

nationalgrid

# Exercise Prelude

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## Executive Summary

Exercise Prelude (“Prelude”) was a Network Emergency Co-ordinator (NEC) Exercise, required under GS(M)R to test the emergency arrangements in place to manage a Network Gas Supply Emergency (NGSE).

Prelude focused on downstream industry players particularly interactions between the NEC, the Distribution Networks control rooms, DN operational teams and the Shipper community. Interactions with upstream participants were limited to testing communication and data exchange.

The exercise was the first full scale test to include interactions from more than one Distribution Network control room with both the Distribution National Control Centre (DNCC) and Scotia Gas Networks control room taking a full part in the exercise and communicating with their Shippers, Consumers and the Network Emergency Management Team (NEMT).

The exercise scenario of a progressive Gas Deficit Emergency (GDE) tested actions and communications at each stage of the NGSE. Prelude was an effective test of emergency arrangements. The exercise demonstrated improvements in emergency procedures from previous exercises. It also identified areas where existing procedures needed some modification and where communications could be improved.

Previous large NEC Exercise’s have raised common concerns, in particular the following:

- The effectiveness of the information exchange between NEMT, the Distribution Network control rooms and the Distribution Networks;
- For Firm Load Shedding the quality of the contact details maintained by Shippers and their instructions to sites who cannot turn off gas;
- Shippers performance in delivering Emergency Interruption.

Prelude demonstrated that:

- The communication between the NEMT and the new structure of multiple Distribution Network control rooms is effective;
- Shipper performance in delivering Emergency Interruption has improved;
- Distribution Networks have improved their performance in Firm Load Shedding compared with previous exercises, with comparative measures demonstrating opportunities for further performance improvements;
- The quality of the contact details available from Shippers is still an issue;
- Shippers will need to ensure their emergency procedures and processes remain aligned as Distribution Networks develop their independent system operator functions;

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- Supplementary Transporters would benefit from further contact from Distribution Networks to explain the actions required of Supplementary Transporters in an emergency;
- Due to time constraints the testing of restoration was limited, and would benefit from retesting.

Exercise Prelude was an effective test of emergency arrangements and the authors would like to thank all participants. Numbered footnotes in this document refer to the recommendations table in section 7.2.

# National Grid

## **Contents**

1.0	Introduction	5
1.1	Exercise Scope	5
1.2	Exercise Structure and context	5
2.0	Results and Observations	8
2.1	Procedures	8
2.2	Communication	9
2.3	Supporting Tools	10
3.0	Load Shedding Analysis	12
3.1	VLDMC Interruption and Firm Load Shedding	12
3.2	Emergency Interruption of Non-VLDMC DN Loads	13
3.3	Firm Load Shedding of >25,000 tpa Consumers	14
3.4	Overall performance	14
3.5	Special Status Sites	19
4.0	Isolation	23
5.0	Restoration	23
6.0	Bord Gáis Eireann	23
7.0	Findings and Recommendations	24
7.1	Findings	24
7.2	Recommendations	26

## **Appendices**

Appendix 1	Shipper Emergency Interruption performance
Appendix 2	LDZ Firm Load Shedding Data
Appendix 3	Shipper Performance Firm Load Shedding
Appendix 4	LDZ Analysis of Special Status Sites Data
Appendix 5	LDZ Isolation
Appendix 6	Exercise briefing pack
Appendix 7	Glossary

# National Grid

## 1.0 Introduction

Exercise Prelude tested the emergency arrangements in place to manage a Network Gas Supply Emergency (NGSE) and fulfilled the NEC's obligations under GS(M)R to periodically carry out a full industry exercise.

### 1.1 Exercise Scope

1.1.1 Prelude was held on the 5th and 6th of November 2008. It focused on testing the emergency procedures in place to effectively manage a NGSE. The exercise examined principally downstream industry process and engaged fully with the Gas National Control Centre (GNCC), Distribution Network control rooms, Distribution Networks and Shippers. Communications were tested with terminal operators, storage sites and interconnectors, with Bord Gas Eireann carrying out a downstream exercise in parallel to Prelude. Interaction with DECC and the SRT remained out of the scope of the exercise.

1.1.2 The exercise modelled a scenario of a progressive GDE and focused on the demand reduction measures enacted by the industry to achieve a supply demand balance at each stage of the emergency. During the exercise strategic decision making by the Network Emergency Coordinator (NEC) and development of the strategy by the Network Emergency Management Team (NEMT) were simulated by exercise injects to expedite progress of the exercise through the various stages of an NGSE. This afforded the maximum time available to undertake downstream load response activities. Simulated data was exchanged with each party to prove the validity of forms.

1.1.3 End users were contacted as part of the interruption and Firm Load Shedding process.

### 1.2 Exercise Structure and Context

1.2.1 Prelude was a return to a large scale coordinated industry exercise that tested the progression of an NGSE through its various stages. As such it mirrored exercise Moscow in 2005 in format and processes tested. The listing below summarises previous NEC exercises and highlights the main specific recommendations from each report.

- Moscow 2005 – A full industry exercise examining each stage of the downstream emergency procedures and including communication exchange with terminals.
  - Recommendations
    - Improvements to the forms used during an NGSE
    - Availability of resources to conduct Firm Load Shedding
    - Provision of accurate site details by Shippers
    - Clarification of Interactions with BGE

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- Exercise Neptune 2006 – A full industry exercise testing progression to an immediate Stage 3 NGSE, with the full participation of terminal operators and liaison with the DTI and simulation of the Strategic Response Team.
  - Recommendations
    - Realignment of duties within the NEMT
    - Timely reporting of emergency interruption and Firm Load Shedding
    - Provision of accurate site details by Shippers
    - Improve the reliability of the ESP program
- Exercise Opus 2007 - Specifically examined each Distribution Network Firm Load Shedding performance and explored the definitions for Special Status Sites.
  - Recommendations
    - DN's to share best practice to identify and implement further improvements
    - Provision of accurate site details by Shippers
    - DN's to review the definition of Special Status Sites to ensure timely load reduction

1.2.2 The scope of exercise Prelude was similar to that of exercise Moscow in that it focused on the coordinated downstream response to an NGSE with participation from upstream participants limited to testing communications. This report will make reference to the more recent exercise Neptune and Exercise Opus when comparing the progression through the stages of the emergency and the results of load reduction measures respectively.

1.2.3 Prelude tested the consistency of downstream procedures through each stage by simulating progressive supply losses over the two days of the exercise.

### Day One

On day one effort was concentrated on the following stages and subsequent actions:

#### Stage 1 Potential NGSE

- Emergency Interruption

#### Stage Two

- Maximisation of Beach and storage supplies (communication only)
- Suspension of National Grids' participation on the OCM as residual balancer

#### Stage Three

- Firm Load Shedding of NTS and DN VLDMC's

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- Restoration of some sites using a simulated direction Notice.

### Day Two

On day two the exercise progressed with further supply losses leading to the following actions:

Stage Three (continued)

- DN Firm Load Shedding

Stage Four

- Isolation of Distribution Networks

Stage Five

- Restoration.

1.2.4 Individuals were tasked to observe key industry participants actions during the exercise and report their recommendations. Feedback was also given by industry participants to inform the production of this report.

# National Grid

## 2.0 Results and Observations

2.0.1 Emergency exercises are run to test the effectiveness of existing processes and procedures to identify where improvements are required. This section of the report assesses how effective existing procedures were shown to be, discusses any communication issues encountered and identifies any problems experienced with the support tools and systems critical to managing a gas supply emergency.

### 2.1 Procedures

2.1.1 The formation of the NEMT worked well with roles being clearly defined. A number of newly trained individuals successfully took part in the exercise both as Officers in Charge (OIC) and within the defined teams. Changes to NEMT roles and duties following recommendations from exercise Neptune also proved to be effective. The support function worked well with the OIC Support acting as a central hub for communications from the NEC and for the Supply team.

2.1.2 The Supply team were not fully aware of the relevant hard disk shared area being used to store, manage and send notices by the Support Team and the associated procedure. Within the exercise this was addressed by the relevant team leaders. Going forward training will be required to increase familiarity of roles and procedures across teams.<sup>1</sup>

2.1.3 During the exercise the Incident Controller asked for additional information from OIC Supply in respect of Storage Utilisation in order to maintain assessment of the Safety Monitors. Including this update of the figures as a standard action under the OIC Supply action list will improve the visibility and necessity of this consideration in the E3 procedures.<sup>2</sup>

2.1.4 Communications and procedures were proven to be effective between the NEMT and the two Distribution Network control rooms. With additional Distribution Networks developing their own control rooms it is prudent to minimise the risk of confused notification and response by ensuring that E3 documents remain aligned.<sup>3</sup>

2.1.5 Information sharing overall throughout the exercise across teams and particularly between the NEMT and control rooms was very effective with fewer delays and less querying of data exchange compared to exercises Moscow and Neptune. On day two during Stage 3 and Stage 4 there were some delays in the return of information from a Distribution Network. Some differences in the values returned on the day, and that available post exercise, were also identified in the exercise. This suggests that further efficiencies may be made in

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tracking calls, collating information and communicating back through to the NEMT.<sup>4</sup>

- 2.1.6 Going forward Shippers need to take into account the communication and procedural changes necessary to engage with multiple Distribution Network control rooms.<sup>5</sup> Design of some Shippers systems lends itself to the issuing of widespread curtailment notices rather than specific area interruption.<sup>6</sup>

### 2.2 Communications

- 2.2.1 There were no significant delays in communications from the NEMT to other parties with all teams working well in the exercise. Telephone communications with Sites were supplemented with the relevant faxed notification to Shippers and sites. The target for contacting NTS VLDMC customers by telephone is 30 minutes. This was not met during the exercise. This was due to inaccurate contact details discussed in 2.2.6 and the stretching of the Shipper Liaison teams capacity as they were also responsible for sending and tracking faxes. This affected the swift collation of data and the production of accurate information to the NEMT.<sup>7</sup>
- 2.2.2 Faxed communication of notices caused practical issues for Shippers. They reported that fax machines were replicating notifications to emergency interrupt. This resulted in resource being utilised to audit the most recent NEC and interruption notifications.<sup>8</sup>
- 2.2.3 SC2004 is the system that manages emergency interruption and produces the notifications that are faxed to sites and Shippers. SC2004 developed a fault on day two of the exercise. This resulted in the automatic resending of restoration notices to Shippers after the exercise had completed. This impacted on Shippers not being able to utilise fax machines until the fault had been stopped.<sup>9</sup>
- 2.2.4 All notices were issued prefixed with “Exercise Prelude” albeit some Shippers commented that the notices were either typed or written on the forms. Notices have also been rebranded to reflect the Transporter sending the message. This rebranding, and the increase in the number of Transporter contacts is consistent with distribution networks developing their own control room function.
- 2.2.5 Shippers reported that communication via telephone in general was very clear and effective.
- 2.2.6 The provision by Shippers of effective contact details does remain an issue and is analysed in detail in section 3.4 and fig 5. Contact details are critical to the NEC and all Transporters in actioning effective load shedding. Although the industry requirements are clear, and effort has been made to resolve this issue, the quality of contact details needs

## National Grid

improvement.<sup>10</sup> Any improvements in this area could mean the difference between load shedding of some loads or progression to Isolation.

