nationalgrid

Exercise Neptune

2006

Executive Summary

Exercise Neptune was a NEC exercise, required under GS(M)R, to fully test the emergency arrangements in place to manage a network gas supply emergency.

This exercise engaged upstream and downstream industry players and the DTi. Unlike previous exercises, Neptune tested a scenario where sudden catastrophic failure resulted in the need to proceed straight to a Stage 3 emergency. This has highlighted several areas where existing procedures need to be improved to effectively manage this type of emergency. Difficulties were also identified in communications between the two gas control rooms, the GNCC and DNCC, and measures are being identified and put in place to resolve these. Improvements are required in some communications and decision support tools used, to ensure they are robust and fit for purpose.

The previous NEC exercise, Moscow in 2005, raised concern in three areas:

- Shipper generated emergency interruption
- >25,000 tpa firm load shedding
- Network isolation

Exercise Neptune demonstrated that:

- Shippers' performance in delivering emergency interruption remains very variable and appears to be independent of shipper portfolio size.
- There has been an improvement in >25,000 tpa sites that can be successfully firm load shed (36% to 43%), however there remain a disappointing number of sites who either cannot be contacted or can be contacted but cannot turn off their gas.
- Plans for Network isolation show a considerable improvement over the previous exercise.

Communications and information exchange was generally good with storage sites, the Isle of Grain and BGE, but further work is needed to improve understanding.

Coordination between the DTi and the GNCC emergency management team worked well. However, some work is required to ensure gas maximisation processes deliver what is required.

The NEC Safety Case Forum has been established, with representatives from the HSE, NEC, primary and secondary transporters; this group will progress the recommendations made in this report.

Exercise Neptune was an effective test of emergency arrangements and the authors would like to thank all participants.

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1 Introduction

Exercise Neptune 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 scale exercise. Neptune revisited the areas of concern highlighted during the 2005 exercise, Moscow, and tested upstream response.

1.1 Exercise Scope

Exercise Neptune was held on the 6th and 7th of September 2006. It was externally focused testing the effectiveness of emergency processes and the gas industry's response to a NGSE. The Network Emergency Management Team (NEMT) did not develop an emergency strategy but worked to a script which specified the actions required throughout the exercise. This allowed them to focus on the effectiveness of the emergency procedures and to evaluate the response of internal and external parties.

Exercise Neptune tested upstream and downstream emergency response and DTi procedures. The DNCC, the Interconnectors, the Isle of Grain, storage sites, shippers, APX, Distribution Networks, the DTi and large users all participated in the exercise. Communications, information exchange, situation reports, maximisation of supplies, emergency interruption, OCM suspension, firm load shedding and isolation were all tested. Input from the terminals and the strategic response team (SRT) was simulated.

1.2 Exercise Structure

Previous NEC exercises have tended to be based around progressively worsening scenarios in which actions were taken in a structured way as each stage was declared. It is recognised that a sudden, catastrophic failure could result in an emergency situation that required immediate escalation to a higher emergency stage. Neptune tested emergency arrangements against this type of scenario to identify if the existing procedures support this type of incident.

The Neptune scenario involved the failure of supplies from a key terminal during a high demand day which resulted in a situation requiring the immediate declaration of a Stage 3 emergency. This was followed by further supply losses on the second day resulting in escalation to Stage 4 and wide spread isolation.

2 Procedures, Communications and Supporting Tools

Emergency exercises are run to test the effectiveness of existing processes and to identify where improvements are required. This section of the report assesses how effective existing procedures are, discusses the communication

issues encountered and highlights the problems experienced with the support tools and systems critical to managing an emergency.

2.1 Procedures

The GNCC E3 details the actions required at each stage of an emergency and is divided into check lists for the NEMT. As exercise Neptune moved straight to a Stage 3, each team found that they had a number of actions that needed to be completed at once. The current GNCC E3 does not fully support this type of incident and needs to be revised to ensure all emergencies can be effectively managed. Systems need to be introduced to enable the NEMT to more effectively track the tasks they are responsible for, to ensure they are all completed in a timely manner[1].

Coordinating communications was particularly difficult and needs to be simplified so that a clear message can be quickly distributed to all parties[2].

The structure of NEMT teams should be reviewed to ensure they are still fit for purpose following changes that have been made to the NEMT duties over recent years[3].

Information exchange with the DNCC was slow due to the technical problems described below. The current procedures instruct the DNCC of the actions required and provide details of flow rates on the same form.

Calculating the required information is time consuming and this leads to delays updating the DNCC on the actions they need to complete. Providing details of the actions needed prior to flow rate information would enable DNCC to initiate actions earlier[4]. Hence avoiding the situation observed during Neptune, where GNCC had completed emergency interruption before DNCC had been specifically notified of the need to emergency interrupt Network sites.

During Neptune there was a significant delay before some Networks were contacted; early release of actions required and a review of DNCC communication routes should speed up this process[5].

The management of commercially sensitive information also needs to be reviewed to ensure the market and wider community receive information appropriately[6].

2.2 Communication Issues

At the start of the exercise, all NEMT teams had tasks to complete for Stages 1 through to 3, including communication to external organisations. This generated an extremely high workload for the OIC Support team, who struggled to send the required forms out timely, in a coherent order. Communication requirements need to be reviewed, to rationalise the information that needs to be issued in this type of incident[2].

Faxed forms still presented problems for several parties; although many more forms were typed, the few hand written forms proved difficult to read as were some of the forms with checked 'buttons'. The legibility of forms needs to be improved[7].

Both the GNCC and DNCC encountered problems with incorrect contact numbers and regular audits of contact numbers should be introduced to address these issues[8].

DNCC and GNCC need to ensure external communications are coordinated, so that mixed messages do not generate confusion[2].

2.3 Supporting Tools

The NEMT uses the emergency strategy programme (ESP) to determine what actions are required to bring the system into a supply/demand balance. During the exercise problems with ESP considerably delayed the release of information to DNCC. This problem was traced to a bug in the programme which was fixed before the second day of the exercise. ESP is a key tool for managing major incidents, which has been developed and amended over many years. The programme is no longer considered to be fully robust; a tool needs to be developed to replace it[9].

Delays in providing information to DNCC were further exacerbated, as the electronic forms used for data exchange between the control rooms would not allow operators to edit information. During the exercise forms were printed off, filled in by hand and faxed to DNCC. This problem needs to be resolved to prevent reoccurrence. As these electronic forms are critical, the level of IT support provided should be reviewed to ensure it is adequate[10].

