



Participant & End-to-End Test Specification for the November 2010 BSC Systems Release

Prepared by Change Implementation Team

For Review	Date of Issue	Version Number	1.0
For Attention Of	National Grid Electricity Transmission, Logica, BSC Parties, Cognizant and other interested parties		
Overview or Purpose of Document:			
Purpose of Document			
The purpose of this document is to specify End-to-End Testing for the November 10 BSC Systems Release in accordance with the Tripartite Test Strategy.			
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1 Introduction

1.1 Scope

End-to-End Testing for the November 2010 Balancing and Settlement Code (BSC) Systems Release (the Release) will focus on the following changes:

Change	Impact
P243 'Publication of Generator Forward Availability by Fuel Type'	BMRS
P244 'Provision of BritNed flow data to the Balancing Mechanism Reporting System (BMRS)'	BMRS
CP1333 'Improved Reporting of Prices for SO-SO trades'	BMRS

P243 'Publication of Generator Forward Availability by Fuel Type'

P243 will publish the following on the BMRS:

- National Output Usable data broken down by Fuel Type and Balancing Mechanism (BM) Unit for the 2-14 days and 2-52 weeks ahead time periods;
- Output Usable data for Interconnectors. Currently forward availability for Interconnectors is not provided to National Grid but we expect this data will become available to National Grid and the wider industry in the near future. In the interim, the BMRS will report the forward availability for each Interconnector fuel type as zero
- transferring all Output Usable data/Generating Plant Demand Margin data from the BSC website to the BMRS.

P244 'Provision of BritNed flow data to the BMRS'

P244 will:

- include the Netherlands-England Interconnector (BritNed) data on the BMRS as a new fuel category.
- make allowances in the BSC for future Interconnector data to be incorporated into the BMRS without the need for a Modification Proposal

CP1333 'Improved Reporting of Prices for SO-SO trades'

Solution summary:

- A new web page for System Operator (SO)-SO price data that presents it as a table of structured data, rather than unstructured text;
- A new structured Tibco message (that presents the price data in a structured manner, rather than requiring Party systems to extract it from a textual message as currently); and
- A web page for retrieving historical price data (for a particular Settlement Day, Interconnector and/or Settlement Period).
- A new loader which will validate and load the SO-SO files sent from National Grid. The loader will deal with files in xml format.

End-to-End Testing for P243/P244/CP1333 will focus on:

1. SO correctly sending the Balancing Mechanism Reporting Agent (BMRA)-I003 'Receive System Related Data' to BMRA;
2. SO correctly sending the BMRA-I025 to BMRA;
3. SO correctly sending the BMRA-I026 to BMRA; and
4. The correct receipt of the above data by recipients.

To facilitate End-to-End testing, the BPO will also conduct the following steps (covered in more detail in OAT):

5. BMRA correctly receiving and processing the data items;
6. BMRS correctly displaying the new BMRA data items on the BMRS Low-Grade Service website;
7. BMRS correctly displaying the new BMRA data items on the BMRS High-Grade Service website;
8. BMRS correctly publishing the new BMRA data items on to Participants via the High-Grade Tibco Messaging Service;

Subsequent processing of correctly formatted and valid data flows by Test Participants after acceptance/loading is out of scope. Checking the accuracy and correctness of calculations for various system prices is also out of scope as this is covered by regression testing.

However ELEXON will investigate any issues identified by Test Participants to ensure that the data flows are in line with the IDD specifications.

1.2 Responsibilities

The table below details various responsibilities of ELEXON, Logica and the other Participants.

Responsibility	ELEXON	BPO	SO	BSC Parties	AMD
Identify/Organise Participants	X				
Set up End-to-End/Integration Testing environment		X	X	X ¹	
Create/Identify test data and expected results for End-to-End Testing		X	X		
Check own systems ready to receive test data				X	
Send System Related Data to BMRA [BMRA-I003, BMRA-I025, BMRA-I026]			X		
Confirm receipt of SO-sent test data	X	X			
Issue System Related Data to BSC Parties (e.g. TIBCO messages to BSC Parties)		X			
Confirm receipt of BMRA-I005 flow ²				X	
Record Results	X	X	X	X	
Support Participant	X	X			
Record Defects/Issues (if required)	X	X	X	X	
Address Defects (if required)		X ³	X		x
Publish test results		X			

1.3 Approach

End-to-End Tests on BMRA will be carried out in the OAT Environment. End to End testing will utilise the OAT environment towards the end of OAT testing. The E2E test phase will focus on the receipt of the new data flows by BSC Participants as the SO-BMRA interface will have been tested under OAT. The SO will employ a feed from their test environment for sending the System Related Data and SO-SO price data. This feed will be completely separate to the live feed. The SO will send the data flows which will then be transmitted by the BSC Agents, processed and published to Participants via various routes such as the High-Grade and the Low-Grade Service and the New Electricity Trading Arrangements (NETA) network. The BPO will arrange a temporary IP address where the Participants can access the High-Grade and Low-Grade Service.