- 2.2.7 The NEC Safety Case specifies ANS as a primary method of notification. It is noted that ANS messages were initially ignored by a number of recipients. However non-read notifications were contacted during the exercise to ensure users read ANS notifications. It has been noted that in the event of an actual NGSE sufficient resources may not be readily available to undertake this task if the non read volume is high. Shippers need to ensure that the ANS machine is available and messages are read by the relevant staff.
- 2.2.8 There were delays experienced on day two of the exercise in the provision of isolation information. Given the reporting and response timescales in the emergency procedures, it became evident that there was insufficient time to rigorously test restoration of the NGSE and instigation of local gas supply emergencies. It is recommended that the process for isolation and restoration are examined within the emergency exercise programme.<sup>11</sup>
- 2.2.9 Storage operators were all aware of the exercise and data exchange of the relevant forms and updates were received as expected. Comment was received suggesting that forms could be improved to give greater clarity to storage sites as to what information was expected to be returned to the OIC Supply,<sup>12</sup> but generally the operators were clear as to the expectations in the exercise.
- 2.2.10 As previously noted the role of terminal operators was limited to confirming communications from the NEC and NEMT. However some terminal operators contacted during the exercise were unaware of the exercise, but confirmed that emergency communications had been received.<sup>13</sup>
- 2.2.11 Feedback from Supplementary Transporters requested greater clarity as to the actions the Distribution Networks were asking them to complete. This suggests that the emergency procedures in general, and the Supplementary Transporters specific role in an emergency, needs clarification from the Distribution Networks.<sup>14</sup> Clarity and communication is important, as supplementary transporters have responsibility for interruption and Firm Load Shedding on their networks and must respond to instructions, including those to isolate, given by the upstream Distribution Network.

## 2.3 Supporting systems

- 2.3.1 The new version of the Emergency Strategy Program (ESP) decision support tool was used throughout the exercise with prepared data sets to generate the next stage of the NGSE. This worked well with the

## National Grid

operators experiencing the responses at each stage of the emergency. Going forward enhancements are recommended to improve the user interface and modelling capability of the system.<sup>15</sup>

- 2.3.2 NEC forms and OIC Supply forms were sent to fax machines using the online Webfax application. This proved a very efficient and effective method of issuing faxes. Shippers only comments were that faxes received from Webfax had an “incorrect” time printed at the top of the fax. This time did not correspond with the time the notice was issued on the form. Initial investigations suggest that the Webfax application uses the service provider’s local time to issue faxes and this is reflected in the automatically generated fax header. There is value in assessing if this would materially affect any post emergency audit of the information.<sup>16</sup>
- 2.3.3 Distribution Networks encountered some problems with sending interruption notices via SC2004 at Stage 1 and Stage 3 of the exercise. A fault with the system resulted in delays being introduced to complete these stages of the emergency exercise.<sup>17</sup> As highlighted in paragraph 2.2.3 an additional fault occurred after completion of the exercise that had the effect of resending restoration notices to Shippers.
- 2.3.4 Lotus Notes communication of the DNCC series of forms failed when liaising with Scotia Gas Networks. However this was quickly realised by the OIC Demand, and the back up email exchange of the relevant forms was instituted. The root cause of the system failure will be investigated.<sup>18</sup> Scotia Gas Networks also reported issues with their Time To Fail application. Neither of these issues inhibited the Distribution Network in completing their tasks within the required timescales.

**3.0 Load Shedding Analysis**

3.0.1 Effective load shedding is a vital element in successfully managing a NGSE. Exercise Prelude effectively tested the delivery of load reduction on the primary and secondary systems. In this section of the report particular attention has been paid to analysing the performance of Emergency Interruption and Firm Load Shedding, including Special Status Sites. Comparisons have been made with exercise Opus to determine trends and areas for improvement.

**3.1 VLDMC Interruption and Firm Load Shedding**

3.1.1 Emergency interruption and Firm Load Shedding of VLDMC's is actioned by the GNCC and Distribution Network control rooms, for NTS and Distribution Network loads respectively. It was possible to contact all VLDMC's for emergency interruption and Firm Load Shedding. The respective control room contacts the site to instruct load shedding via telephone followed by a fax of the appropriate GSMR notification. The procedure was executed and in general worked well. The results of VLDMC load shedding were

**NTS Emergency Interruption**

<b>NTS VLDMCs</b>	
Time to contact All Sites 50 Mins	
Number of VLDMCs	22
Isolate within 1hr	20
Isolate with 1 - 2 hrs	2
Isolate within 2 - 3 hrs	0
Isolate within 3 - 4 hrs	0

*Table 1*

**Distribution Network Emergency Interruption**

<b>LDZ VLDMC</b>	
Time to contact All sites 20 mins	
Number of VLDMC's	6
Isolate within 1hr	3
Isolate within 1-2hr	3
Isolate within 2-3hr	
Isolate within 3-4hr	

*Table 2*

**NTS Firm Load Shed of VLDMC's**

<b>NTS VLDMCs</b>	
Time to contact All Sites 2hr 26 mins	
Number of VLDMCs	40
Isolate within 1 hr	34
Isolate within 1 - 2 hrs	5
Isolate within 2 - 3 hrs	
Isolate within 3 - 4 hrs	1

*Table 3*

## National Grid

### Distribution Network Firm Load Shed of VLDMC's

LDZ VLDMC	
Time to contact All sites 20 mins	
Number of VLDMC's	7
Isolate within 1hr	3
Isolate within 1-2hr	3
Isolate within 2-3hr	1
Isolate within 3-4hr	

Table 4

3.1.2 Performance by the Distribution Network control rooms was excellent in that all VLDMC customers were contacted by telephone within the target of 30 minutes. For NTS VLDMC's this target was missed. The practical issues encountered were the quality of the contact details available for sites, and the efficiency of faxing notifications as discussed in paragraph 2.2.1. With respect to contact details the time taken to complete load shedding of VLDMC's was frustrated by establishing contact with individuals with the appropriate level of authority and responsibility. As an example, for NTS Firm Load Shedding (Table 3) only one specific individual had authority to confirm compliance at a site. This individual was unavailable for several hours. No other individual contacted at the site would confirm that the site would load shed in accordance with the GSMR notification.

### 3.2 Emergency Interruption of Non-VLDMC Distribution Network Loads

3.2.1 Non-VLDMC interruptible sites are emergency interrupted by their Shippers. DNCC and Scotia Gas Networks control room contacted Shippers and instructed them to emergency interrupt all of their interruptible portfolio. Shippers provide feedback to the respective Distribution Network control room on the progress of emergency interruption every ½ hour in line with the DN's E3 procedures, until all their sites have been interrupted. The Distribution Network control room collates this data and provides updates to the NEMT on at least an hourly basis in accordance with the E1 procedure. Further details of the emergency interruption updates provided to the NEMT are supplied in Appendix 1.

3.2.2 Control rooms commented that Shippers were unsure of the appropriate control room to provide updates to. As the structure of the industry changes to each Distribution Network having its own control room, it is important that Shippers are kept informed and made aware of the practical implications this will have on their operations and specifically their emergency procedures. Similarly some Shippers commented that the systems they have in place are aligned to interrupt and report on interruption on a national basis and that updates by geographical network prove difficult to collate. Although some shippers

## National Grid

were unable to contact all of their sites within the exercise timescales, overall performance by Shippers was improved in processing emergency interruption, with the majority of loads contacted within 2 1/2 hours.

3.2.3 Updates on the progress of interruption were regularly communicated to The NEMT by both distribution network control rooms within the 60 minute target in E1. Updates from DNCC for National Grid Distribution, Wales and West Networks and Northern Gas Networks, were delivered every half an hour providing a clear real time assessment of the progress of interruption being executed. Updates from the SGN control room for their network were only delivered every hour.

### 3.3 Firm Load Shedding > 25,000 tpa Consumers

3.3.1 In exercise Prelude Distribution Networks were asked to contact a minimum of 200 sites in each of their networks LDZ 's to enable comparison with exercise Opus. A number of the networks also took the opportunity to contact a greater number of sites and to undertake a sample of site visits.

3.3.2 For the purposes of the report the results of Firm Load Shedding are examined under the following headings.

- Overall performance
- Special Status site Performance.

### 3.4 Overall performance

3.4.1 The Firm Load Shedding results for Prelude, compared to all recent exercises, are shown in the table below. Where sites could be contacted and could stop using gas, calls were classed as "successful". Where sites were contacted but could not turn off gas, they were classed as "could not turn off gas". Where it was not possible to contact sites from the contact details, calls were classed as "contact details incorrect". Full details of the data used in Prelude are attached in Appendix 2.

Firm Load Shedding of Above 25,000 tpa by Exercise.

Contact Type	Moscow 2005		Neptune 2006		Opus 2007		Prelude 2008	
	No.	%	No.	%	No.	%	No.	%
Successful (could turn off)	582	36%	1112	43%	1651	47%	1558	52%
Could not turn off	515	32%	612	24%	657	19%	444	15%
Total sites where contact was made	1097	68%	1724	66%	2308	65%	2002	67%
Contact details incorrect	512	32%	878	34%	1223	35%	981	33%
Total attempted contacts	1609		2602		3531		2983	

Table 5

3.4.2 The results in table 5 show a progressive improvement in successful contacts where consumers were able to cease flowing gas. The chart below (Fig 1) shows a reduction in the percentage of consumers who could not turn off and a corresponding rise in successful contacts.

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However the level of incorrect details remains at 32.89 % and is virtually static across all exercises. This highlights the continuing need for improvement in the quality of contact details supplied by Shippers to Xoserve.