3 Load Shedding

Effective load reduction is a vital part of managing a NGSE. Exercise Moscow highlighted issues with the delivery of emergency interruption, firm load shedding of >25,000 tpa consumers and isolation. Particular attention was paid to performance in these areas during exercise Neptune. This section of the report considers all load shedding activities performed during Neptune. As the exercise went straight to a Stage 3, emergency interruption and firm load shedding were completed simultaneously.
Due to the technical problems mentioned earlier, details of load shedding requirements were not received by DNCC until 11:40. Emergency interruption and firm load shedding initiated by DNCC, was therefore delayed.

3.1 VLDMC Interruption and Firm Load Shedding

Emergency interruption and firm load shedding of VLDMCs is carried out by the GNCC and DNCC for NTS and DN loads respectively. It was possible to contact all VLDMCs within one hour and the tables below show the time needed to cease taking gas.

Sites are contacted by phone and the request to emergency interrupt and/or firm load shed is followed up by a faxed GS(M)R notice. Some GS(M)R notices to interruptible consumers were sent out from GNCC without the "Exercise Neptune" watermark. These sites were subsequently contacted and notified that no action was required. This would not be an issue in a real emergency as no watermark would be required; however, the issue needs to be addressed to prevent confusion in future exercises.

Day 1 Emergency Interruption & Firm Load Shed of VLDMCs

NTS VLDMCS		LDZ VLDMCs	
Time to Contact All Sites	50 mins	Time to Contact All Sites	within 30 mins
Number of VLDMCs	46	Number of VLDMCs	12
Isolate within 1 hr	38	Isolate within 1 hr	12
Isolate within 1-2 hrs	5	Isolate within 1-2 hrs	0
Isolate within 2-3 hrs	1	Isolate within 2-3 hrs	0
Isolate within 3-4 hrs	2	Isolate within 3-4 hrs	0

Day 2 Firm Load Shed of VLDMCs

NTS VLDMCS	
Time to Contact All Sites	15 mins
Number of VLDMCs	6
Isolate within 1 hr	5
Isolate within 1-2 hrs	0
Isolate within 2-3 hrs	0
Isolate within 3-4 hrs	1

note: DNCC did not contact any VLDMCs on day 2 of Exercise

During the first day of the exercise it was possible to maintain supplies to priority consumers, however, one NTS priority load, was incorrectly requested to firm load shed when it should have only been requested to emergency interrupt. This was due to an administrative error at GNCC and control systems to prevent a reoccurrence are being introduced[11].

3.2 Emergency Interruption of DN Loads

Non-VLDMC interruptible sites are emergency interrupted by their shippers. DNCC contacted sixteen shippers and asked them to emergency interrupt all of their interruptible portfolio. Shippers are requested to provide feedback to DNCC on the progress of emergency interruption every ½ hour until all their sites have been interrupted.

During the exercise three shippers (Hydrowingas, North Sea Gas and Smartest Energy) provided no updates back to DNCC. As these shippers have not demonstrated that they are able to effectively complete emergency interruption, the NEC has written to them to raise his concerns. Due to a misunderstanding RWE did not fully participate in the exercise. Following discussions with the NEC, they have provided full details of an independent exercise they completed and have agreed to fully participate in future exercises.

Shipper performance varied considerably; the time taken to contact all sites ranged from one hour to four. The time taken appears to be independent of shipper's portfolio size. Shippers need to consider how improvements can be made in this area[12]. Details shipper of performance is shown in appendix 7.1.

DNCC provided no updates to GNCC on the progress of emergency interruption and procedures need to be amended to clarify the need for this information exchange[13].

Both DNCC and GNCC encountered difficulties with SC2004 during restoration. The system would not produce revocation notices for individual sites, but issued multiple copies to shippers. These problems need to be investigated and resolved[14].

3.3 Firm Load Shedding of >25,000 tpa Consumers

This year LDZs were asked to load shed 20% of their large load by volume, rather than a specific number of sites, as this more accurately reflects what would happen in a real incident. To enable comparison with previous exercises they were asked to contact a minimum number of 200 sites. With the exception of London all LDZs were able to deliver 20% load reduction and UKD successfully contacted over 20% of load in other LDZs to make up the shortfall.

The 20% load reduction appears to have caused confusion at DNCC, who were unable to clarify the instruction due to communications difficulties. The process needs to be revised so that percentage load requests are readily understood by all parties and can be delivered as required[15].

Several Networks have commented that the load shedding database lacks the functionality to easily report on load shed progress, and that the 'target' volume cannot be amended without losing data. As this database is key to the process of >25,000 tpa load shedding, a review of its functionality is recommended[16].

The time taken by the Networks to contact sites varied from two and a half hours to over four and a half hours, see appendix 7.2. Consideration needs to be given to what is an appropriate timescale for contacting large loads and best practise shared, to ensure firm load shedding can be effectively delivered by all[17].

The GNCC received very little feedback on the progress of firm load shedding from DNCC, and communications in this area need to be reviewed to ensure the appropriate information is shared between the control rooms[13].

The firm load shedding results for exercise Neptune, compared to previous 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".

Contact Type	Krakatoa 2003		Load Shed 2004		Moscow 2005		Neptune 2006	
	No.	%	No.	%	No.	%	No.	%
Successful (could turn off)	1780	47%	1214	31%	582	36%	1112	43%
Could not turn off	705	19%	606	16%	515	32%	612	24%
Total sites where contact was made	2485	65%	1820	47%	1097	68%	1724	66%
Contact details incorrect	1318	35%	2063	53%	512	32%	878	34%
Total attempted contacts	3803		3883		1609		2602	

