted or to the size of data files, it is a concern of NGC that an error on a Client system might jeopardise the stability of the entire EDT submission system. NGC is concerned that a rogue Client system might resubmit very large files at frequent intervals which has the potential of critically slowing or halting the processing of other Trading Agent's files. For this reason NGC proposes to implement a system whereby if the frequency of submissions exceeds a defined normal rate for a sustained period, then the concerned Trading Agent's account shall be locked until they contact NGC to resume normal service. Details of the proposed limits are discussed in reference 3.

6   TRADING AGENT SUBMISSION FILE NAMING CONVENTION

Each submission file will have a file name consisting of two parts and a file extension. The file extension will be '.SBM' to indicate that the file contains submission data defined to be as follows:

Title	Meaning	Field Size	Field Format	Comments
TANAME	Trading Agent Name	9	XXXXXXXXX	name should be padded with '_' to the full field width
SEQNO	Sequence number	4	9999	the submission sequence number

Thus, the filename will be of the form

   XXXXXXXXX9999.SBM

For example, for a Trading Agent the name 'TR_AGT', for which the previously submitted file sequence number was 20, the file name would be:

   TR_AGT___0021.SBM

The Trading Agent portion of the name must correspond with the agreed name of the submitting agent. All submission files must have a 'SBM' file type marker. If these conditions are not met, the submitted file will be rejected in its entirety.

The submission sequence number contained within the file name must be submitted successively. Each time a file is submitted the sequence number should be incremented by one. Should a file be submitted out of sequence it will be rejected in its entirety. All subsequent out of sequence files will be rejected. Each rejection will be identified by a 'V_GEN_5' message in the rejection file. The next valid submission number will be two greater than that indicated by the 'last was *{sequence}'* in the above message contained in the rejection file associated with the last submission sent. Please refer to section 9.3 and to reference 2 for further details on the error message formatting.

Example Error message:

```
<!>
<V_GEN_5>,<File failed>
File out of sequence: 2233. Last was 1236
<*>
```

In the above example the Trading Agent has submitted a file with the sequence number 2233. The 'last was' portion of the message indicates that the last valid sequence number submitted was 1236 so that the one expected this time is 1237. Although submission 2233 has been rejected it has caused the expected submission counter associated with this Trading Agent on the Host to be incremented by one, hence the next file sequence number that will be accepted by the Host is now 1238.

The first submission made via EDT to NGC by a Trading Agent should have a submission sequence number of 0001. Leading zeroes should be included to the full field width. After submission 9999 the next submission number should roll over to 0001.

Note:

All nomenclature of Agents and their respective BMUs, including the 9-character field above, will be agreed between NGC and the relevant Agent or their representative as part of the Agent/BMU registration process.

7 SUBMISSION FILE FORMAT

Submissions for each Trading Agent will be made in Comma Separated Value (CSV) text formatted files. Each submission file will consist of one or more records, with each record being a single line of text. The end of the file will be indicated by the text string '<EOF>'.

Each record will consist of a number of fields, each separated by a comma. Each record will include a record header consisting of the same initial fields, as shown in section 7.1. The remainder of each record will contain data according to the data record type included in the record header, as defined in section 7.2.

Any records that start with an asterisk ('*') will be ignored, thereby allowing comments to be included in submission files.

All times must be a whole number of minutes.

Sample submission data files are shown in the appendices.

In the table definitions, the following field format conventions are used:

Time format: [CCYY-MM-DD hh:mm]

where the following definitions apply:

CCYY	year (numeric)
MM	month (numeric)
DD	day (numeric)
	a single space separator between date and time
hh	hours
mm	minutes

Note:

Whilst all data handling is automatic, NGC has aimed at a format which is as legible as possible.

Additional white space either side of fields is permitted. The only restriction on white space being on the internal space in the date/time field separating the date and time portions, where only a single space character must be present.

