Network Emergency Coordinator (NEC) Report

Exercise Viper

17th September 2014

Executive Summary

To prevent a supply emergency occurring or to minimise the safety risks associated where one develops, the Network Emergency Co-ordinator (NEC) has established arrangements pursuant to the Gas Safety (Management) Regulations 1996 for coordinating the actions of duty holders, including transporters, operating on the affected part of the network. In accordance with the NEC's safety case obligations these processes are tested on a periodic basis to ensure that arrangements are robust and duty holders are cognisant of their responsibilities.

The 2014 NEC emergency exercise, "Exercise Viper", was split into three separate elements to allow more focus on key areas of the emergency process:

1. NEC Industry Exercise - Gas Deficit Emergency (GDE)
2. Critical Transportation Constraint (CTC) Exercises aligned with Distribution Networks
3. Distribution Network firm load shedding Exercises

This report focuses on part 1, the main NEC Industry Exercise and includes the high level outputs of parts 2 & 3. Detailed reporting for part 2 will be shared with participants and the HSE only and Distribution Networks will also report individually on their own firm load shedding exercises (part 3) directly to the HSE.

The NEC Industry Exercise took place on Wednesday 17th September during normal working hours.

The exercise gauged the effectiveness of an industry response to a Network Gas Supply Emergency (NGSE); testing industry communication processes and each party's internal procedures to ensure that the emergency arrangements are robust and aligned.

Exercise Viper focused on the emergency arrangements described in the Procedure for Network Gas Supply Emergency (reference T/PM/E/1) last updated in 2012 to reflect the introduction of revised NEC safety case arrangements resulting from the implementation of NTS Exit Reform.

The exercise was completed in one working day and exercised National Grid's ability to formulate a Network Emergency Management Team (NEMT), the communication processes defined by the Procedure for Network Gas Supply Emergencies (T/PM/E/1) for management of a NGSE and the associated industry response.

Industry participants taking part in Exercise Viper included National Grid; Gas Distribution Network Operators (DNOs); Shippers; Terminals, Interconnectors, Storage Facility Operators, NTS directly connected loads and the Department of Energy and Climate Change.

Exercise Viper successfully demonstrated that the industry was able to respond to a Gas Deficit NGSE in accordance with the emergency arrangements described in the Procedure for Network Gas Supply Emergency.

The exercise fulfilled all planned objectives and provided the opportunity for the NEMT to test a range of updated systems and processes whilst exploring preventative options prior to and during a Gas Deficit NGSE. Post exercise feedback was positive and updated processes have been embedded post exercise.

The exercise highlighted 21 individual recommendations for improvement and these are detailed throughout this document and collated in Section 5 along with an update following the recommendations made from last year's NEC Exercise Ulysses in Section 6.

Contents

1. Introduction

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The 2014 NEC emergency exercise, "Exercise Viper", was split into three separate exercises to allow more focus on key areas of the emergency process:

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3. Individual Distribution Network firm load shedding Exercises

This report focuses on part 1, the main NEC Industry Exercise and includes the high level outputs of parts 2 & 3. Detailed reporting for part 2 will be shared with participants and the HSE only and Distribution Networks will also report individually on their own firm load shedding exercises (part 3) directly to the HSE.

Reporting is structured around a range of objectives developed ahead of the exercise to test emergency processes and systems. Each objective is summarised and key recommendations are noted throughout the report.

Industry participants taking part in Exercise Viper included:

- National Grid
  - Network Emergency Management Team (NEMT)
  - Gas National Control Centre (GNCC)
- Distribution Network Operators (DNs)
  - National Grid Gas Distribution (NGD)
  - Northern Gas Networks (NGN)
  - Scotia Gas Networks (SGN)
  - Wales & West Utilities (WWU)
- Shippers
- Terminal Operators including LNG Importation Terminal Operators
- Interconnector Operators
- Storage Facility Operators
- Supplementary Transporters
- NTS Directly Connected Loads
- Department of Energy and Climate Change (DECC)

Observers from the Health and Safety Executive were in attendance at National Grid Gas's headquarters in Warwick during the main NEC exercise and one of the DN CTC exercises. HSE observers were also welcomed at individual DN offices for the Distribution Network firm load shedding exercises.

The NEC Exercise and the four DN CTC exercises were organised on behalf of the NEC by the National Grid Emergency Planning Team (EPT). Each DN managed its own firm load shedding exercise separately.

2. Exercise Objectives

The principal objective of Exercise Viper was to test the emergency arrangements set out in the Procedure for Network Gas Supply Emergency (T/PM/E/1) and the response of all parties to a developing Network Gas Supply Emergency.