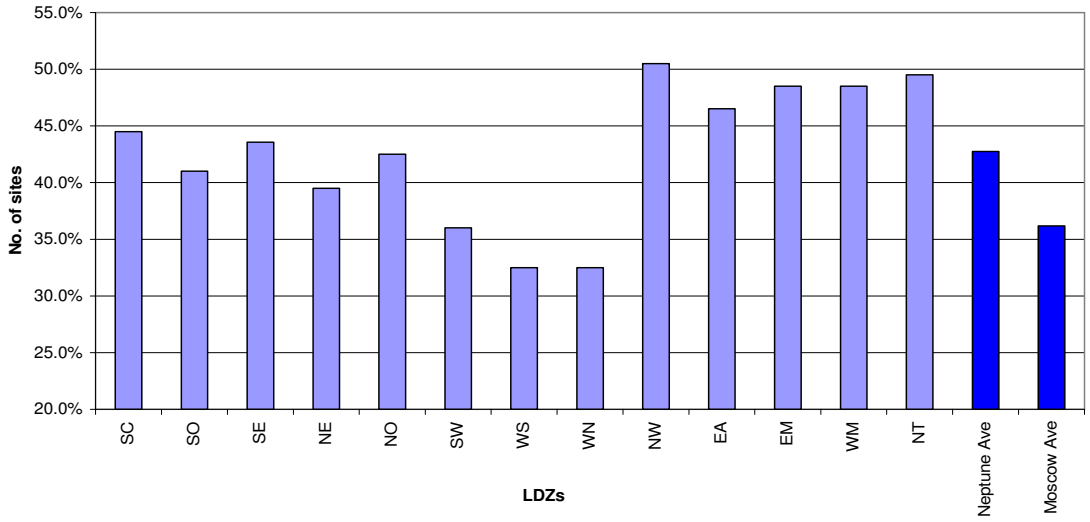
These results show an increase in successful contacts where consumers were able to turn off gas. There was a corresponding decrease in the number of sites who were contacted but were unable to stop using gas, compared to the previous exercise. However, there remained approximately one third of sites who could not be contacted. The percentage of sites with incorrect contact details has remained relatively constant; the peak during the 2004 exercise reflects the different approach taken for exercise load shed.

All Networks were provided with the same script and instructions for use when calling sites and recording results. However, performance of firm load shedding varied considerably across the LDZs, as shown in the table and graphs below. Sites which could turn off their gas varied from 32.5% to 50.5% across LDZs and unsuccessful contacts varied from 63.5% to 18%. Obviously, care is needed to ensure that Networks are consistently recording firm load shedding data. The variation in results appears to indicate that caller experience and training may significantly impact on the success of load shedding and Networks should share best practice to optimise performance[18].

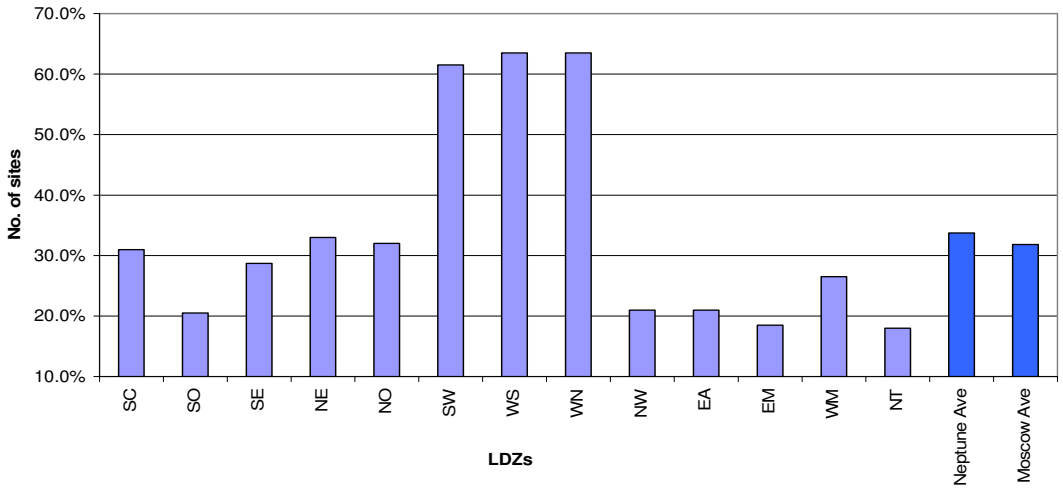
Firm Load Shedding of top 200 above 25,000tpa sites by LDZ

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
SC	200	62	89	49	31.00%	44.50%	24.50%	13,058,153	26,363,858	49.5%
SO	200	41	82	77	20.50%	41.00%	38.50%	12,722,953	25,168,722	50.6%
SE	202	58	88	56	28.71%	43.56%	27.72%	9,999,108	18,577,655	53.8%
NE	200	66	79	55	33.00%	39.50%	27.50%	14,009,771	26,201,303	53.5%
NO	200	64	85	51	32.00%	42.50%	25.50%	16,111,561	31,870,208	50.6%
SW	200	123	72	5	61.50%	36.00%	2.50%	9,702,751	13,045,175	74.4%
WN	200	127	65	8	63.50%	32.50%	4.00%	3,728,236	6,140,326	60.7%
WS	200	127	65	8	63.50%	32.50%	4.00%	7,299,857	39,730,921	18.4%
EA	200	42	93	65	21.00%	46.50%	32.50%	12,265,700	20,526,171	59.8%
EM	200	37	97	66	18.50%	48.50%	33.00%	27,949,692	46,196,619	60.5%
NT	200	36	99	65	18.00%	49.50%	32.50%	14,056,268	22,671,607	62.0%
NW	200	42	101	57	21.00%	50.50%	28.50%	18,825,145	33,031,661	57.0%
WM	200	53	97	50	26.50%	48.50%	25.00%	27,598,963	45,694,418	60.4%
TOTAL	2602	878	1112	612	33.74%	42.74%	23.52%	187,328,158	355,218,644	52.7%

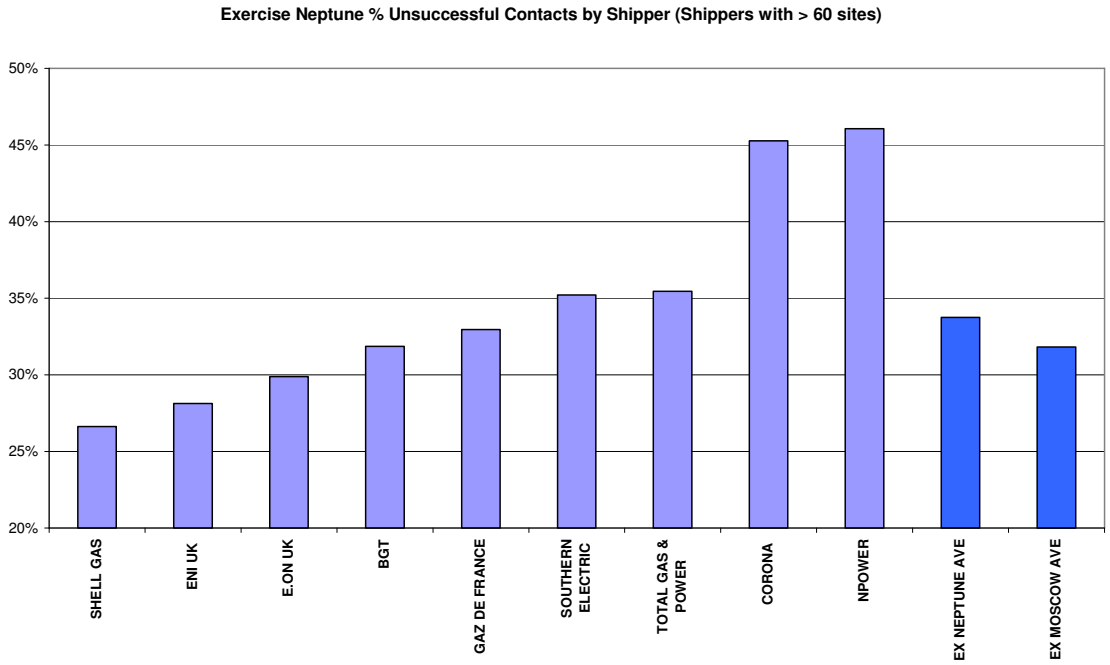
Exercise Neptune % Successful Contacts Who Can Turn Off Gas by LDZ (loads >25,000 tpa)