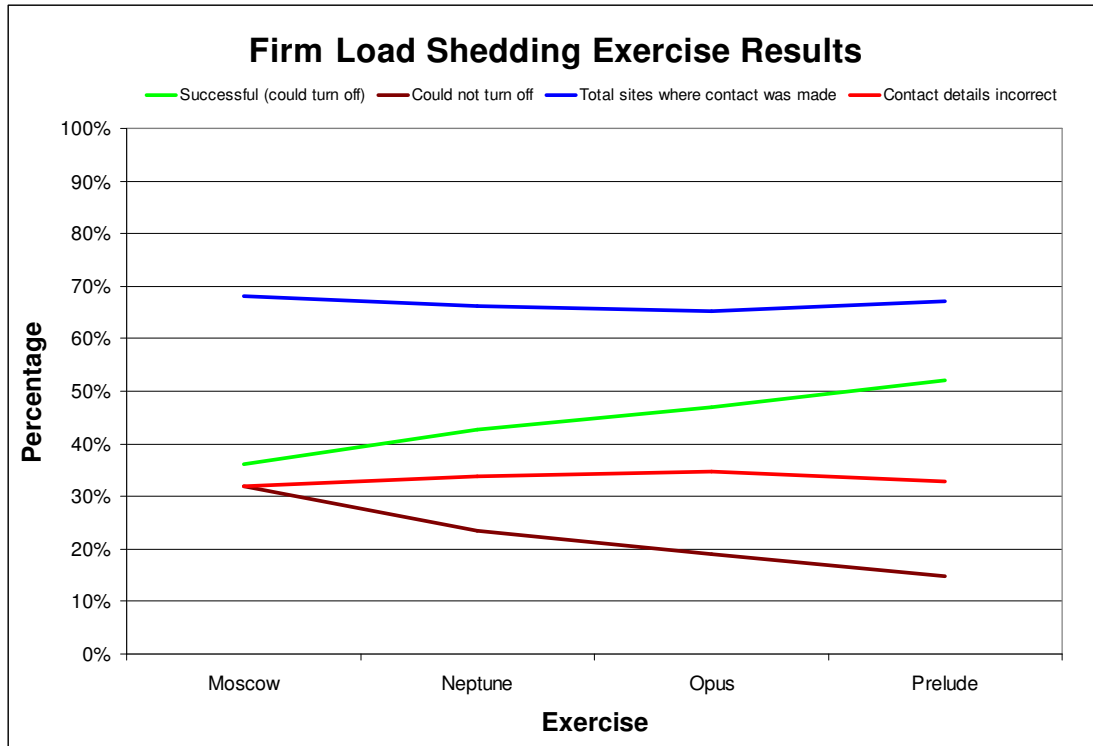


Fig 1

3.4.3 Table 6 below shows the Firm Load Shedding results for each of the LDZ's for exercise Prelude. For comparison Table 7 reproduces the results for exercise Opus. The data demonstrates an overall improvement in the percentage of successful contacts made. It is also encouraging to note the increase in site SOQ firm load shed from 56.07% in Opus to 65.10 % in Prelude.

Exercise Prelude Firm Load Shedding Results by LDZ

LDZ	Calls	Unsuccessful Contacts	Can Turn off	Cannot Turn Off	% Unsuccessful Contacts	% Can Turn Off	% Cannot Turn Off	% of Site SOQ FLS
EA	250	89	116	45	35.60%	46.40%	18.00%	56.48%
EM	250	88	160	2	35.20%	64.00%	0.80%	73.44%
NL	250	113	136	1	45.20%	54.40%	0.40%	56.72%
NW	250	52	143	55	20.80%	57.20%	22.00%	65.32%
WM	250	68	139	43	27.20%	55.60%	17.20%	63.22%
SO	253	111	98	44	43.87	38.74	17.39	59.53
SE	250	114	103	33	45.60	41.20	13.20	52.76
SC	230	57	117	56	24.78	50.87	24.35	58.73
WS	200	61	106	33	30.50%	53.00%	16.50%	71.66%
WN	200	78	91	31	39.00%	45.50%	15.50%	70.41%
SW	200	50	105	45	25.00%	52.50%	22.50%	61.07%
NO	200	38	141	21	19.00%	70.50%	10.50%	86.01%
NE	200	62	103	35	31.00%	51.50%	17.50%	63.32%
<b>TOTAL</b>	<b>2983</b>	<b>981</b>	<b>1558</b>	<b>444</b>	<b>32.89%</b>	<b>52.23%</b>	<b>14.88%</b>	<b>65.10%</b>

Table 6

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Exercise Opus Firm Load Shedding Results by LDZ

LDZ	Calls	Unsuccessful Contacts	Can Turn Off	Cannot Turn Off	% Unsuccessful Contacts	% Can Turn Off	% Cannot Turn Off	% of Site SOQ FLS
EA	250	56	113	81	22.40%	45.20%	32.40%	37.64%
EM	250	77	142	31	30.80%	56.80%	12.40%	70.29%
NT	250	113	111	26	45.20%	44.40%	10.40%	54.12%
NW	250	55	131	64	22.00%	52.40%	25.60%	50.65%
WM	250	60	130	60	24.00%	52.00%	24.00%	57.17%
SO	200	44	85	71	22.00%	42.50%	35.50%	46.38%
SE	200	41	110	49	20.50%	55.00%	24.50%	54.27%
SC	322	96	152	74	29.81%	47.20%	22.98%	64.53%
WS	398	175	168	55	43.97%	42.21%	13.82%	67.40%
WN	362	209	153	0	57.73%	42.27%	0.00%	48.06%
SW	399	162	159	78	40.60%	39.85%	19.55%	60.78%
NO	200	59	104	37	29.50%	52.00%	18.50%	58.93%
NE	200	76	93	31	38.00%	46.50%	15.50%	52.72%
<b>TOTAL</b>	<b>3531</b>	<b>1223</b>	<b>1651</b>	<b>657</b>	<b>34.64%</b>	<b>46.75%</b>	<b>18.61%</b>	<b>56.07%</b>

Table 7

3.4.4 The graph (fig 2) compares the SOQ successfully firm load shed between exercise Opus and exercise Prelude by each LDZ. Improvements have been made in almost every LDZ. The average performance of the top 4 LDZ is 75% of the total SOQ contacted, being firm load shed. Where performance has dropped in exercise Prelude it is important that lessons are learnt. It is recommended that Distribution Networks continue with their constructive efforts to share best practice and identify further improvements that will bring overall performance of each LDZ up to the level achieved by the best performing.<sup>19</sup>

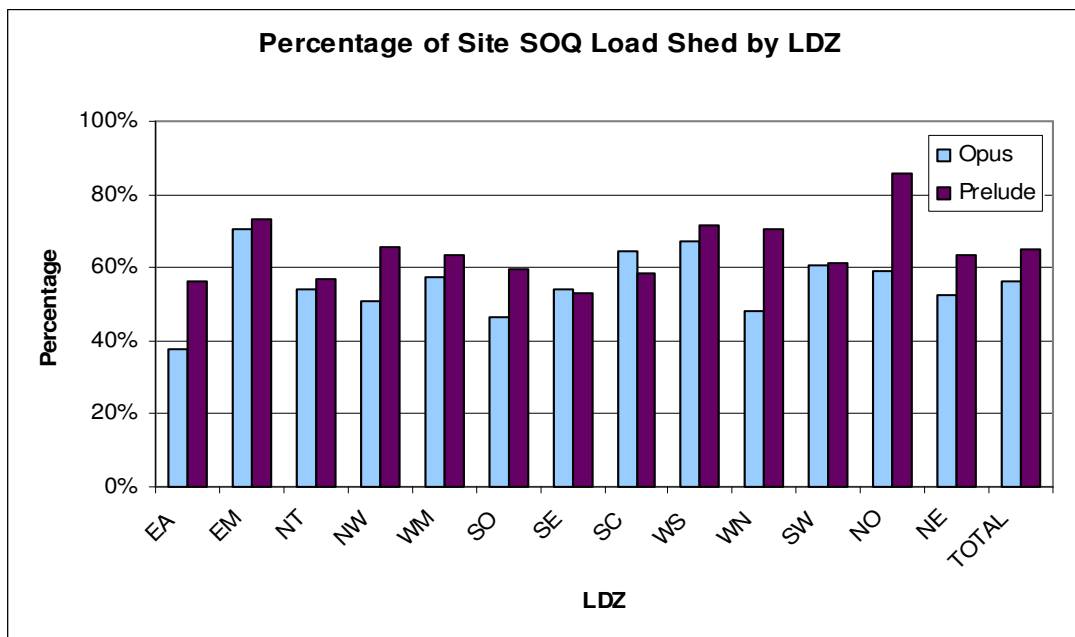


Fig 2

3.4.5 Improvement is also observed in the percentage of sites that were successfully contacted and could turn off their supplies from 46.75% to 52.23%. Fig 3 charts the 'turn off' percentage for each LDZ. The overall improvement may demonstrate deeper understanding by end consumers of their responsibilities in terms of Firm Load Shedding. It may also reflect improvements by Distribution Networks in their call

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handling and escalation processes to ensure consumers contacted are aware of their responsibilities.<sup>20</sup>

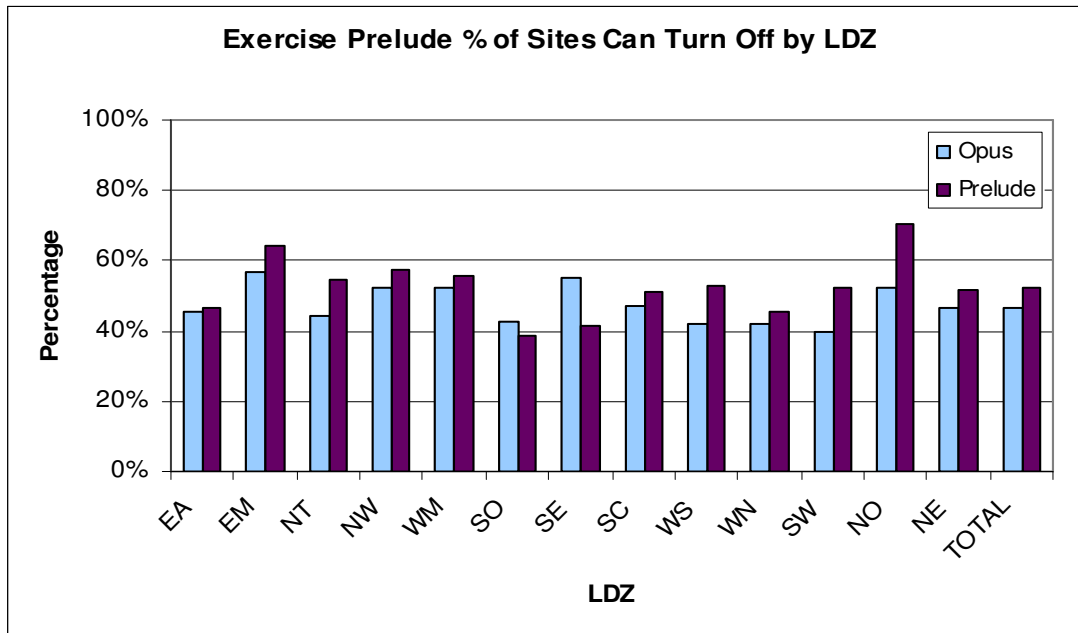


Fig 3

3.4.6 Shippers are responsible for providing emergency contacts via Xoserve to Transporters. For exercise Prelude 32.89 % of contacts attempted had incorrect contact details. This adds greatly to the time and resources required to achieve Firm Load Shedding. Shippers are urged to ensure that the emergency contacts for their consumers are correct and updated through Xoserve.<sup>21</sup> Performance of Shippers in providing accurate details was varied. Based on Shippers with greater than 60 customers, the percentage of unsuccessful contacts in the portfolio ranged between 26.19 % and 52.94 %.