Blank lines present in the submission file prior to the '<EOF>' string will be treated as a formatting error, and the file will be rejected in its entirety.

7.1   Submissions File Format – Record Header

Field	Acronym	Format	Units	Comments
Data Record Type	-	Alphanumeric	-	Up to 4 Characters
				One of PN Physical Notification QPN Quiescent Physical Notification BOD Bid-Offer Data MEL Maximum Export Limit MIL Maximum Import Limit RURE Run Up Rates Export RURI Run Up Rates Import RDRE Run Down Rates Export RDRI Run Down Rates Import NDZ Notice to Deviate from Zero NTO Notice to Deliver Offers NTB Notice to Deliver Bids MZT Minimum Zero Time MNZT Minimum Non-Zero Time SEL Stable Export Limit SIL Stable Import Limit MDV Maximum Delivery Volume MDP Maximum Delivery Period
Trading Agent Name	-	Alphanumeric	-	Up to 9 Characters
BM Unit Name	-	Alphanumeric	-	Up to 9 Characters

7.2 Submissions File Format – Record Data

Data Record Type	Field	Format	Units	Comments
PN	Time from	Time format	-	
	PN Level from	Numeric	MW	
	Time to	Time format	-	
	PN Level to	Numeric	MW	
QPN	Time from	Time format	-	
	QPN Level from	Numeric	MW	
	Time to	Time format	-	
	QPN Level to	Numeric	MW	
BOD	Time from	Time format	-	
	Time to	Time format	-	
	Bid-Offer Pair Number	Numeric		
	Bid-Offer Level from	Numeric	MW	
	Bid-Offer Level to	Numeric	MW	
	Offer Price	Numeric	£ / MWh	
	Bid Price	Numeric	£ / MWh	
MEL	Time from	Time format	-	
	Maximum Export Level from	Numeric	MW	
	Time to	Time format	-	
	Maximum Export Level to	Numeric	MW	
MIL	Time from	Time format	-	
	Maximum Import Level from	Numeric	MW	
	Time to	Time format	-	
	Maximum Import Level to	Numeric	MW	
RURE	Effective time	Time format	-	*
	Run-Up Rate 1	Numeric	MW / minute	
	Run-Up Elbow 2	Numeric	MW	
	Run-Up Rate 2	Numeric	MW / minute	
	Run-Up Elbow 3	Numeric	MW	
	Run-Up Rate 3	Numeric	MW / minute	

Data Record Type	Field	Format	Units	Comments
RURI	Effective time	Time format	-	*
	Run-Up Rate -1	Numeric	MW / minute	
	Run-Up Elbow -2	Numeric	MW	
	Run-Up Rate -2	Numeric	MW / minute	
	Run-Up Elbow -3	Numeric	MW	
	Run-Up Rate -3	Numeric	MW / minute	
RDRE	Effective time	Time format	-	*
	Run-Down Rate 1	Numeric	MW / minute	
	Run-Down Elbow 2	Numeric	MW	
	Run-Down Rate 2	Numeric	MW / minute	
	Run-Down Elbow 3	Numeric	MW	
	Run-Down Rate 3	Numeric	MW / minute	
RDRI	Effective time	Time format	-	*
	Run-Down Rate -1	Numeric	MW / minute	
	Run-Down Elbow -2	Numeric	MW	
	Run-Down Rate -2	Numeric	MW / minute	
	Run-Down Elbow -3	Numeric	MW	
	Run-Down Rate -3	Numeric	MW / minute	
NDZ	Effective time	Time format	-	*
	Notice to Deviate from Zero	Numeric	minutes	
NTO	Effective time	Time format	-	*
	Notice to Deliver Offers	Numeric	minutes	
NTB	Effective time	Time format	-	*
	Notice to Deliver Bids	Numeric	minutes	
MZT	Effective time	Time format	-	*
	Minimum Zero Time	Numeric	minutes	
MNZT	Effective time	Time format	-	*
	Minimum Non-Zero Time	Numeric	minutes	
SEL	Effective time	Time format	-	*
	Stable Export Limit	Numeric	MW	

Data Record Type	Field	Format	Units	Comments
SIL	Effective time	Time format	-	*
	Stable Import Limit	Numeric	MW	
MDV	Effective time	Time format	-	*
	Maximum Delivery Volume	Numeric	MWh	
MDP	Effective time	Time format	-	*
	Maximum Delivery Period	Numeric	Minutes	

Note on comments:
*   Date Time fields must be either blank or the commencement of an Operational Day.