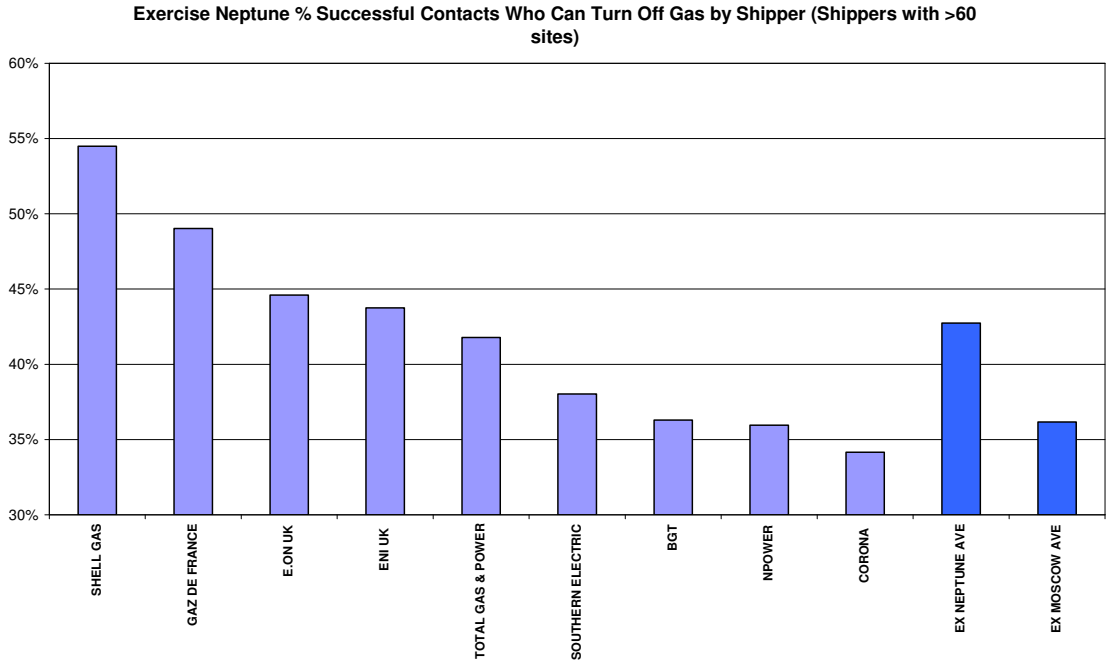


Exercise Neptune % Unsuccessful Contacts by LDZ (loads >25,000 tpa)

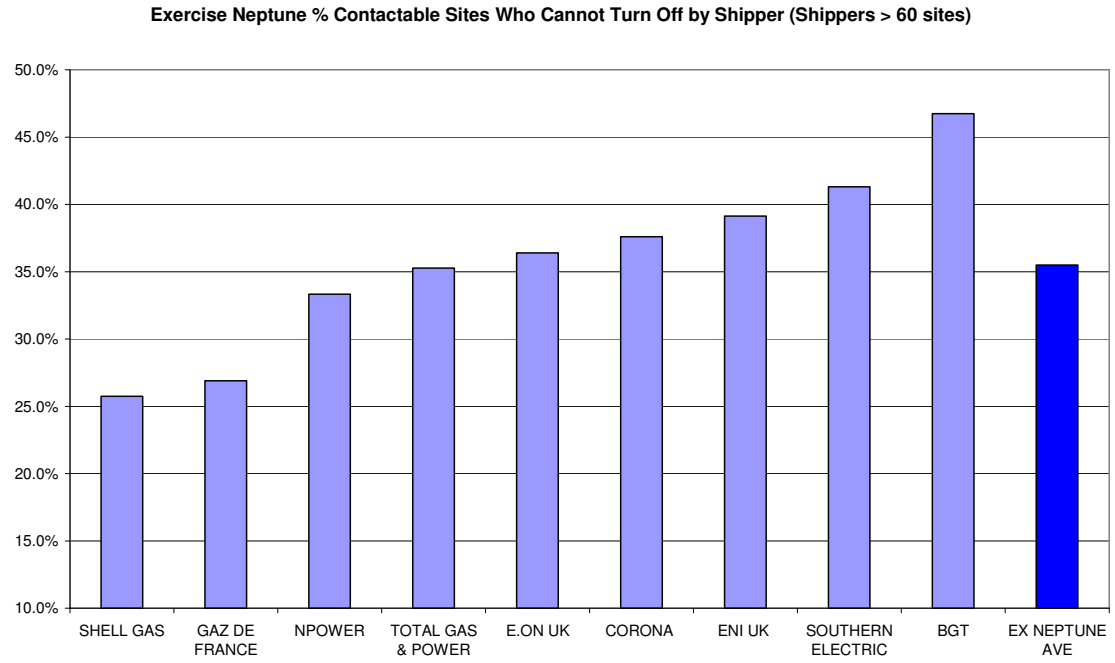


Emergency contact details are collated by shippers and the results of firm load shedding varied considerably by shipper. The results shown below represent shippers who had more than 60 sites contacted during Neptune, full results are provided in appendix 7.3. The percentage of sites which could not be contacted due to inaccurate contact details varied from 26.6% to 46% across shippers. Shippers with more accurate contact data tended to have a greater percentage of sites that could turn off gas; sites which could turn off varied from 54% to 34% across shippers. Focusing more effort in this area could improve data quality to the level of the shipper with the most accurate data, if not improve it further. Accuracy of information is independent of the shippers' portfolio size and consideration needs to be given as to how information accuracy can be improved[19]. Further details of firm load shedding performance by shipper and LDZ are provided in appendix 7.3.