¹ If required

² An ELEXON representative will be present at the BPO's offices to confirm that data has been sent/received. ELEXON will also investigate the possibility of having an ELEXON representative at the participant testers offices should it be requested.

³ The AMD will be responsible for fixing defects and BPO will be responsible for executing the tests.

BSC Parties can choose to receive TIBCO messages either via the Tibco relay file format or a direct link set up between their test environment and the BPO's Operational Acceptance Test (OAT) environment.

ELEXON will organise volunteers for End-to-End Testing.

During End-to-End Testing, ELEXON will have members of the Release team present at the BPO's offices. The Release Team members will contact Participants to confirm whether files have been sent and/or received.

Where data needs to be checked and compared, a file comparison utility such as 'diff' will be used wherever possible. Both versions of the file, along with any other output/results, will be saved so that they can be archived in the Release folder.

Test results and defects will be recorded and managed in accordance with the Tripartite Test Strategy. Also see Section 9 of this document.

Each Test scenario will be considered successful if no defects are found or, at ELEXON's discretion, when an agreed plan is in place to address low severity defects.

2 Deviations from Test Strategy

Currently there are no deviations from the Tripartite Test Strategy (Reference 1).

3 Summary of End-to-End Test Scenarios

End-to-End Testing will ensure that new data submitted by the SO is received and processed by the BMRA and delivered to participants. The recipient systems should be able to receive and upload this data correctly in their systems.

The following is a summary of the flows to be tested.

Flow Name	From Participant	To Participant	Change
BMRA-I003 System Related Data	SO	BMRA	P243/P244
BMRA-I025 SO-SO Prices	SO	BMRA	CP1333
BMRA-I026 SO-SO Standing Data	SO	BMRA	CP1333
BMRA-I005 Publish System Related Data	BMRA	SO and BSC Parties	P243/P244 CP1333
Low-Grade BMRS Website	BMRA	All	P243/P244 CP1333
High-Grade BMRS (Website)	BMRA	SO and BSC Parties	P243/P244 CP1333
High-Grade BMRS (Messaging) ⁴ BMRA-I005 Publish System Related Data	BMRA	SO and BSC Parties	P243/P244 CP1333

The BPO uses TIBCO version 8.1.2 and hence this version will be tested during End-to-End Testing.

Appendix B shows a diagrammatic representation of these flows.

4 Test Scripts

The Test Scripts are described in Appendix C.

⁴ Test scenarios for TIBCO messages do not prescribe testing the Relay file; the reason being that the Relay file is independent of the actual TIBCO message structure and content. It contains all TIBCO data sent during a day for that Participant.

5 Test Scenario Pre-Requisites and Entry Criteria

For End-to-End Testing to commence:

- The System Testing phase for each system must have been completed successfully
- The OAT phase will be complete or almost complete. This includes the BMRS, systems maintained by the SO and any other Participant systems.
- The OAT environment must be stable, with each new flow processed correctly during OAT
- A suitable test environment must be available for every Participant. This includes availability of OAT environment (BPO), with the and a feed from the SO for test data transmission and reception.
- Appropriate production or non-confidential full-width test data must be available for testing all the flows mentioned in the previous section. In the case of production data, Participants must not see confidential data belonging to other Parties⁵;
- In addition to the BPO and the SO, it is desirable to have at least two BSC Parties to take part in testing as explained in Section 3.

6 Software Baseline

Software	Server Version No.	Client Version No.
BMRA	TBC	TBC

The above version numbers may be appended by final patch numbers, which will relate to the fixes following November 2010 OAT. This applies to the complete system – server and client.

⁵ Participants will either see system test data or test data based on their own data.

7 Test Environment Approach

The BPO will be responsible for providing and maintaining a suitable test environment which is based on an upgraded copy of the Live environment.