Following Exercise Ulysses in 2013 a number of recommendations were made based on feedback received from exercise participants. This feedback initiated a number of work streams for the NTS Emergency planning Team which would ultimately be tested during Exercise Viper, forming the rest of the main objectives to be tested alongside the main E1 procedure test:

1. Confirm that industry emergency arrangements remain aligned to the Procedure for Network Gas Supply Emergency (reference T/PM/E/1)
2. Test the new external Fax and SMS communications system
3. Test the revised NEC emergency forms through all emergency stages, and
4. Test the DECC upstream oil and gas crisis management procedure and Upstream Joint Response Team (UJRT) communications

Secondary objectives included testing a range of emergency processes and tools updated following recommendations made following Exercise Ulysses. The outcome of these objectives and the information and observations gathered drive a number of the recommendations made and will feed into design of future emergency exercises and general improvements in NTS process and strategy developments. These objectives included:

5. Test the updated GS(M)R Curtailment/Restoration process
6. Test the new Emergency Data Support Tool
7. Introduce NEMT Officer shadowing to build wider knowledge and confidence
8. Test all Site Emergency Telephone & Fax Lines
9. Test revised NEMT Task Cards (Incident Controller & Supply/Shipper/Demand/Support teams)

This report is structured around the outcome of exercising and testing the above objectives and each objective is considered herein separately. The recommendations from the 2013 NEC Exercise Ulysses are included in Section 6 along with an update on the progress and outcomes

NEMT Training had been developed and rolled out more widely within the National Grid - Gas System Operation department throughout 2014 by providing further role specific training for each NEMT sub team and more than doubling the total trained number of staff. With many new NEMT members, it was important to involve them in various stages of Exercise Viper to provide wider knowledge sharing and process understanding across the NEMT.

At the heart of any exercise is a drive to test and understand process but it is also important to always promote open discussion and healthy debate during an exercise and this was presented as a key objective of the exercise from the start.

The annual NEC exercise allows the NEMT to test all the NTS Site Emergency Telephone & Fax Lines. An updated Emergency Contact directory was provided to the NEMT ahead of the exercise with a key objective to make contact with ALL NTS Users via the various means available (Phone, Fax, ANS & Email).

3. Exercise Scenarios

This section details the approach taken for each of the 3 separate elements of Exercise Viper.

3.1. NEC Exercise (17th September 2014)

The NEC Exercise utilised a simulated Gas Day based on the highest demand day seen in the 2 years prior to the exercise. The historic day utilised was January 23rd 2013 where the actual total UK gas demand reached 386mcmd.

Exercising constraint management strategy would be the focus of the CTC exercises, capturing a wider range of operational constraint issues and involving more NEMT members. Therefore a large portion of the constraint scenario build up and the associated physical and commercial actions in the NEC Exercise were presented directly to the NEMT as an introduction to the exercise only. This approach allowed more time for testing the emergency process whilst using the time allotted efficiently to achieve the exercise objectives.

To begin the main NEC exercise a developing NTS Exit Constraint scenario due to significant supply losses was presented to the NEMT providing a realistic backdrop to the emergency scenario. Whilst the development of a constraint management strategy was not part of the test, it was important to provide realism in the build up to an emergency declaration to ensure that the NEC could be fully engaged. The tools and processes utilised in the constraint management strategy are detailed in National Grid's System Management Principles Statement available online.

With notification of the first significant supply losses the DECC Duty Officer was contacted to initiate the DECC Upstream Emergency Arrangements and request authorisation to initiate the GAS (Gas Availability Status) Report and arrange teleconferences. All Beach and LNG Supply Terminals were subsequently contacted and requested to provide the GAS reports detailing the maximum deliverability for the current and following gas days. Once all GAS reports had been received the Upstream Joint Response Team (UJRT) Teleconference was held between National Grid, DECC and Terminal Group Leaders (TGLs) to test process understanding and discuss the supply deficit.

Following the development of a robust constraint management strategy the scenario was moved forward and further significant supply losses were communicated to the NEMT. Analysis of the overall system balance and Network Analysis of the potential system pressure losses led the NEMT to develop a strategy to access actions under stage 1 and 2 of the emergency procedures following exhaustion of all available pre-emergency actions and tools.

Once an appropriate strategy to mitigate the significant supply losses was developed in line with National Grid's emergency procedures, the Incident Controller sought approval from the NEC (observed by the HSE) to move immediately to declare a Stage 1 & 2 Gas Deficit Emergency. This strategy was approved by the NEC and the industry notified of the emergency declaration.

Table 1 below provides the emergency actions available to the NEC at each stage of a Gas Deficit Emergency NGSE and the specific arrangements that were to be tested during the exercise.