The following chart shows the percentage contacted sites who were unable to turn off their gas for Shippers with > 60 sites. Accurate contact details need to identify the appropriate people within the organisation with the knowledge and authority to turn off the gas. Measures to improve contact data must also address this issue.



3.4 Isolation

During exercise Neptune, Networks were asked isolate load in each LDZ. The volumes of load to be isolated were dependant upon the speed isolation could be delivered. i.e. % load reduction vs. time. North London was able to deliver 15% isolation in four hours and all other LDZs were able to deliver 10% in 3 hours. Isolation details are provided in appendix 7.4.

This represents a considerable improvement over the isolation times observed during exercise Moscow, where five LDZs required five hours or more to deliver isolation. During exercise Neptune several LDZs reduced their isolation times by either identifying additional resources, or isolating at higher pressure tiers. To build on the work completed to date, Networks need to ensure isolation plans are regularly reviewed and that they have confidence in delivery times, as these would be critical in a real incident[20].

3.5 Restoration

All networks were able to provide restoration plans and the DTi held discussions exploring mutual aid options and the use of additional resources in order to determine the time to achieve restoration.

3.6 Bord Gáis Eireann

Communications and the quality of data exchange between GNCC and BGE were considerably improved from those experienced during exercise Moscow.

Although there were initial problems with incorrect fax numbers and a lack of clarity over the information required, these were quickly resolved.

At the start of the incident, BGE were asked to provide a breakdown of their load, by load category. The initial response provided no information on domestic load supplied by supplementary transporters supplied via Moffat. Following a request for clarification, a full breakdown of load was provided.

BGE requested a voluntary load reduction and an increase of indigenous supplies across Northern Ireland, the Isle of Man and the Republic of Ireland. BGE were able to secure a fifteen percent reduction in demand. All parties were contacted and BGE provided a revised offtake profile notice (OPN) within two hours of the initial NEC declaration. Currently the emergency procedures do not request this voluntary load reduction, and should be amended to make full use of this option[21].

There was some confusion over how to calculate the load reduction required from BGE. This introduced a delay of four and a half hours in requesting the turndown at Moffat. The process needs to be simplified and addressed more clearly in the NEMT team training provided to staff[22]. BGE provided a revised OPN reflecting this load reduction which should have taken account of the initial voluntary load reduction.

At the start of the second day, BGE should have been requested to reduce their load by 90% to reflect load shedding of all additional load over 25,000 tpa and to isolate 10% of domestic load. This reflected the load reduction being request on mainland Britain. However, initially BGE were requested to reduce load by only 20%, with an additional load reduction requested two hours later. Again, this delay was due to confusion in the OIC demand team, and a support tool needs to be developed to assist the production of BGE load reduction figures[22].

Changes are also required to the GNCC E3, to ensure the multiple tasks which require completing by NEMT members are more effectively tracked[1].

BGE provided OPNs for both of the load reductions they were asked to complete, however, the second indicated that they would cease taking gas from 15:00 hrs. This is likely to have been incorrect; however, it was not queried during the exercise. Follow up work is required with BGE to ensure OPN requirements in an emergency are clear[23].

3.7 Supplementary Transporters

Supplementary transporters are contacted and requested to complete emergency interruption and firm load shedding on their systems. This appears to have been effective, although little feedback has been provided. Only one supplementary transporter has provided feedback on the exercise directly, which raises the concern that other supplementary transporters may not be fully engaged in the process. It may be prudent for secondary transporters to complete an audit of supplementary transporters, to ensure emergency contact

information is available and that all supplementary transporters understand their responsibilities during an emergency[24].

During exercise Moscow, several Networks commented that supplementary transporters were asking them to divert resources to isolate individual sites during Stage 4. Isolation is not required by supplementary transporters, in the majority of cases, as this will occur on upstream systems. Since exercise Moscow procedures have been improved and this problem did not reoccur during Neptune.

4 Supply Side Response

Exercise Neptune tested upstream processes, with storage sites and the Isle of Grain fully participating. Although terminals were not involved in the exercise, the DTi played their role, to enable situation reports to be run as part of a full exercise. In this section of the report, upstream response is considered.

4.1 Situation Reports

Prior to this exercise, the situation report process has been tested as a stand alone process and not as part of a full test of emergency procedures. This exercise provided an opportunity to assess how collating situation report information and participating in DTi teleconferences impacted on the OIC Supply and his team.

GAS and Situation reports are emailed to the GNCC mailbox and consideration needs to be given to the most appropriate way these can be readily accessed by the OIC Supply team, without disrupting shift staff that are likely to be focused on the emergency[25].

Participating in DTi teleconferences with the terminal group leaders diverted the OIC Supply away from his team for significant periods of time. This led to some difficulties in keeping the team up to date with events, so the team structure needs to be reviewed to address these issues[3].

4.2 Storage

Communications generally worked well between the OIC Supply team and the majority of storage sites. The contact number was incorrect for one site and reached the security lodge for one other; these have now been rectified. As storage sites are critical, it would be useful to introduce a regular audit of contact details to ensure information is accurate[26].

The storage 2a form was sent to all sites requesting information on maximum delivery rates etc. Several sites appeared to have difficulty providing the information required. This form needs to be reviewed, so the information requested is clear[7]. GNCC need to engage with storage sites to ensure they are

clear on what is required from them, and that they are able to provide the information in a timely manner, when required[26].

4.3 Isle of Grain

All information exchange with the Isle of Grain went well. The site fully understood what they were being asked to provide and returned all information promptly and in the correct format.

5 DTi

The DTi participated in exercise Neptune to test government emergency processes prior to winter. During the first day of the exercise, the upstream team participated in the Situation report process. On the second day, the JRT was set up to consider the consequences of a major gas supply loss and restoration options following isolation. The DTi are producing a separate report on their findings.

5.1 Upstream Processes

Contact between the OIC Supply and the JRT upstream team was introduced to provide a link for information exchange on the supply position between the NEMT, upstream industry and the JRT. All other information exchange between the JRT and National Grid should be via the Strategic Response Team (SRT).

Initial contact with the JRT (Upstream) proved difficult, with calls going straight to voicemail as the DTi were testing remote access, but this settled down once the JRT was fully established. Teleconferences between the OIC Supply, DTi and the terminal group leaders worked well, however, some discussions drifted into wider issues out of the scope of this interface. Guidelines for the OIC Supply need to be revised to provide clarity on the communications role[27]; wider issues need to be referred to the SRT.