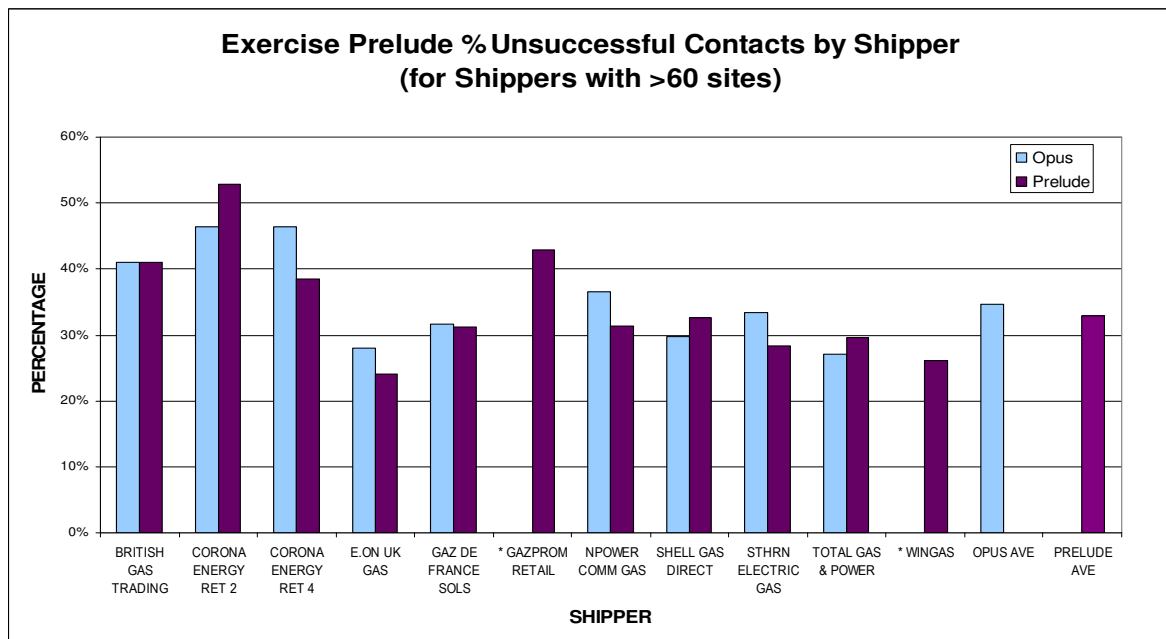


Fig 4 (\* no comparable data from exercise Opus)

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3.4.7 Shippers who had better contact details also had better figures for sites that when contacted were able to turn off gas. The range of percentages was from 63.96 % to 34.31 %.

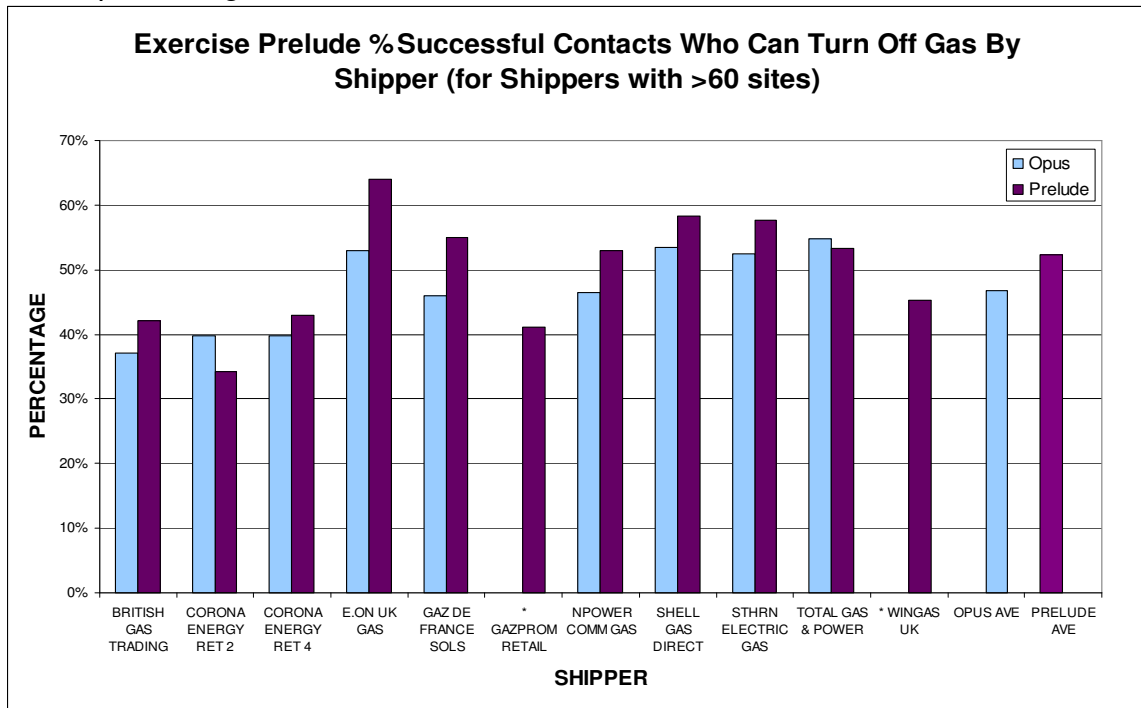


Fig 5 (\* no comparable data from exercise Opus)

3.4.8 The following chart measures the percentage of sites contacted that could not turn off. As such it is a useful indication of whether the person contacted has the knowledge and authority to comply with the transporters request. It is encouraging that compared with exercise Opus progress has been made in ensuring that when contact is made the appropriate person can turn off gas. Full details of Firm Load Shedding by Shipper are in Appendix 3.

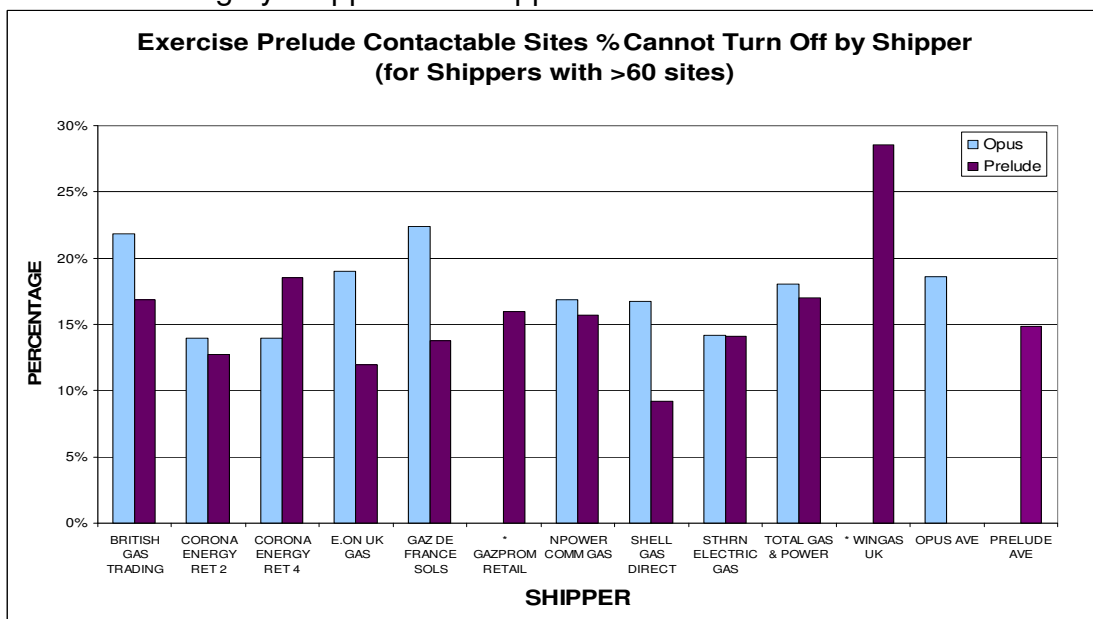


Fig 6 (\* no comparable data from exercise Opus)

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### 3.5 Special Status Sites.

3.5.1 Special Status Sites are defined by each Distribution Network as the sites that it has a high confidence can be load shed quickly. In common with exercise Opus in 2007 exercise Prelude tested the capability to load shed Special Status Sites.

3.5.2 In Exercise Opus National Grid Gas Distribution defined Special Status Sites as the 'Top 30' sites on each of their LDZ's. For exercise Prelude they revised the definition to sites greater than 2 million tpa. This aligns with the criteria used by the other Distribution Networks. The table below (Table 8) shows each Distribution Networks performance in load shedding Special Status Sites in Prelude. Additional analysis of performance is detailed in Appendix 4.