8   NOTIFICATION FILE NAMING CONVENTIONS.

Each notification file will have a file name consisting of two parts and a file extension. The file extension will be one of '.ACK', '.ACC' or '.REJ'. These extensions correspond to an acknowledgement of receipt of a Trading Agent's submission, notification of the acceptance of data from a Trading Agent and rejection of data from a Trading Agent's submission respectively.

The name will follow the same format as that of the submission file:

Title	Meaning	Field Size	Field Format	Comments
TANAME	Trading Agent Name	9	XXXXXXXXX	name should be padded with '_' to the full field width
SEQNO	Sequence number	4	9999	the acknowledgement sequence number (as per the submission sequence - section 6)

Thus, the filename will be of the form

    XXXXXXXXX9999.ACK

For example, for a Trading Agent with the name 'TR_AGT', for which the submitted file sequence number was 20, the acknowledgement file name would be:

    TR_AGT___0020.ACK

This is further outlined in section10

9   ACKNOWLEDGEMENT / ACCEPTANCE / REJECTION FILE FORMAT

9.1   Acknowledgement File Format

The acknowledgement file will contain the notification time of the submission. The notification time will use the standard EDT date/time formats as defined in reference 2.

To facilitate the use of automated systems, NGC will identify each message by the use of start and end tags. The string '<!>' will indicate the start of a message, whilst the string '<*>' will indicate the end. The last line of a reject file will contain the string '<EOF>'.

The file will take the format:

> *<!>*
> *<Message Type>*
> *Message*
> *<*>*
> *<EOF>*

Example:

> <!>
> <Notification Time>
> 2002-04-12 12:13
> <*>
> <EOF>

9.2   Acceptance File Format

Acceptance files are produced once a submission file has been validated in its entirety. The acceptance .ACC file will contain a list of all BMUs for which all submitted data has passed formatting, consistency and validation tests.

The output will be in the form of a list, sorted alphanumerically by BMU name. The last line of the acceptance file will contain the string '<EOF>'.

Each record will take the form:

BMU <name> OK

An example entry for a BMU *BM_UNIT_1* would be:

BMU BM_UNIT_1 OK

In the case of a submission file containing just an '<EOF>' tag (no submitted data) a message 'Empty file' will be placed in the acceptance file.

9.3   Rejection File Format

Reject files are also produced once a submission file has been validated in its entirety. Each record contained within a file is checked for formatting, validity and consistency.

Should formatting prove incorrect the file will not proceed to validation and will be rejected at that stage. Thus a record that has invalid data and is also incorrectly formatted for the type of data will only have a message stating that it was rejected owing to a formatting error. The validity of the record will not be considered.

Once a record has completed and passed formatting checks, it will be checked against each applicable validation and consistency rule. Any and all of these failures will be reported individually for each submitted record. Hence a single row that does not comply with multiple validation or consistency rules, will give rise to multiple error messages within a reject file.

To facilitate the use of automated systems, NGC will identify each message by the use of start and end tags. The string '<!>' will indicate the start of a message, whilst the string '<*>' will indicate the end. The last line of a reject file will contain the string '<EOF>'.

A rejection in the reject .REJ file will be one of the following formats:

> *<!>*
> *<Error Code>,<Expanded Error Message>*
> *error record*
> *<*>*

OR

> *<!>*
> *<Error Code>,<Expanded Error Message>*
> *further information*
> *<*>*

Note: there may be more than one record before the string '<*>'.