The NEMT notified the JRT and shippers of the need to maximise gas supplies. This should have triggered the JRT to commence proceedings to obtain an Order in Council, necessary to for the DTi to direct upstream industry. The JRT took the decision to issue “request letters” to industry instead of pursuing an Order in Council, which is contrary to the Crisis Management Briefing Pack. Delays in decision making at JRT resulted in this letter going to industry one and a half hours after the NEMT request to maximise gas.

Since the exercise the DTi have confirmed that it could take up to 48 hours to raise an Order in Council, and upon this instruction, the suppliers would take every action to maximise deliveries. This could include actions which may potentially damage fields for little additional gas. The concern at National Grid is that some suppliers may be reluctant to continue delivery into an uncertain market and that a method of ensuring maximum deliveries in an emergency is

required. The gas maximisation process and powers available to the JRT need to be fully understood, to ensure supplies can be maximised in a timely manner if required under emergency circumstances[28].

Currently Situation reports (and GAS reports) do not include information on the capability of imports via the European Interconnector and the Isle of Grain. The DTi are currently investigating how best to capture this information.

5.2 Joint Response Team

The incident controller also played the SRT role on day two of the exercise, to provide an appropriate contact for the JRT. The JRT challenged NEMT and NEC decisions and suggested alternative solutions, rather than focusing on the consequences of the actions taken to minimise the impact of the incident. Whilst some challenge and review is to be expected, questioning actions that have already been taken and re-running NEMT debate, demonstrated that the JRT was operating at a tactical rather than a strategic level.

During initial discussions on mutual aid the JRT asked UKD to provide a view on independent networks. The JRT need to engage independent networks directly as UKD would not be in a position to provide this information[29].

6 Findings and recommendations

6.1 Findings

Exercise Neptune tested emergency arrangements against a sudden, catastrophic failure resulting in a Stage 3 emergency. It identified a number of areas where improvements are required, to ensure this type of emergency can be effectively managed. The main recommendations are captured in the table in section 6.3.

The problems with ESP during the exercise created considerable difficulties and demonstrated how critical this decision support tool is to managing emergencies. A more robust solution is required.

Information exchange between the GNCC and DNCC needs to be improved, as do the communication links from DNCC to the Networks. This will ensure that all relevant information is shared and fed back to the NEMT, to inform further decisions.

Whilst there was an improvement in firm load shedding of >25,000 tpa consumers, the level of sites which cannot be contacted or who cannot turn off their gas remains disappointingly high. The number of sites with incorrect details varies considerably across shippers.

Network isolation showed a marked improvement over the performance seen in exercise Moscow.

Recommendations will be progressed through the NEC safety case forum and other appropriate groups.

6.2 Future Exercises

Exercise Neptune was a comprehensive test of emergency arrangements which revisited the key issues raised by exercise Moscow. Neptune also involved testing upstream industry and storage sites and has identified many different areas where improved performance is required.

Recommendations have been made and will be discussed with the relevant parties. To fully test improvement in these diverse areas it would be beneficial for a number of smaller, more focused exercises to be completed over the next year. A detailed plan of proposed exercises will be produced and discussed with the HSE[30].

6.3 Recommendations

No.	Issue	Comments	Owner	Target date
		General		
1	The current GNCC E3 does not fully support gas incidents requiring immediate escalation above stage 1	GNCC E3 needs to be revised to cater for the possibility that an emergency might occur that requires immediate escalation to Stage 2/3/4 thus placing additional pressures on NEMT teams. Revisions need to prioritise requirements and provide a mechanism for tracking progress.	GNCC	May 07
3	Some NEMT duties are no longer appropriately allocated	NEMT teams and duties should be reviewed to ensure they are still fit for purpose. e.g. Participating in DTi teleconferences with the terminal group leaders diverted the OIC Supply away from his team for significant periods of time. Roles to be updated for the next version of GNCC E3.	GNCC	May 07
9	The ESP programme proved unreliable	A robust alternative to ESP that can cater for network alterations and will be fully supported needs to be developed.	GNCC	Sep 07
		Communication Issues		
2	The coordination of external communications requires improvement	Difficulties were experienced coordinating communications, with mixed messages generating confusion. GNCC and DNCC E3 documents need to be revised to address this issue.	GNCC DNCC	May 07
4	Delayed information exchange between DNCC and GNCC	Information exchange with DNCC was delayed due to the additional time taken for GNCC to produce the first DNCC1 form, as it also had to include revised flow rate information. The emergency procedures need to be reviewed so that an early indication of the emergency actions required can be notified to DNCC, ahead of the detailed requirements.	GNCC DNCC	May 07
5	Delays in DNCC contacting all Networks	Communications need to be improved between DNCC and the Networks to ensure all parties are prepared to undertake actions required of them	DNCC Networks	May 07
6	Commercially sensitive information	A review should be carried out to ensure the market and wider community receive information appropriately.	GNCC	May 07
7	Legibility and Interpretation of emergency forms	The legibility of forms needs to be improved and information requests need to be clarified so recipients understand what is needed e.g. Storage2a. A review of DNCC and GNCC E3 emergency forms is required and updates included in the next revisions.	GNCC DNCC	May 07

No.	Issue	Comments	Owner	Target date
8	Incorrect contact details	All parties should consider introducing regular audits of emergency contact details.	All	May 07
10	Electronic forms	Some users had problems with the electronic forms used to transfer information between GNCC and DNCC. The level of IT Support made available under emergency conditions requires review. Consideration ought to be given to an automatic escalation in priority under these circumstances.	GNCC	Jan 07
13	Emergency Interruption and Firm Load Shedding updates	The GNCC received very little feedback on the progress of Emergency Interruption and FLS from DNCC. E1 specifies set timescales for emergency updates between all the parties involved. GNCC and DNCC E3 procedures to be amended to clarify update requirements. Changes to be made in the next E3 revision. External parties (shippers DNs etc.) need to be reminded of their reporting responsibilities. DNs to consider how reporting of FLS progress can be made easier to ensure updates can be provided.	GNCC DNCC DNs	May 07
Emergency interruption				
12	Shipper emergency interruption	Shippers need to identify how emergency interruption performance can be improved.	Shippers	May 07
14	SC2004 system.	SC2004 did not produce revocation notices for individual sites, but issued multiple copies to shippers. Exercise watermarks were missing on some of the GSMR forms (not relevant in a real emergency). Correction to the SC2004 system required to resolve these issues.	GNCC	Jan 07
Firm Load Shedding				
11	NTS priority loads	An NTS priority load was wrongly asked to emergency load shed. A system is being introduced to prevent this error reoccurring.	GNCC	Jan 07
15	Percentage load reductions	The percentage load reduction request caused confusion at DNCC leading to delays in contacting the DNs. The request for load reduction needs to be revised to remove any ambiguity.	GNCC DNCC	May 07
16	Firm load shedding database functionality	The firm load shedding database lacks functionality to enable FLS progress to be easily monitored. The database should be reviewed to assess fitness for purpose.	DNs	May 07