**Exercise Prelude Special Status Site Data**

LDZ	No of Special Sites	No of Special Sites shed by phone	% SOQ of Special Sites shed by phone	No of Special Sites visited in exercise	% SOQ of Special Sites shed by visit in exercise	Predicted No of Special Sites shed in 4 hours	% of SSS SOQ Shed in 4 hours	Predicted time to deliver maximum load shed of Special Sites
NL	9	4	55.12%	3	30.32%	7	85.45%	6 hrs
EA	6	6	100.00%	0	0.00%	6	100.00%	4 hrs
WM	30	17	67.17%	3	12.01%	20	79.18%	8 hrs
NW	17	15	91.20%	2	8.80%	17	100.00%	4 hrs
EM	19	18	91.00%	1	9.00%	19	100.00%	4 hrs
WS	13	12	90.39%	1	10.00%	13	100.00%	2.5 hrs
WN	4	4	100.00%	0	0.00%	4	100.00%	1.5 hrs
SW	8	7	92.32%	1	8.00%	8	100.00%	3 hrs
SO	7	5	74.63%	2	25.37%	7	100.00%	3 hrs
SE	5	4	87.57%	1	12.43%	5	100.00%	3 hrs
SC	12	9	67.18%	3	32.82%	12	100.00%	3 hrs
NE	8	5	73.35%	3	26.65%	8	100.00%	3 hrs
NO	19	19	100.00%	0	0.00%	19	100.00%	3 hrs
<b>TOTAL</b>	<b>157</b>	<b>125</b>	<b>83.32%</b>	<b>20</b>	<b>12.79%</b>	<b>145</b>	<b>96.07%</b>	

Table 8

3.5.3 For direct comparison Table 9 reproduces the results of Special Status Site shedding from exercise Opus. The most notable features in comparison are the drop from 240 sites to 157 sites classed as Special Status Sites. This is due to the change in definition applied by National Grid Gas Distribution discussed in 3.5.2. Also it is worth noting the increase in overall performance in load shedding Special Status Sites within 4 hours from an average of 80.06 % under Opus to 96.07 % in Prelude. This demonstrates the high confidence the Networks have in rapidly shedding these loads.

# National Grid

## Exercise Opus Special Status Site Data

LDZ	No of Special Sites	No of Special Sites shed by phone	% SOQ of Special Sites shed by phone	No of Special Sites visited in exercise	% SOQ of Special Sites shed by visit in exercise	Predicted No of Special Sites shed in 4 hours	% of SSS SOQ Shed in 4 hours	Predicted time to deliver maximum load shed of Special Sites
NL	30	17	70.85%	3	4.27%	15	76.48%	8 hours
EA	30	9	42.23%	3	6.74%	15	73.45%	8 hours
WM	30	15	53.02%	3	10.38%	15	67.33%	8 hours
NW	30	16	47.80%	3	13.47%	15	65.99%	8 hours
EM	30	23	82.80%	5	16.63%	15	77.82%	8 hours
WS	13	7	38.83%	2	29.79%	9	68.62%	3
WN	3	1	16.79%	2	83.21%	3	100.00%	2.5
SW	8	5	40.39%	2	54.93%	7	95.32%	2.5
SO	10	5	53.81%	1	15.13%	10	100.00%	4 hrs
SE	5	3	43.13%	1	39.11%	5	100.00%	4 hrs
SC	11	11	92.52%	6	7.48%	11	100.00%	4 hrs
NE	20	10	62.80%	10	37.20%	20	100.00%	1h 41mins
NO	20	13	60.31%	7	39.69%	20	99.30%	2h 20mins
<b>TOTAL</b>	<b>240</b>	<b>135</b>	<b>62.52%</b>	<b>48</b>	<b>15.29%</b>	<b>160</b>	<b>80.05%</b>	

Table 9

3.5.4 Although confidence has increased that the sites identified in Prelude can be load shed in a timely manner, the effect of reducing the number of sites has also had the effect of reducing the volumes identified. Table 10 explores the differences in the load shedding volumes achieved for Special Status Sites and for all firm sites. It compares the proportion of peak day demand load shed in Prelude and Opus for each LDZ.

### Exercise comparisons relative to Peak Load

LDZ	Prelude		Opus	
	SSS Load Shedding as a % of Peak Day	All Firm and SSS Load Shedding as a % of Peak Day	SSS Load Shedding as a % of Peak Day	All Firm and SSS Load Shedding as a % of Peak Day
NL	1.29%	4.64%	3.00%	4.00%
EA	1.11%	6.03%	5.00%	7.00%
WM	3.88%	10.25%	6.00%	9.00%
NW	1.86%	6.57%	5.00%	7.00%
EM	3.92%	9.78%	6.00%	9.00%
WS	4.30%	10.13%	4.00%	5.00%
WN	6.62%	17.48%	6.00%	11.00%
SW	1.64%	6.42%	2.00%	3.00%
SO	2.40%	8.98%	2.10%	2.90%
SE	0.55%	3.73%	0.60%	1.90%
SC	2.40%	7.01%	2.00%	4.80%
NE	1.60%	7.84%	1.46%	3.02%
NO	6.30%	12.05%	3.12%	4.82%
<b>TOTAL</b>	<b>2.44%</b>	<b>7.54%</b>	<b>2.53%</b>	<b>5.37%</b>

Table 10

## National Grid

3.5.5 As would be expected, with fewer sites identified as Special Status, National Grid Distributions Special Status Site percentage relative to peak load has fallen for its LDZ's, from an average of 5% in Opus to an average of 2.5% in Prelude. For other LDZ's the percentage has increased, most markedly in Northern Gas Networks NO LDZ. The overall effect is a slight reduction of SOQ available from Special Status Sites from 2.53% of peak day load to 2.44% of peak day load. The chart (fig 7) below displays the percentages for each LDZ.

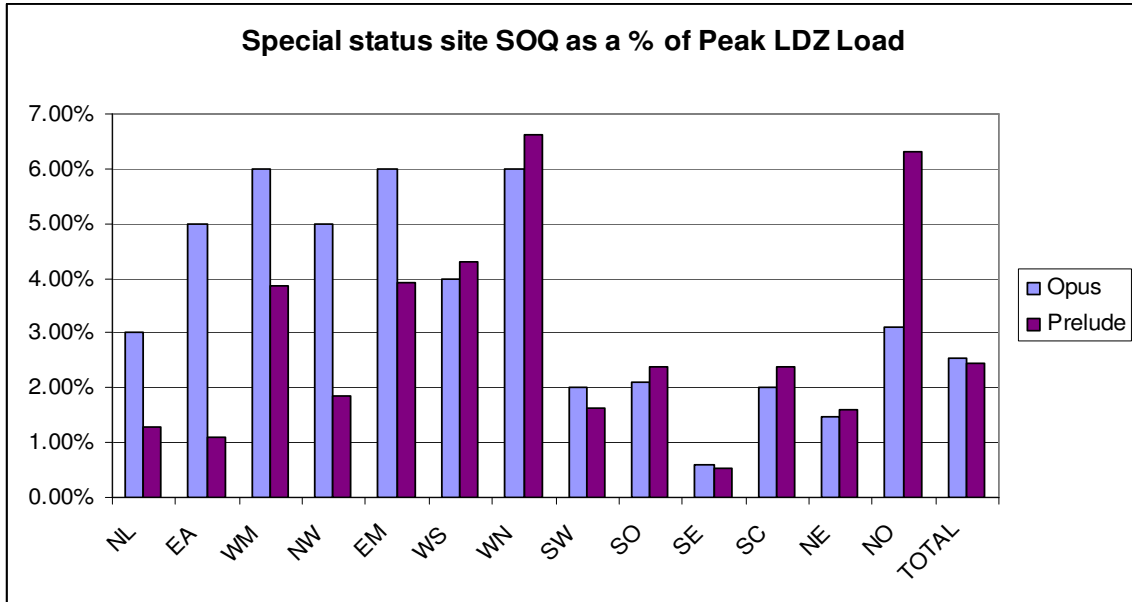


Fig 7

3.5.6 In contrast figure 8 shows the improvement in the overall level of load shedding achieved as a percentage of the peak LDZ load with the increase from 5.37 % in Opus to 7.54 % in Prelude. It is encouraging to note the considerable improvement by the majority of Distribution Networks since exercise Opus.

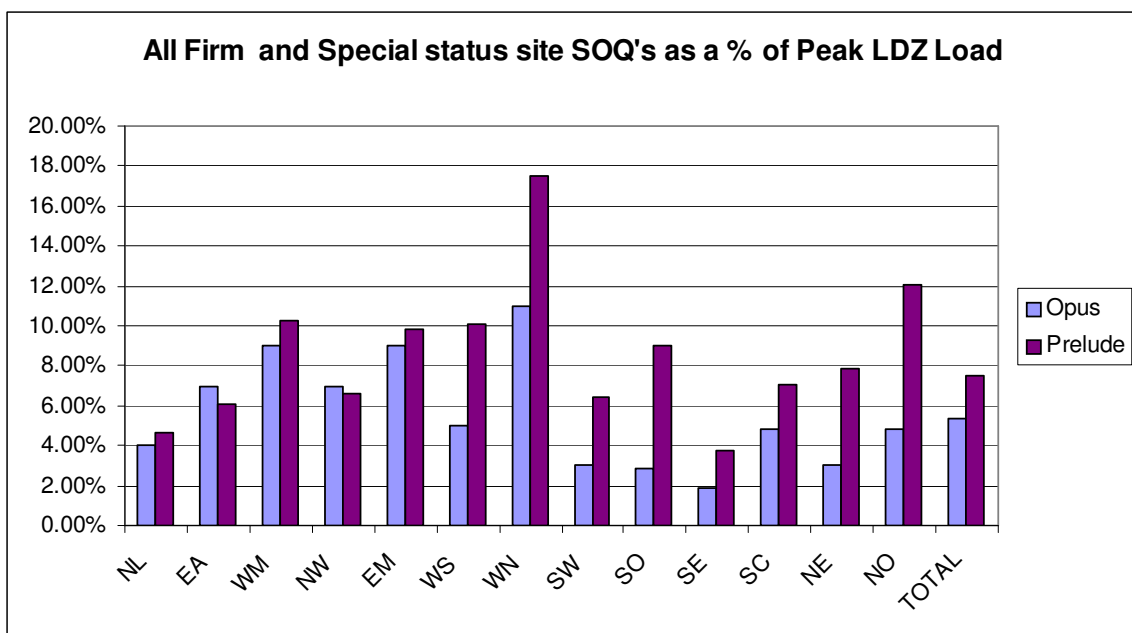


Fig 8

## National Grid

3.5.7 Although overall performance has improved, it can be seen that there is divergence in values between LDZ's and in the rate of improvement achieved. It is important that the large improvements by some networks do not mask marginal improvements or slight declines in individual LDZ's. It is also important that the quantity classified as Special Status Sites, and the confidence that it can load shed rapidly be maintained. Distribution Networks are encouraged to redouble their efforts to identify, share and implement best practices. It is also recommended that Distribution Networks further refine their criteria for identifying Special Status Sites to establish a satisfactory balance between the SOQ value achieved by concentrating on these sites, and confidence that the load reduction will be timely.<sup>22</sup>