The SO will be responsible for maintaining a suitable test environment which is based on an upgraded copy of their Live environment. The SO will use this to send System Related Data.

All other Participants i.e. BSC Parties will be responsible for setting up and loading the test data into their test systems.

8 Data Requirements and Expected Results

Test data is required for each of the scenarios detailed in Appendix C. The SO will use existing production volume data and replicate it for test runs.

New fields are introduced in the amended interfaces.

Test data transmitted by the SO will be received by BMRA and used for subsequent tests. It is expected that all data is correctly transmitted and received by the systems involved.

As described earlier, test data will not be an exact replica of the Live data.

9 Test Results and Defects Process

This section describes responsibilities associated with logging test results and resolving defects.

All defects identified during testing should be raised with the BSC Service Desk (bscservicedesk@logica.com). Defects may be raised directly with the BSC Service Desk by the BPO, ELEXON, SO and other Participants. However it is anticipated that the BPO will raise the majority of defects on behalf of other Participants. The BPO will be responsible for logging and tracking all defects raised with the BSC Service Desk.

The AMD will be responsible for the following:

- 1) Any defect where a data flow originating from BMRA does not conform to the IDD Specification.
- 2) Any defect where BMRA fails to accept a data flow that conforms to the IDD specifications.
- 3) Any other defects including those with TIBCO messaging which ELEXON deems as appropriate.

SO will be responsible for the following:

- 1) Any defect where a data flow originating from SO does not conform to the IDD or the NGET-ELEXON Specification.

BSC Parties will be responsible for the following:

- 1) Any defect where the BSC Party fails to accept a data flow that conforms to the IDD specification.

Each Party will notify ELEXON about the test results. ELEXON will log these details on the scripts.

10 Assumptions and Risks

It is assumed that all Participants will be ready in time for the testing.

Risks and mitigation actions are outlined below:

No	Risk Owner	Risk	Mitigation
1	Test Participant (SO, BSC Party)	A Test Participant is not ready in time due to staff unavailability or environment set up problems (e.g. test systems not conforming to IDD Specifications or pre-requisite business data not loaded into test systems).	<p>Test Participant to confirm resource availability and contact details to ELEXON via email.</p> <p>Test Participant to confirm to ELEXON that Test systems are available and correctly set up at least 2 weeks prior to the Participant Test date.</p> <p>Test participant to ensure set up conforms to the new IDD Specifications for the BMRA-I005 file provided by ELEXON at least 1 month before test date.</p> <p>Test participant to ensure set up conforms to a compatible TIBCO version- i.e. 8.1.x or other backward compatible versions.</p> <p>Test Participant to request any test data required to set up their Participant test systems at least 3 weeks prior to the End-to-End Test date.</p> <p>ELEXON to provide test data at the Test Participants request at least 3 week prior to End-to-End Testing – to ensure that the Test Participants test systems are set up before the Test date.</p>
2	ELEXON, AMD	BMRS changes not available in time for End-to-End Testing.	<p>The AMD to confirm progress at weekly checkpoints prior to delivery of changes and any defect fixes.</p> <p>The BPO to confirm to ELEXON that test system is available and correctly set up at least 2 weeks prior to the End-to-End Test date.</p>
3	SO	SO unable to send the BMRA-I003, BMRA-I025 and BMRA-I026. This may be due to other high-priority operational reasons.	SO to confirm resource allocation and availability to ELEXON two days prior to testing.
4	SO, BPO	Communication link between SO and BPO cause delays to testing.	BPO and SO to configure IP address 2 weeks prior to End-to-End test dates.

11 Document Control

a Authorities

Version	Date	Author	Reviewer	Reason for review
V0.1	15/06/2010	SHJ		Peer Review
v0.1	18/06/10	SHJ	SF	Peer Review
v0.2	24/06/10	SHJ	TYM,YVW,RIS, JAA	Formal Review
v0.3	01/07/2010	SHJ	BPO, National Grid	Formal Review
V0.4	15/07/2010	SHJ	BPO, National Grid	Updated with formal review comments
V0.5	15/07/2010	SHJ	-	Removed repeated word