No.	Issue	Comments	Owner	Target date
17	Time to deliver Network firm load shedding	The time taken by the Networks to contact sites varied substantially. Consideration needs to be given to reducing contact times by sharing best practice.	DNs	May 07
18	Firm load shedding performance.	Results suggest that caller experience and training are influential in the effectiveness of firm load shedding. Options for optimising performance need to be developed and implemented.	DNs	May 07
19	Incorrect Emergency Contact Details	Consideration needs to be given to how emergency contact data quality can be improved for >25,000 tpa consumers.	Shipper Community	Mar 07
21	BGE voluntary load reduction	BGE identified a voluntary load reduction which is not covered in the current GNCC E3. Procedures need to be amended to take advantage of this load reduction	GNCC/BGE	Jan 07
22	Difficulty calculating load reduction requirements for BGE	There was confusion over how much load needed to be shed at Moffat. Training needs to be improved in this area and a tool developed which will simplify the process.	GNCC	May 07
23	Accuracy of OPN information provided by BGE	Some incorrect OPN information was received from BGE. Clarification of emergency information requirements is required.	GNCC BGE	May 07
24	Engaging Supplementary transporters	Supplementary transporters may not be fully engaged in the emergency process. Secondary transporters need to review contacts and procedures to ensure the Supplementary transporters are fully informed and aware of their responsibilities during an emergency.	DNCC Secondary Transporters	May 07
Isolation				
20	Isolation delivery	Networks need to ensure isolation plans are reviewed regularly so they remain up to date and provide realistic isolation times.	Networks	Jun 07
Upstream				
25	GAS and Situation reports	These reports are currently emailed to the GNCC mailbox. Suitable access to these forms needs to be available to OIC Supply so as to prevent any unnecessary disruption to the Control Room staff.	GNCC	Jan 07
26	Storage site information exchange	Greater understanding is needed to ensure appropriate information is provided by storage sites. As these sites are critical an audit of contact information should also be introduced.	GNCC Storage sites	May 07
27	The scope of JRT Teleconferences needs clarification	Issues outside the scope of the JRT teleconferences were discussed. Guidelines for the OIC Supply need to be revised to provide clarity on the communications role; wider issues need to be referred to the SRT.	GNCC	Dec 06

No.	Issue	Comments	Owner	Target date
28	The process for maximisation of gas supply at Stage 2 requires review	The gas maximisation process and powers available to the JRT need to be fully understood, to ensure supplies can be maximised in a timely manner if required in an emergency.	GNCC/DTi	May 07
29	JRT membership	The JRT should consider how to engage with all distribution networks to ensure all relevant information is available to them.	DTi	May 07
Further exercises				
30	Emergency exercises	A plan of exercises needs to be developed to ensure all areas are tested.	GNCC	May 07

7.0 Appendices

7.1 Shipper Performance - Emergency Interruption

Note: Interruption called at 11:50.

Shipper		Time	% of Portfolio Interrupted	Total % Portfolio Interrupted	No of Sites in Portfolio	Comments
AGA	Total Gas & Power	12:56	18			
		13:30	73			
		14:04	85			
		14:38	92			
		15:15	94	94	259	
AGI	ENI (UK)	13:39	40	40	74	ENI fax and telephone lines went down at 11:50. ENI contacted 40% of their portfolio between 12:40 and 13:25.
BPG	BP Gas Marketing	12:20	100	100	6	
BUS	British Gas Trading	13:12	50			
		13:45	100	100	167	
GLC	Corona Retail 4	13:55	45			
QGM	Corona Retail 1	15:09	65			
VEC	Corona Retail 2	15:51	70	70	38	
HDW	Hydrowingas				32	DNCC contacted Hydrowingas at 16:13 but they did not provide any updates
KIN	E.ON UK	13:30	100			All sites contacted by 13:15
POW	E.ON UK			100	128	
LEP	EDF Energy				2	Contacted GNCC rather then DNCC. Only 2 sites on their portfolio
NSG	North Sea Gas				2	No updates received
QUA	Shell Gas Direct	13:23	37			
		14:00	52			
		14:42	64			
		15:20	68			
		15:58	82	82	187	
RWE	RWE Trading					Returned fax to DNCC at 12:25. RWE are carrying out their own exercise. DNCC are awaiting their report.
IEU	Npower Direct					
NGD	Npower Comm				66	
SCP	Scottish Power	13:39	100	100	5	
SHE	SSE Energy	12:58	40			
SOP	Southern Electric			40	23	
SMT	Smartest Energy				7	Contacted Smartest Energy at 15:27 as we had had no response. ANS had been going off and they found faxes on machine. They will be more proactive on the 2nd day.
STA	Statoil UK	14:20	50			
		15:05	72			
		15:50	96			
		16:12	100	100	51	
VOL	Gaz de France Solutions	12:26	72			
		13:00	95			
		13:07	96	96	294	

7.2 Network Performance – Firm Load Shedding

NETWORK	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
Scotia Gas	602	161	259	182	26.74%	43.02%	30.23%	35,780,214	70,110,235	51.0%
United Utilities	400	130	164	106	32.50%	41.00%	26.50%	30,121,332	58,071,511	51.9%
Wales & West	600	377	202	21	62.83%	33.67%	3.50%	20,730,844	58,916,422	35.2%
UKD	1000	210	487	303	21.00%	48.70%	30.30%	100,695,768	168,120,476	59.9%
Total	2602	878	1112	612	33.74%	42.74%	23.52%	187,328,158	355,218,644	52.7%