### 4.0 Isolation

- 4.0.1 Networks were asked to Isolate at least 10% of the load on their LDZ. As part of the process the Distribution Networks identified and reported on the percentage of load reduced, the postcodes and towns affected, the estimated time to isolate, and the number of supply points that this represents on their network.
- 4.0.2 From the Isolation data in Appendix 5 it can be observed that Networks have delivered returns that are slightly under or over the percentage requested. In common with other demand reduction processes the Networks execute the most effective isolation strategy from their established plans, taking account of the characteristics of their networks and the time taken to safely complete the Isolation. For the load requested, times to isolate ranged from 1 to 5.5 hours. This is consistent with both exercise Opus and exercise Neptune, but could be examined further by assessing the length of time to isolate against a range of percentage isolation requested.<sup>23</sup>
- 4.0.3 Communication back to the NEMT for some Distribution Networks was delayed during Isolation and outside of the 2 hour deadline for the detailed response. In an NGSE a balance must be maintained between provision of accurate, clear information and the timeliness of its delivery. The recommendation to examine in closer detail isolation and restoration will examine the effectiveness of information provision to the NEC.

### 5.0 Restoration

- 5.0.1 The delays experienced during isolation in exercise Prelude led to restoration diverging from the exercise schedule. NEC notices were sent and LGSE's were declared in all networks. Restoration notices were also sent from SC2004. A system fault with SC2004 resulted in restoration notices being re-sent to Shippers after the completion of the exercise. The recommendation to test both isolation and restoration in more detail should also explore the practicalities of managing the NGSE and the subsequent LGSE's.

### 6.0 Bord Gais Eireann

- 6.0.1 In conjunction with exercise Prelude BGE ran a parallel exercise to test their procedures to effect load shedding downstream of Moffat interconnector. Communications were exchanged at Stage 1 of exercise Prelude to affect emergency interruption. BGE also offered a voluntary load reduction that was included within the exercise scenario. This

## National Grid

tested the E3 procedures that had been amended since exercise Neptune to accept this request. Coincident with Stage 3 being declared BGE simulated a complete isolation of Moffat and commenced with their parallel load shedding exercise. All communications between BGE and the NEMT were effective and timely reflecting the changes made to procedures since exercise Neptune.

### 7.0 Findings and Recommendations

7.0.1 Exercise Prelude tested the emergency arrangements against a scenario of a progressive Gas Deficit Emergency. It highlighted a number of areas where improvements are required. The main recommendations are detailed in the table under section 7.2 . The findings below detail and summarise some of the key issues.

#### 7.1 Findings

7.1.1 Exercise Prelude proved to be an effective test of the emergency procedures and the actions of the NEMT, Transporters and Shippers. The responses from all parties, including the Shipper community, reflected a high level of engagement with the process that can be built on going forwards.

7.1.2 In common with exercises Neptune and Opus, Shippers provision of contact details remained a significant issue in exercise Prelude. Improvements have been evidenced in other areas of Shipper performance including emergency interruption and this needs to be replicated in providing equally accurate information for Firm Load Shedding. Nearly a third of all calls made during this and previous exercises has been to an incorrect number. This raises doubts that load shedding > 25000tpa can be fully undertaken before moving to emergency isolation. Increases in the percentage of sites that can shed load once contacted demonstrates that sites understand their responsibilities and will act once contacted by transporters. It is therefore vital that this initial contact is accurate.

7.1.3 Further work is required by Distribution Networks to share knowledge to improve their overall performance in terms of Firm Load Shedding and contacts with Special Status Sites. The differences in performance between Distribution Networks demonstrate that there is scope for further incremental improvements. Particular attention should be given to areas such as call management and collation of data within the Distribution Network to ensure these processes are optimised.<sup>24</sup>

7.1.4 The main issue in feedback from Shippers was the use of fax communications during the exercise. Due to system faults faxes were reissued to Shippers during, and after the exercise had completed. It is recommended that the underlying requirement to provide faxed

## **National Grid**

communication be reviewed and the impact of changing to a different form of communication assessed.

- 7.1.5 Insufficient time was available to fully explore the restoration process. It is recommended that isolation and restoration be examined in the exercise programme with attention given to the strategy to adopt in terms of the completion of the NGSE and the continuation of a number of LGSE within the Distribution Networks.

## National Grid

### 7.2 Recommendations.

No.	Issue	Action	Owner	Target
1	NEMT training - Familiarity of roles, interactions and specific procedures across NEMT teams.	Update NEMT training materials to identify handovers and specific processes used.	EPT	May 2009
2	E3 Update – Inclusion of Safety Monitor assessment.	Update E3 to include a work instruction to produce assessments of GSMR Safety Monitors as part of the OIC Supply role.	EPT	March 2009
3	E3 Transporter Consistency - Maintain an integrated approach to communications in E3 as Distribution Networks establish their own control rooms.	Transporters commitment to ensure governance of emergency documentation is managed through the NEC Safety Case Forum. <ul style="list-style-type: none"> <li>• NEC Safety Case Working Group to assess any changes required to emergency procedures and ensure consistency between Transporters.</li> </ul>	EPT / NEC SC Forum	Ongoing
4	Collation and Communication of data to the NEMT from DN's	Delays were introduced in the exercise due to the collation of information from the retained distribution networks. <ul style="list-style-type: none"> <li>• DN to implement changes to processes to improve performance</li> <li>• Ensure consistency of information communicated to sites</li> </ul>	RDN	August 2009
5	Communication of changes to Shippers - Engagement with Shippers is required to ensure they are aware of industry changes and the impact it will have on emergency processes.	Work required by the DN's and the EPT to assess the impacts to Shippers and communicate the actions that Shippers need to take. <ul style="list-style-type: none"> <li>• Identify changes that impact on Shippers emergency processes.</li> <li>• Develop a communication plan with the DN's prior to the migration of their control rooms</li> <li>• In partnership with the DN's communicate with Shippers to ensure they are aware of the required changes.</li> </ul>	EPT / DN's	May 2009 - To identify changes that will impact on Shipper Processes
6	Alignment of Shipper Emergency Procedures	Shippers are responsible for aligning their processes and procedures to reflect changes in the emergency arrangements.	Shippers	Ongoing
7	Fax notifications – Utility of faxing notifications.	Examine the UNC requirements for faxed emergency communications. Look at alternative notification systems and develop options to improve current notification process.	EPT	June 2009
8	Fax Notifications – Impact on wider industry and changes to existing Shipper / Site procedures	Determine the impact on Shippers and Sites processes of adopting proposed alternatives to fax notification. <ul style="list-style-type: none"> <li>• Engage with Shippers sites and others to establish if an alternative method of communication has industry support.</li> </ul>	EPT / Shippers / Industry	June 2009

## National Grid

9	SC2004 – Faxes being reissued.	Investigate and resolve the problem of faxes being reissued by SC2004.	DN's	April 2009
10	Quality of Contact Details	Incorrect contact details accounts for 33% of calls made during Firm Load Shedding. It is the Shippers responsibility to maintain these details. <ul style="list-style-type: none"> <li>EPT to work with Ofgem /HSE / DECC to ensure clarity of the expectations required of the industry.</li> <li>EPT to reiterate UNC requirements and engage with Shippers to improve performance.</li> </ul>	Shippers	Ongoing
11	Isolation and Restoration	Delays during exercise Prelude resulted in insufficient time to fully examine restoration. Emergency exercise programme to include Isolation and restoration testing. <ul style="list-style-type: none"> <li>EPT to produce exercise Plan by March 2009.</li> <li>Isolation and restoration exercise to examine the practicalities of managing an NGSE and the subsequent LGSE's.</li> </ul>	EPT	March 2009 Exercise Schedule to the HSE
12	Supply Forms	Review and update of forms to ensure that the appropriate information is communicated to industry participants and that any required responses are undertaken.	EPT	March 2009
13	Engagement of Terminal operators in Exercises.	EPT to engage and communicate with the relevant upstream parties to ensure they are fully aware of their responsibilities and have visibility of the emergency testing programme. <ul style="list-style-type: none"> <li>EPT to liaise with DECC to ensure responsibilities between DECC and NEC are appropriately aligned and clearly communicated to the wider industry.</li> </ul>	EPT	Ongoing
14	Supplementary Transporter information	DN's to liaise with supplementary transporters to <ul style="list-style-type: none"> <li>Ensure they have knowledge of the DN's emergency procedures</li> <li>Ensure that ST are aware of their responsibilities and align their emergency procedures accordingly.</li> </ul>	NEC Working Group / DN's	July 2009
15	ESP Decision Support tool enhancements.	Improvements are required to ESP's User interface to ensure that existing system workarounds are resolved. Enhancements to the tools modelling capabilities need to be included in a new release.	EPT	September 2009
16	Webfax - Date and time of issue header	An assessment of the consequences and risks to post emergency audit of the continuation of webfax notification. Analysis needs to consider the benefits that webfax has in terms of efficiency over comparable systems.	EPT	April 2009