Version	Date	Author	Authoriser	Signature
V1.0	26/07/2010	SHJ	YVW	

b Distribution

Recipient	Version	Date	Reason

c References

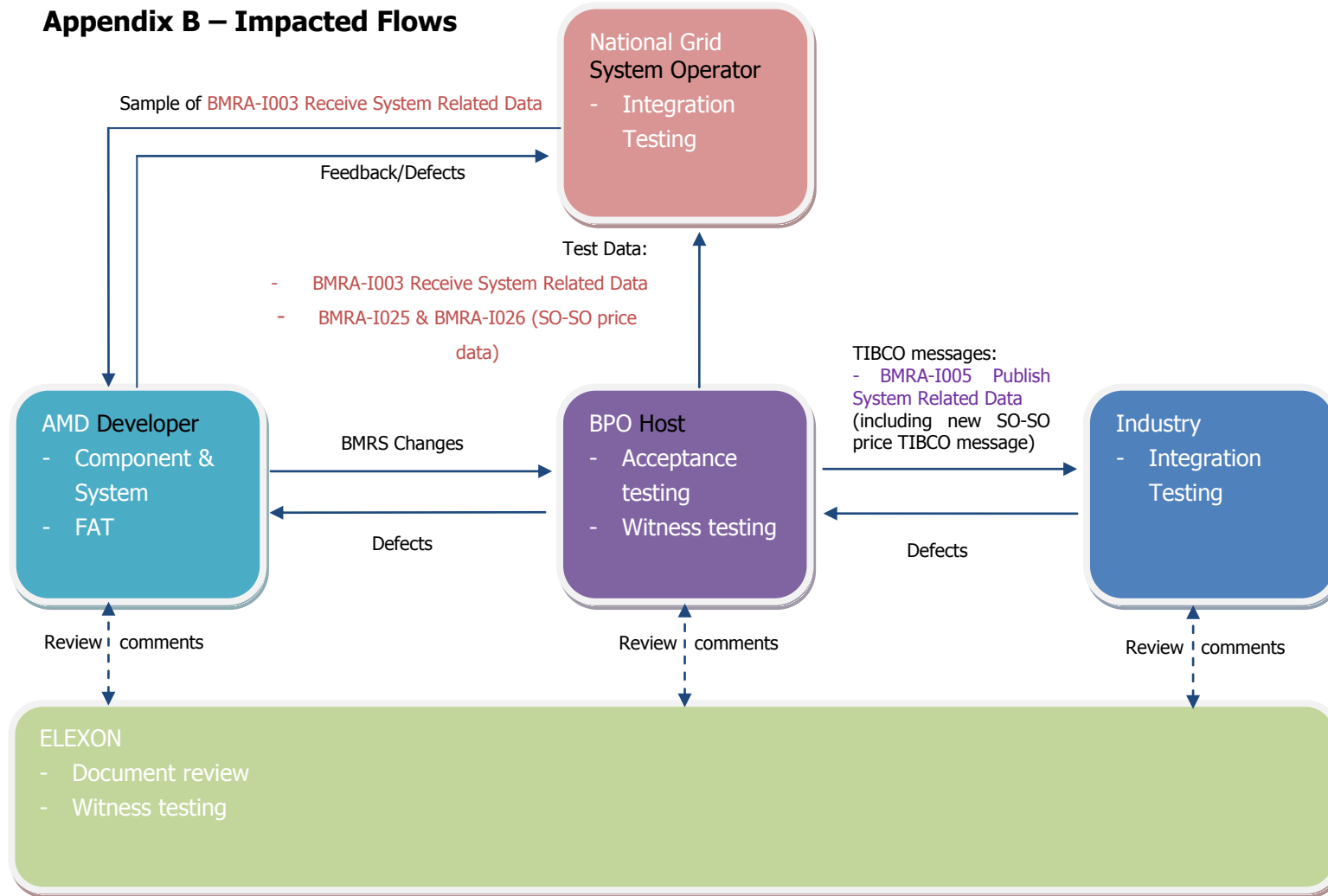
Reference	Document
Reference 1	Tripartite Test Strategy

12 Appendix A – Terms used in this Document

Other acronyms and defined terms take the meanings defined in the Balancing and Settlement Code (the Code), Section X.