7.3 Shipper and LDZ Performance – Firm Load Shedding

Exercise Neptune Firm Load Shedding Results by Shipper

Shippers	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
BP Gas Marketing Ltd.	1	0	1	0	0.00%	100.00%	0.00%	5836203	5836203	100.0%
British Gas Trading Ltd.	496	158	180	158	31.85%	36.29%	31.85%	21072368	47599633	44.3%
Contract Natural Gas Ltd.	1	1	0	0	100.00%	0.00%	0.00%	0	5412	0.0%
Corona Energy Retail	243	110	83	50	45.27%	34.16%	20.58%	5671770	13357902	42.5%
E.ON	469	153	199	117	32.62%	42.43%	24.95%	29313861	72667708	40.3%
EDF Energy plc	38	13	15	10	34.21%	39.47%	26.32%	988155	2092843	47.2%
ENI UK Ltd.	64	18	28	18	28.13%	43.75%	28.13%	8500164	14199563	59.9%
Gaz de France Solutions Ltd.	355	117	174	64	32.96%	49.01%	18.03%	36979745	68487920	54.0%
Hydrowingas Ltd.	12	2	8	2	16.67%	66.67%	16.67%	2294171	2930140	78.3%
Natural Gas Shipping Services	3	1	2	0	33.33%	66.67%	0.00%	53012	79374	66.8%
NPower	91	41	33	17	45.05%	36.26%	18.68%	2688767	5262097	51.1%
Powergen	11	10	0	1	90.91%	0.00%	9.09%	0	465946	0.0%
Regent Gas	4	2	1	1	50.00%	25.00%	25.00%	12727	127349	10.0%
Scottish Power Energy Mgt.	28	13	13	2	46.43%	46.43%	7.14%	984753	1379894	71.4%
Shell Gas Direct Ltd.	323	86	176	61	26.63%	54.49%	18.89%	25830722	42722501	60.5%
Smartest Energy Ltd.	2	0	2	0	0.00%	100.00%	0.00%	7575312	7575312	100.0%
Southern Electric Gas Ltd.	71	25	27	19	35.21%	38.03%	26.76%	3505434	4183798	83.8%
SSE Energy Supply Ltd.	2	0	1	1	0.00%	50.00%	50.00%	72414	72414	100.0%
Statoil (UK) Ltd.	41	5	24	12	12.20%	58.54%	29.27%	16526044	20772305	79.6%
Total Gas & Power Ltd.	347	123	145	79	35.45%	41.79%	22.77%	19422536	45400330	42.8%
Shippers All	**2602**	**878**	**1112**	**612**	**33.74%**	**42.74%**	**23.52%**	**187328158**	**355218644**	**52.7%**
Shippers who made over 60 calls total	**2459**	**831**	**1045**	**583**	**33.79%**	**42.50%**	**23.71%**	**152985367**	**313881452**	**48.7%**

Exercise Neptune Firm Load Shedding Results by Shipper (only shippers with 60+ sites)

Shippers	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
Shell Gas	323	86	176	61	26.63%	54.49%	18.89%	25830722	42722501	60.46%
ENI UK	64	18	28	18	28.13%	43.75%	28.13%	8500164	14199563	59.86%
BGT	496	158	180	158	31.85%	36.29%	31.85%	21072368	47599633	44.27%
E.ON	469	153	199	117	32.62%	42.43%	24.95%	29313861	72667708	40.34%
Gaz de France	355	117	174	64	32.96%	49.01%	18.03%	36979745	68487920	53.99%
Southern Electric	71	25	27	19	35.21%	38.03%	26.76%	3505434	4183798	83.79%
Total Gas & Power	347	123	145	79	35.45%	41.79%	22.77%	19422536	45400330	42.78%
NPower	91	41	33	17	45.05%	36.26%	18.68%	2688767	5262097	51.10%
Corona	243	110	83	50	45.27%	34.16%	20.58%	5671770	13357902	42.46%
Ex. Neptune Avg.	2602	878	1112	612	33.74%	42.74%	23.52%	187328158	313881452	59.68%
Ex. Moscow Avg.	1609	512	582	515	31.82%	36.17%	32.01%	80505099	195528120	41.00%
Shippers who made over 60 calls total	**2459**	**831**	**1045**	**583**	**33.79%**	**42.50%**	**23.71%**	**152985367**	**313881452**	**48.74%**

Firm Load Shedding of top 200 above 25,000tpa sites 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
SC	200	62	89	49	31.00%	44.50%	24.50%	13,058,153	26,363,858	49.5%
SO	200	41	82	77	20.50%	41.00%	38.50%	12,722,953	25,168,722	50.6%
SE	202	58	88	56	28.71%	43.56%	27.72%	9,999,108	18,577,655	53.8%
NE	200	66	79	55	33.00%	39.50%	27.50%	14,009,771	26,201,303	53.5%
NO	200	64	85	51	32.00%	42.50%	25.50%	16,111,561	31,870,208	50.6%
SW	200	123	72	5	61.50%	36.00%	2.50%	9,702,751	13,045,175	74.4%
WN	200	127	65	8	63.50%	32.50%	4.00%	3,728,236	6,140,326	60.7%
WS	200	127	65	8	63.50%	32.50%	4.00%	7,299,857	39,730,921	18.4%
EA	200	42	93	65	21.00%	46.50%	32.50%	12,265,700	20,526,171	59.8%
EM	200	37	97	66	18.50%	48.50%	33.00%	27,949,692	46,196,619	60.5%
NT	200	36	99	65	18.00%	49.50%	32.50%	14,056,268	22,671,607	62.0%
NW	200	42	101	57	21.00%	50.50%	28.50%	18,825,145	33,031,661	57.0%
WM	200	53	97	50	26.50%	48.50%	25.00%	27,598,963	45,694,418	60.4%
TOTAL	2602	878	1112	612	33.74%	42.74%	23.52%	187,328,158	355,218,644	52.7%

7.4 LDZ - Isolation Details

LDZ	% Isolation Achieved	Time taken to Achieve % (hrs)	Number of affected Supply Points
SC	10	3	187,000
SO	10	3	223,014
SE	10	3	268,977
NE	10	3	147,471
NO	10	3	98,028
SW	10	3	236,744
WN	10	3	43,265
WS	10	3	148,570
EA	10	3	141,931
EM	10	3	200,592
NT	15	4	375,000
NW	10	3	484,200
WM	10	3	205,524
		TOTAL	2,760,316

7.5 Glossary

BGE	Bord Gáis Eireann
DN	Distribution Network
DNCC	Distribution National Control Centre
DTi	Department of Trade and Industry
E3	Gas Supply Emergency Procedure
ESP	Emergency Strategy Programme
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
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
SOQ	Supply Offtake Quantity
SRT	Strategic Response Team
tpa	Therms per annum
UKD	UK Distribution
VLDMC	Very Large Daily Metered Customer