Example rejections:

> <!>
> <V_RURE_2>,<An invalid combination of NULL rates and breakpoints was encountered>
> RURE, TR_AGT, BMUNIT01, 2001-11-03 05:00, , , 12,
> <*>

OR

> <!>
> <V_GEN_5>,<File failed>
> File out of sequence: 2233. Last was 1236
> <*>

For further information on error messages please refer to reference 2.

10 EXAMPLE SUBMISSION CYCLE.

The section below exemplifies a particular submission cycle. Particular naming conventions are outlined in earlier sections of this document.

Consider an example file created by a Trading Agent e.g. *TR_AGT___0021.SBM*

The file will be FTPed to NGC's Host and placed into the 'SUBMISSION' sub-directory. NGC will then move the file from this directory to a processing area.

Looking in the 'NOTIFICATION' directory the Trading Agent will see a NGC acknowledgement file *TR_AGT___0021.ACK* created. This file will have the same name as the submitted file, but its extension will now read .ACK. This informs the Trading Agent that their submission has been received by NGC and is being processed. Inside the acknowledgement file, the Trading Agent will find the notification time of the file which has just been submitted (please refer to section 9.1).

After a short period of time, acceptance and/or rejection files will be created in the 'NOTIFICATION' directory. A file labelled *TR_AGT___0021.ACC* will be created if all the submitted file records for any BMU included in the submission file are accepted. A file named *TR_AGT___0021.REJ* will be created if any record present in the submission file is rejected. The Trading Agent may now download these files and review their contents.

APPENDIX A: Examples Of Submission Records

These sample data records have been supplied for guidance on submission format and layout only. These records are not intended to be realistic or consistent.

```
* Example data
PN        ,  TR_AGT ,                  ,   2001-11-03 06:30 ,         77 ,        2001-11-03 07:00    ,         100
                            BMUNIT01
*
MEL       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,        210 ,        2001-11-03 09:30 ,         210
MIL       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,          0 ,        2001-11-04 05:00 ,           0
*
NDZ       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,         90
NTO       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,          2
NTB       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,          2
MZT       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,        120
MNZT      ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,        120
SEL       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,        120
SIL       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,          0
MDV       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,       2380
MDP       ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,        269
*
RURE      ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,        8.2 ,        100 ,       13.6 ,        150 ,     12.8
RDRE      ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,       13.4 ,        250 ,       14.7 ,        200 ,      9.9
RURI      ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,        8.2 ,       -170 ,       13.6 ,       -120 ,     12.8
RDRI      ,  TR_AGT  ,  BMUNIT01 ,   2001-11-03 05:00 ,       13.4 ,       -140 ,       14.7 ,       -177 ,      9.9
*
BOD       ,  TR_AGT  ,   BMUNIT01 ,  2001-11-03 12:00 ,  2001-11-03 12:30        ,          1 ,         50 ,        50 ,      30 ,          25
<EOF>
```

DOCUMENT STATUS

Template Version: 1.11
PRODUCT DESCRIPTION REFERENCE

CT/24.22.0023

AMENDMENT RECORD

Issue	Draft	Date	Author	Description of changes
4		18/12/2000	DJB	Revised with comments from internal review.
4	1	06/12/2000	DJB	Include revisions owing to change requests and clarifications. Includes NGC Events 2743, 2601, 2583 and NETA Change Request 251.
3		24/05/2000	DJB	Revised with comments from internal review.
2		19/01/2000	DJB	Second Formal Issue, revised with comments from external parties.
1		23/12/1999	DJB	First Formal Issue.

CHANGE FORECAST

Once issued this document is not expected to change, however if it does it will be re-issued whole

DISTRIBUTION

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A copy of the issued document will be given to the OFGEM NETA, Programme Development Office for distribution to parties external to NGC.

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