Acronym/Term	Definition
Participant	General term used to denote BPO, SO, BSC Parties, and the AMD
AMD	Application Management and Development Service Provider (Cognizant)
BPO	Business Process Operator and Host (Logica)
BMRA	Balancing Mechanism Reporting Agent
BMRS	Balancing Mechanism Reporting System
OAT	Operational Acceptance Test
SO	System Operator

13 Appendix B – Impacted Flows



14 Appendix C - High-Level End-to-End Test Scripts

The letters used to denote responsibility in the scripts below have the following meanings:

E = ELEXON

B = BPO

P = BSC Party

SO = System Operator

14.1 Test summary

Test	Participants
1(a) BMRA-I003 SO to BMRA (P243/P244)	BPO, SO
1(b) Load and publish BMRA-I003 data (P243/P244)	BPO
2(a) BMRA-I025 SO to BMRA (CP1333)	BPO, SO
2(b) Load and publish BMRA-I025 data (CP1333)	BPO
3(a) BMRA-I026 SO to BMRA (CP1333)	BPO, SO
3(b) Load and publish BMRA-I026 data (CP1333)	BPO
4(a) BMRA-I005 BMRA to BSC Parties – System Related Data (P243)	BPO, Participants
4(b) BMRA-I005 BMRA to BSC Parties – SO-SO price data (CP1333)	BPO, Participants

14.2 Test 01 (a): BMRA-I003 SO to BMRA (P243/P244)

Purpose:		To test that the SO can send the new data items in the BMRA-I003 data flow and the BMRA can successfully receive it.		Prerequisite:	N/A	
Tester(s):		SO, BPO		Date:	September 2010	
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F

1	SO	<p>SO sends System Related Data:</p> <ul style="list-style-type: none"> • For 2-14 days ahead: <ul style="list-style-type: none"> ○ National Output Usable data ○ National Output Usable data by Fuel Type ○ National Output Usable data by Fuel Type and BM Unit ○ Zonal Output Usable data ○ Generating Plant Demand Margin • For 2-52 weeks ahead: <ul style="list-style-type: none"> ○ National Output Usable data ○ National Output Usable data by Fuel Type ○ National Output Usable data by Fuel Type and BM Unit ○ Zonal Output Usable data ○ Generating Plant Demand Margin • National Output Usable data for 2-49 days ahead • Zonal Output Usable data for 2-49 days ahead • National Output Usable data for 1-5 years ahead • Zonal Output Usable data for 1-5 years ahead • System Zone maps • BM Unit mapping information 	Data sent from SO.	Server Log Verbal confirmation		
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2	B	BMRA receives System Related data.	Data received by BMRA.	BMRS Inbox Check System Related Data from SO.		
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14.3 Test 01 (b) Load and publish BMRA-I003 data (P243/P244)

Purpose:		To test that can successfully publish System Related Data received in Test01 (a) on the BMRS Low-Grade Service.		Prerequisite:		N/A
Tester(s):		BPO		Date:		September 2010
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F
1	B	BMRA loads data successfully. Data is displayed on the Low-Grade BMRS and is available to download in CSV format.	Data available (display and download) on BMRS Low-Grade site matches/relates to data flow.	Screenshot and CSV file match/relate to System Related Data from the SO.		

14.4 Test 02 (a): BMRA-I025 SO to BMRA (CP1333)

Purpose:		To test that the SO can send the new data items in the BMRA-I025 data flow and the BMRA can successfully receive it.		Prerequisite:	n/a	
Tester(s):		SO, BPO		Date:	September 2010	
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F
1	SO	SO sends SO-SO price data.	Data sent by SO	Server Log Verbal confirmation		
2	B	BMRA receives SO-SO price data	Data received by BMRA	BMRS Inbox Check SO-SO price data from SO.		

14.5 Test 02 (b): Load and publish BMRA-I025 data (CP1333)

Purpose:		To test that BMRA can successfully load and publish BMRA-I025 data on the BMRS Low-Grade Service.		Prerequisite:	n/a	
Tester(s):		BPO		Date:	September 2010	
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F

1	B	BMRA loads data successfully. Data is displayed on the Low-Grade BMRS and is available to download in CSV format.	Data available (display and download) on BMRS Low-Grade site matches/relates to data flow.	Screenshot match/relates to SO-SO data		
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14.6 Test 03 (a): BMRA-I026 SO to BMRA (CP1333)

Purpose:		To test that the SO can send the new data items in the BMRA-I026 data flow and the BMRA can successfully receive it.		Prerequisite:	n/a	
Tester(s):		SO, BPO		Date:	September 2010	
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F
1	SO	SO sends SO-SO standing data.	Data sent by SO	Server Log Verbal confirmation		
2	B	BMRA receives SO-SO standing data	Data available (display and download) on BMRS Low-Grade site matches/relates to data flow.	Screenshot match/relates to SO-SO data		