## National Grid

17	SC2004 – Fault producing timely notices	Investigate and resolve the issue with producing Interruption notices via SC2004 that led to delays in the Prelude exercise.	DN	April 2009
18	Lotus Notes – Form transfer with SGN	Investigate and resolve the issue of incomplete communication of forms using Lotus Notes. <ul style="list-style-type: none"> <li>Review the risk that this problem may be repeated as distribution networks develop their independent system control rooms.</li> <li>Develop alternate processes if required</li> </ul>	SGN / EPT	April 2009
19	DN Knowledge sharing - Firm Load Shedding	Distribution Networks should continue with their constructive efforts to share best practice and identify further improvements that will bring overall performance of each LDZ in Firm Load Shedding up to the level achieved by the best performing.	DN's / NEC Working Group	Ongoing
20	DN Knowledge sharing – Call management	Call management and the collation and communication of data to the NEMT is an area where performance may be raised by sharing best practice. <ul style="list-style-type: none"> <li>NEC Safety Case working group to establish and recommend the adoption of best practice.</li> </ul>	DN's / EPT	August 2009
21	Updating Contact Details	Shippers to utilise the existing xoserve process to update their own and their sites emergency contact details in accordance with UNC requirements.	Shippers	Ongoing
22	DN Knowledge sharing – Special status Sites.	Distribution Networks can further refine their criteria applied by each Distribution Network to establish a satisfactory balance between the SOQ value achieved for Special Status Sites, and their confidence that load reduction will be timely. <ul style="list-style-type: none"> <li>EPT to facilitate at the NEC Working Group</li> </ul>	DN's/ NEC Working Group	Ongoing
23	Isolation and restoration strategies.	Distribution Networks to examine the Isolation and restoration processes to improve Isolation times and assess the strategy they would adopt in restoring services over a range of percentage isolations. Implications of self purge and relight and actions / authorisation required will need to be assessed.	DN's / System Operator Forum	Ongoing
24	NEC Working Group – Scope of group.	Consideration may be given to widen the scope of the NEC working group to include supporting processes such as call handling to facilitate DN knowledge sharing.	EPT / NEC Working Group	March 2009

## National Grid

### Appendix 1

#### Shipper performance in Emergency Interruption of non VLDMC Distribution Network Loads.

##### DNCC - Shipper Update on non VLDMC Emergency Interruption

	+ 30 Mins	+ 1 Hour	+ 1 Hour 30 Mins	+ 2 Hours	+2 Hours 30 Mins	+ 3 Hours	+ 3 Hours 30 Mins	+ 4 Hours
GDF	35%	87%	89%	89%	89%	89%	89%	89%
BGT		50%	50%	50%	100%	100%	100%	100%
Total		10%	10%	10%	40%	40%	60%	100%
Corona		50%	65%	65%	70%	70%	70%	70%
Statoil		25%	25%	25%	50%	50%	90%	90%
Shell			5%	5%	53%	81%	81%	81%
SSE			85%	85%	95%	95%	95%	95%
Eon		60%	60%	60%	84%	84%	84%	84%
Scottish and Southern		95%	95%	95%	95%	95%	95%	95%
RWE		50%	50%	50%	95%	95%	95%	95%
Wingas			100%	100%	100%	100%	100%	100%
Scottish Power			100%	100%	100%	100%	100%	100%
ENI			50%	50%	100%	100%	100%	100%
BP		100%	100%	100%	100%	100%	100%	100%
NGS			100%	100%	100%	100%	100%	100%
RBS					100%	100%	100%	100%

##### SGN Control Room - Shipper Update on non VLDMC Emergency Interruption

	+ 1 Hour	+1 Hour 30 Mins	+ 2 Hours	+3 Hours	+ 4 Hours
GDF	83.5%	84.4%	84.4%	84.4%	84.4%
BGT		100%	100%	100%	100%
Total			40%	60%	85%
Corona		70%	70%	70%	70%
Statoil			100%	100%	100%
Shell		50%	80%	86%	87%
SSE			85%	85%	100%
Eon			84%	84%	84%
Scottish and Southern			100%	100%	100%
RWE	50%	50%	100%	100%	100%
Wingas				85%	100%
Scottish Power	12%	12%	100%	100%	100%
ENI			100%	100%	100%
BP			100%	100%	100%
Gazprom			100%	100%	100%
Smartest Energy			100%	100%	100%

*The minimum requirement for DN's to update the NEMT is hourly in E1. Shippers should update DN's every half hour with progress reports in line with E3.*

## National Grid

### Appendix 2

### LDZ Firm Load Shedding data for Exercise Prelude and Exercise Opus

Exercise PRELUDE Firm Load Shedding Results by LDZ

LDZ	Calls	Unsuccessful Contacts	Can Turn off	Cannot Turn Off	% Unsuccessful Contacts	% Can Turn Off	% Cannot Turn Off	SOQ Can Turn Off	Total Site SOQ	% of Site SOQ Isolated
EA	250	89	116	45	35.60%	46.40%	18.00%	12506879	22142222	56.48%
EM	250	88	160	2	35.20%	64.00%	0.80%	32525507	44287912	73.44%
NL	250	113	136	1	45.20%	54.40%	0.40%	12612226	22237806	56.72%
NW	250	52	143	55	20.80%	57.20%	22.00%	22413063	34313721	65.32%
WM	250	68	139	43	27.20%	55.60%	17.20%	28000470	44288691	63.22%
<b>RETAINED</b>	<b>1250</b>	<b>410</b>	<b>694</b>	<b>146</b>	<b>32.80%</b>	<b>55.52%</b>	<b>11.68%</b>	<b>108058145</b>	<b>167270352</b>	<b>64.60%</b>
SO	253	111	98	44	43.87	38.74	17.39	21963737	36896900	59.53
SE	250	114	103	33	45.60	41.20	13.20	10437046	19783831	52.76
SC	230	57	117	56	24.78	50.87	24.35	14490031	24674016	58.73
<b>SCOTIA</b>	<b>733</b>	<b>282</b>	<b>318</b>	<b>133</b>	<b>38.47%</b>	<b>43.38%</b>	<b>18.14%</b>	<b>46890814</b>	<b>81354747</b>	<b>57.64%</b>
WS	200	61	106	33	30.50%	53.00%	16.50%	13366614	18652569	71.66%
WN	200	78	91	31	39.00%	45.50%	15.50%	6051179	8594134	70.41%
SW	200	50	105	45	25.00%	52.50%	22.50%	10874989	17807322	61.07%
<b>WWU</b>	<b>600</b>	<b>189</b>	<b>302</b>	<b>109</b>	<b>31.50%</b>	<b>50.33%</b>	<b>18.17%</b>	<b>30292782</b>	<b>45054025</b>	<b>67.24%</b>
NO	200	38	141	21	19.00%	70.50%	10.50%	26,037,580	30,273,534	86.01%
NE	200	62	103	35	31.00%	51.50%	17.50%	13351242	21086311	63.32%
<b>NGN</b>	<b>400</b>	<b>100</b>	<b>244</b>	<b>56</b>	<b>25.00%</b>	<b>61.00%</b>	<b>14.00%</b>	<b>39,388,822</b>	<b>51,359,845</b>	<b>76.69%</b>

Exercise OPUS Firm Load Shedding Results by LDZ

LDZ	Calls	Unsuccessful Contacts	Can Turn Off	Cannot Turn Off	% Unsuccessful Contacts	% Can Turn Off	% Cannot Turn Off	SOQ Can Turn Off	Total Site SOQ	% of Site SOQ Isolated
EA	250	56	113	81	22.40%	45.20%	32.40%	8531189	22662818	37.64%
EM	250	77	142	31	30.80%	56.80%	12.40%	33371422	47478834	70.29%
NT	250	113	111	26	45.20%	44.40%	10.40%	12088175	22336158	54.12%
NW	250	55	131	64	22.00%	52.40%	25.60%	17685227	34917526	50.65%
WM	250	60	130	60	24.00%	52.00%	24.00%	24967891	43674715	57.17%
<b>RETAINED</b>	<b>1250</b>	<b>361</b>	<b>627</b>	<b>262</b>	<b>28.88%</b>	<b>50.16%</b>	<b>20.96%</b>	<b>96643904</b>	<b>171070051</b>	<b>56.49%</b>
SO	200	44	85	71	22.00%	42.50%	35.50%	12097636	26085028	46.38%
SE	200	41	110	49	20.50%	55.00%	24.50%	10011297	18445571	54.27%
SC	322	96	152	74	29.81%	47.20%	22.98%	16289588	25245041	64.53%
<b>SCOTIA</b>	<b>722</b>	<b>181</b>	<b>347</b>	<b>194</b>	<b>25.07%</b>	<b>48.06%</b>	<b>26.87%</b>	<b>38398521</b>	<b>69775640</b>	<b>55.03%</b>
SW	399	162	159	78	40.60%	39.85%	19.55%	0.3893623	0.6406484	60.78%
WN	362	209	153	0	57.73%	42.27%	0.00%	0.3123205	0.6498539	48.06%
WS	398	175	168	55	43.97%	42.21%	13.82%	0.497061	0.7374417	67.40%
<b>WWU</b>	<b>1159</b>	<b>546</b>	<b>480</b>	<b>133</b>	<b>47.11%</b>	<b>41.42%</b>	<b>11.48%</b>	<b>1.1987438</b>	<b>2.027944</b>	<b>59.11%</b>
NE	200	76	93	31	38.00%	46.50%	15.50%	7379497	13996367	52.72%
NO	200	59	104	37	29.50%	52.00%	18.50%	9776761	16590446	58.93%
<b>NGN</b>	<b>400</b>	<b>135</b>	<b>197</b>	<b>68</b>	<b>33.75%</b>	<b>49.25%</b>	<b>17.00%</b>	<b>17156258</b>	<b>30586813</b>	<b>56.09%</b>

## National Grid

### Appendix 3 Prelude Firm Load Shedding – Shipper Performance

#### ALL SHIPPER TOTALS

Shipper	Calls	Unsuccessful Contacts	Can Turn off	Cannot Turn Off	% Unsuccessful Contacts	% Can Turn Off	% Cannot Turn Off	% of Site SOQ Isolated
BP GAS MARKETING LTD	1	0	1	0	0%	100%	0%	100%
BRITISH GAS TRADING LIMITED	439	180	185	74	41.00%	42.14%	16.86%	53.05%
BUSINESS ENERGY SOLUTIONS LIM	4	1	3	0	25.00%	75.00%	0.00%	59.41%
CONTRACT NATURAL GAS LIMITED	1	1	0	0	100.00%	0.00%	0.00%	0.00%
CORONA ENERGY RETAIL 2 LIMITED	102	54	35	13	52.94%	34.31%	12.75%	31.11%
CORONA ENERGY RETAIL 4 LIMITED	205	79	88	38	38.54%	42.93%	18.54%	45.17%
E.ON UK GAS LIMITED	419	101	268	50	24.11%	63.96%	11.93%	67.14%
E.ON UK INDUSTRIAL SHIPPING LI	3	2	1	0	67%	33%	0%	8%
EDF ENERGY PLC	54	18	26	10	33.33%	48.15%	18.52%	47.29%
ENI UK LTD	37	13	18	6	35.14%	48.65%	16.22%	53.67%
GAZ DE FRANCE SOLUTIONS LTD	407	127	224	56	31.20%	55.04%	13.76%	70.16%
GAZPROM RETAIL LIMITED	119	51	49	19	42.86%	41.18%	15.97%	42.23%
NPOWER COMMERCIAL GAS LTD	83	26	44	13	31.33%	53.01%	15.66%	60.28%
REGENT GAS	10	2	6	2	20.00%	60.00%	20.00%	62.23%
SCOTTISH POWER ENERGY MANAGEME	17	10	3	4	59%	18%	24%	51%
SHELL GAS DIRECT LIMITED	316	103	184	29	32.59%	58.23%	9.18%	70.32%
SOUTHERN ELECTRIC GAS LTD	92	26	53	13	28.26%	57.61%	14.13%	59.27%
SSE ENERGY SUPPLY LTD	2	0	2	0	0.00%	100.00%	0.00%	100.00%
STATOIL (UK) LTD	49	6	41	2	12.24%	83.67%	4.08%	92.74%
TOTAL GAS & POWER LIMITED	536	159	286	91	29.66%	53.36%	16.98%	61.24%
TRANSCO	3	0	3	0	0.00	100.00	0.00	100.00
WINGAS UK LIMITED	84	22	38	24	26.19%	45.24%	28.57%	55.09%
PRELUDE AVE	2983	981	1,558	444	32.89%	52.23%	14.88%	65.10%

#### SHIPPERS OVER 60 SITES

Shipper	Calls	Unsuccessful Contacts	Can Turn off	Cannot Turn Off	% Unsuccessful Contacts	% Can Turn Off	% Cannot Turn Off	% of Site SOQ Isolated
BRITISH GAS TRADING LIMITED	439	180	185	74	41.00%	42.14%	16.86%	53.05%
CORONA ENERGY RETAIL 2 LIMITED	102	54	35	13	52.94%	34.31%	12.75%	31.11%
CORONA ENERGY RETAIL 4 LIMITED	205	79	88	38	38.54%	42.93%	18.54%	45.17%
E.ON UK GAS LIMITED	419	101	268	50	24.11%	63.96%	11.93%	67.14%
GAZ DE FRANCE SOLUTIONS LTD	407	127	224	56	31.20%	55.04%	13.76%	70.16%
GAZPROM RETAIL LIMITED	119	51	49	19	42.86%	41.18%	15.97%	42.23%
NPOWER COMMERCIAL GAS LTD	83	26	44	13	31.33%	53.01%	15.66%	60.28%
SHELL GAS DIRECT LIMITED	316	103	184	29	32.59%	58.23%	9.18%	70.32%
SOUTHERN ELECTRIC GAS LTD	92	26	53	13	28.26%	57.61%	14.13%	59.27%
TOTAL GAS & POWER LIMITED	536	159	286	91	29.66%	53.36%	16.98%	61.24%
WINGAS UK LIMITED	84	22	38	24	26.19%	45.24%	28.57%	55.09%

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## Appendix 4.

### Analysis of Special Status Sites.

#### Exercise Prelude

LDZ	No. of SSS	Total SOQ of SSS	No. of SSS shed by phone	SOQ of SSS shed by phone	No. of SSS visited in exercise	SOQ of SSS shed by site visit in exercise	Shed by phone and visit	% of SSS SOQ Shed by phone and visit	Predicted no. of SSS shed in 4 hours	Predicted SOQ of SSS shed in 4 hours	% of SSS SOQ Shed in 4 hours
NL	9	6,177,995	4	3,405,494	3	1,873,366	5,278,860	100.00%	7	5,278,860	85.45%
EA	6	4,081,723	6	4,081,723	0	0	4,081,723	100.00%	6	4,081,723	100.00%
WM	30	16,754,805	17	11,254,804	3	2,011,949	13,266,753	100.00%	20	13,266,753	79.18%
NW	17	9,732,846	15	8,876,252	2	856,594	9,732,846	100.00%	17	9,732,846	100.00%
EM	19	17,777,629	18	16,177,629	1	1,600,000	17,777,629	100.00%	19	17,777,629	100.00%
WS	13	7,907,011	12	7,146,798	1	790,701	7,937,499	100.00%	13	7,907,011	100.00%
WN	4	3,257,850	4	3,257,850	0	0	3,257,850	100.00%	4	3,257,850	100.00%
SW	8	4,557,001	7	4,207,001	1	350,000	4,557,001	100.00%	8	4,557,001	100.00%
SO	7	9,854,086	5	7,354,086	2	2,499,981	9,854,067	100.00%	7	9,854,086	100.00%
SE	5	2,903,122	4	2,542,162	1	360,858	2,903,020	100.00%	5	2,903,122	100.00%
SC	12	8,427,975	9	5,661,907	3	2,766,061	8,427,968	100.00%	12	8,427,975	100.00%
NE	8	4,293,532	5	3,149,389	3	1,144,143	4,293,532	100.00%	8	4,293,532	100.00%
NO	19	15,823,818	19	15,823,818	0	0	15,823,818	100.00%	19	15,823,818	100.00%
<b>TOTAL</b>	<b>157</b>	<b>111,549,393</b>	<b>125</b>	<b>92,938,913</b>	<b>20</b>	<b>14,253,653</b>	<b>107,192,566</b>	<b>100.00%</b>	<b>145</b>	<b>107,162,206</b>	<b>96.07%</b>

#### Exercise Opus

LDZ	No of Special Sites	Total SOQ of Special Sites	No of Special Sites shed by phone	SOQ of Special Sites shed by phone	No of Special Sites visited in exercise	SOQ of Special Sites shed by visit in exercise	Shed by phone and visit	% of SSS SOQ Shed by phone and visit	Predicted No of Special Sites shed in 4 hours	Predicted SOQ of Special Sites shed in 4 hours	% of SSS SOQ Shed in 4 hours
NL	30	8,991,574	17	6,370,118	3	383,680	6,753,798	75.11%	15	6,877,195	76.48%
EA	30	9,565,209	9	4,039,569	3	644,666	4,684,235	48.97%	15	7,025,790	73.45%
WM	30	20,303,525	15	10,765,195	3	2,107,500	12,872,695	63.40%	15	13,670,844	67.33%
NW	30	15,290,401	16	7,309,063	3	2,060,202	9,369,265	61.28%	15	10,090,069	65.99%
EM	30	24,198,798	23	20,035,714	5	4,025,272	24,060,986	99.43%	15	18,831,807	77.82%
WS	13	7,984,055	7	3,099,828	2	2,378,667	5,478,495	68.62%	9	5,478,495	68.62%
WN	3	3,007,541	1	505,000	2	2,502,541	3,007,541	100.00%	3	3,007,541	100.00%
SW	8	4,557,001	5	1,840,463	2	2,503,210	4,343,673	95.32%	7	4,343,673	95.32%
SO	10	8,677,400	5	4,669,023	1	1,312,774	5,981,797	68.94%	10	8,677,400	100.00%
SE	5	3,196,283	3	1,378,411	1	1,250,000	2,628,411	82.23%	5	3,196,283	100.00%
SC	11	6,709,493	11	6,207,893	6	501,600	6,709,493	100.00%	11	6,709,493	100.00%
NE	20	4,359,172	10	2,737,707	10	1,621,465	4,359,172	100.00%	20	4,359,172	100.00%
NO	20	8,537,936	13	5,149,613	7	3,388,323	8,537,936	100.00%	20	8,477,936	99.30%
<b>TOTAL</b>	<b>240</b>	<b>125,378,388</b>	<b>135</b>	<b>74,107,597</b>	<b>48</b>	<b>24,679,900</b>	<b>98,787,497</b>	<b>78.26%</b>	<b>160</b>	<b>100,745,698</b>	<b>80.05%</b>

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### Appendix 5

### Isolation of Distribution Networks by LDZ for Exercise Prelude and Exercise Neptune

**PRELUDE**

LDZ	% Isolation Achieved	Time taken to Achieve % (Hrs)	No. of Affected Supply Points
EA	13.6	4.5	185,000
EM	12.1	5.5	131,340
NT	10.4	3.5	280,000
NW	11.0	2	208,800
WM	10.2	3	171,818
SO	10.2	4.5	159,166
SE	11.4	4.5	294,000
SC	11.2	1	180,733
SW	10.1	2.5	149,324
WN	9.2	2	36,163
WS	12.5	2	198,912
NE	11.5	2.5	147,000
NO	9.0	2.5	98,000
<b>TOTAL</b>			<b>2,240,256</b>

**NEPTUNE**

LDZ	% Isolation Achieved	Time taken to Achieve % (Hrs)	No. of Affected Supply Points
EA	10	3	141,931
EM	10	3	200,592
NT	10	3	375,000
NW	10	3	484,200
WM	10	3	205,524
SO	10	3	223,014
SE	10	3	268,977
SC	10	3	187,000
SW	10	3	236,744
WN	10	3	43,265
WS	10	3	148,570
NE	10	3	147,471
NO	10	3	98,028
<b>TOTAL</b>			<b>2,760,316</b>

*Exercise Neptune data has been utilised for this analysis as it is the most directly comparable to Exercise Prelude.*

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## Appendix 6

Exercise Prelude Briefing Pack – Was issued to industry in advance of Exercise Prelude and is reproduced alongside this document at :

<http://www.hse.gov.uk/gas/supply/information.htm>

## Appendix 7 - Glossary

ANS	Automatic Notification System
BGE	Bord Gáis Eireann
DECC	Department of Energy and Climate Change
DN	Distribution Network
DNCC	Distribution National Control Centre
E3	Gas Supply Emergency Procedure
ESP	Emergency Strategy Programme
EPT	Emergency Planning Team
FLS	Firm Load Shedding
GAS	Gas Availability Status
GNCC	Gas National Control Centre
GS(M)R	Gas Safety (Management) Regulations 1996
HSE	Health and Safety Executive
IT	Information Technology
JRT	Joint Response Team
LDZ	Local Distribution Zone
LGSE	Local Gas Supply Emergency
NEC	Network Emergency Co-ordinator
NEMT	Network Emergency Management Team
NGSE	Network Gas Supply Emergency
NTS	National Transmission System
OCM	On the Day Commodity Market
OIC	Officer in Charge
OPN	Offtake Profile Notice
SC2004	System used for Interruption
SRT	Strategic Response Team
tpa	Therms per annum
UKD	UK Distribution
VLDMC	Very Large Daily Metered Customer