14.7 Test 03 (b): Load and publish BMRA-I026 data (CP1333)

Purpose:		To test that the BMRA can successfully load and publish BMRA-I026 data on the BMRS Low-Grade Service.		Prerequisite:	n/a	
Tester(s):		BPO		Date:	September 2010	
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F
1	B	BMRA loads data successfully. Data is displayed on the Low-Grade BMRS and is available to download in CSV format.	Data received by BMRA	Screenshot match/relates to SO-SO data		

14.8 Test 04 (a): BMRA-I005 BMRA to BSC Parties – System Related Data (P243)

Purpose:		To test that Participants (BSC Parties) can successfully access BMRA-I005 data and it is also available on the BMRS High-Grade Service.		Prerequisite:	BMRA-I003 data from SO received and uploaded correctly in BMRA. (Test 01)	
Tester(s):		BPO, Participants (SO and one or more BSC Parties)		Date:	September 2010	
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F
1	B	BMRS publishes System Related Data for Participants.	Data published on BMRS website.	Server Log Verbal confirmation		

2	P	<p>Participant receives:</p> <ol style="list-style-type: none"> 1. SO-SO price data 2. System Related Data: <ul style="list-style-type: none"> ○ For 2-14 days ahead: <ul style="list-style-type: none"> ▪ Output Usable Data by Fuel Type ▪ Output Usable data by Fuel Type and Balancing Mechanism (BM) Unit ▪ Generating Plant Demand Margin ○ For 2-52 weeks ahead: <ul style="list-style-type: none"> ▪ Output Usable Data by Fuel Type ▪ Output Usable data by Fuel Type and Balancing Mechanism (BM) Unit ▪ Generating Plant Demand Margin 	Data received by Participants.	Data query on Participant's TIBCO system		
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3	P	Check that the BMRA-I005 is in accordance with the NETA IDD Part 1 and can be uploaded to own system.	<p>BMRA-I005 flow matches/relates to IDD definition issued for November 2010.</p> <p>Data uploaded successfully without errors relating to IDD specifications. Participant Systems show correct forecast data and numerical data values are identical to the original uploaded System Related Data</p> <p>; or reasonably close where Participant Systems may display rounded numeric values in systems/screens.</p>	<p>Email confirmation</p> <p>Application screenshots, database output/reports showing data after load</p> <p>TIBCO System Related Data</p>		
4	P	Participant views System Related Data on the High-Grade Website.	No difference in values in the screenshot and System Related Data in the relevant TIBCO messages	Screenshot and System Related Data from TIBCO		

14.9 Test 04 (b): BMRA-I005 BMRA to BSC Parties – SO-SO price data (CP1333)

Purpose:		To test that Participants (BSC Parties) can successfully access BMRA-I005 data and it is also available on the BMRS High-Grade Service.		Prerequisite:	BMRA-I025, BMRA-I026 data from SO received and uploaded correctly in BMRA. (Tests 02 and 03)	
Tester(s):		BPO, Participants (one or more BSC Parties)		Date:	September 2010	
Step	Resp	Details	Expected Results	Evidence	Actual Results	P / F
1	B	BMRS publishes SO-SO price data for Participants.	Data published on BMRS website.	Server Log Verbal confirmation		
2	P	Participant receives SO-SO price data	Data received by Participants.	Data query on Participant's TIBCO system		

3	P	Check that the BMRA-I005 is in accordance with the NETA IDD Part 1 and can be uploaded to own system.	<p>BMRA-I005 flow matches/relates to IDD definition issued for November 2010.</p> <p>Data uploaded successfully without errors relating to IDD specifications. Participant Systems show correct price data and numerical data values are identical to the original uploaded SO-SO price data; or reasonably close where Participant Systems may display rounded numeric values in systems/screens.</p>	<p>Email confirmation</p> <p>Application screenshots, database output/reports showing data after load</p> <p>TIBCO System Related Data</p>		
4	P	Participant views SO-SO price data on the High-Grade Website.	No difference in values in the screenshot and SO-SO data in TIBCO	Screenshot and SO-SO price data from TIBCO		

15 Appendix D – Test Schedule

End-to-End tests will be carried out using the BPO's OAT environment for testing data flows. This will mean that the System Operator can send data flows, i.e. tests 1, 2 and 3 from 09/09/2010.

For all (other) BSC Parties, End-to-End testing will be scheduled for 3 days between 13/09/2010 to 04/10/2010. During this period, they will receive TIBCO messages and will be able to conduct tests 4(a) and 4(b).