Gas Deficit Emergency		
Emergency Stage	Action	Tested in Exercise Viper
Stage 1 (Potential)	• Gas conforming to Schedule 3 Part II of GS(M)R	No
	• NTS Linepack utilisation	Yes
	• Distribution Network Utilisation ○ Distribution Network Storage ○ Emergency Interruption	Yes (Data gathering only)
	• Public Appeals	No
Stage 2	• National Grid Gas plc's participation in the OCM will be suspended	Yes
	• Maximise Supplies	Yes
	• Firm Load Shedding	Yes
	• Public Appeals	No
Stage 3	• Public Appeals	No
	• Allocation & Isolation	No
Stage 4	• Restoration	Yes

Table 1: Gas Deficit Emergency Actions to be tested in Exercise Viper

Further information on the arrangements available to the NEC during a potential or actual NGSE is described in the Procedure for Network Gas Supply Emergency (reference T/PM/E/1). An up to date copy of this procedure can be obtained from the National Grid Emergency Planning Team. (Contact details for the Emergency Planning Team are provided in Section 7 of this report) or via the National Grid website referenced in Section 8.

Following emergency declaration, the NEMT exercised a range of emergency communications with all NTS Entry and Exit points to direct the emergency actions indicated in the table above. Feedback and recommendations following Exercise Ulysses in 2013 initiated work to review, simplify and consolidate all emergency forms used by National Grid in a Network Gas Supply Emergency and to review the mass fax communication service. All users were issued a pack of updated forms to be trialled during Exercise Viper as part of the industry briefing note that went out a month prior to the exercise commencing. These forms were fully tested alongside the new automated mass fax and SMS (ANS replacement) system throughout Exercise Viper.

3.2. Critical Transportation Constraint (CTC) Exercise with Distribution Networks

For 2014's NEC Exercise the decision was made to test the development of emergency strategies through four individual smaller scale exercises held between the NEMT and each of the four Distribution Network operators. This approach allowed for closer inspection of a range of real world network failure scenarios and the transporters ability to quantify the risk associated with diminished exit pressures.

Each exercise lasted approximately 4 hours and was led by National Grid's Emergency Planning Team. The exercise was based on a historic high demand day and then initiated with a single NTS failure scenario which would trigger a reduction in offtake pressures in a specific area of the NTS and an associated Local Distribution Zone (LDZ). These pressure losses were compounded through a number of further constraint scenarios whilst communication was ongoing with the DN incident team to determine the potential risks.

The scenarios presented to each DN were bespoke and included a mix of pipeline isolations, compressor unit failures, third party pipeline strikes and terminal outages. In all scenarios, the compound effect of 2 or more NTS failures were required to present any significant risk to the LDZ.

The objective of each DN CTC exercise was to drive DN operators and their incident teams to articulate the risk associated with the continually decreasing offtake pressures which would ultimately end with a risk assessment that was appropriate to take to the NEC to request the declaration of a Critical Transportation Constraint Emergency. The journey from normal network operation through to constraint management scenarios and ultimately a CTC emergency is rarely experienced in normal operation and a CTC emergency has never been declared by the NEC. Therefore exercising these scenarios is important to build the understanding of how transporters can work together efficiently to forecast and avoid system constraints and therefore a developing CTC.

Only the high level outputs of each CTC exercise are provided in this report with the outputs specific to each DN shared directly with DNs and HSE only.

3.3. Individual Distribution Network firm load shedding Exercises

Each of the four Distribution Network Operators was requested to undertake an emergency contact validation exercise during September 2014 to fully engage with their top 200 supply point consumers per Local Distribution Zone (LDZ). This vital exercise validated the emergency contact numbers whilst ensuring sites understood their legal obligations to comply with instructions to cease gas consumption during an emergency.

Successful emergency management requires prompt contact with large gas consumers and it should be expected that these consumers have at least a basic understanding of their obligations should a real emergency scenario occur. Feedback from previous exercises suggested that limited time was provided to DNs during the NEC exercise to undertake their communications test. Separating out this exercise from the main NEC exercise allowed DNs more time to undertake this activity, providing for richer conversation with gas consumers and better information gathering.

Representatives from all transporters meet on a quarterly basis at the E3 Alignment Group to ensure emergency procedures are aligned and collaboration at these meeting led to an agreed set of statistics that would be gathered during these exercises and used going forwards to benchmark the performance of this activity on an annual basis.

Recommendation 1: Firm Load Shedding statistics developed via the E3 alignment group should be gathered annually to enable consistency when tracking and reporting on the accuracy of emergency contact details.

Each DN reported on the outputs of their exercise directly to the HSE and National Grid and a comparison of the key statistics is provided later in this report.

4. Observations & Results

4.1. Review of key NEC Exercise Viper objectives

4.1.1. **Objective 1**: Confirm industry emergency arrangements remain aligned to the E1 Emergency Procedure

A summary of the series of stages and processes exercised during the E1 procedure test and the emergency actions invoked are provided below:

Exercise Activities	Activity Summary
Significant Gas Deficit Scenario DECC & GAS Report	• Simulated supply loss and constraint scenarios presented • DECC Upstream Oil & Crisis Management processes initiated • National Grid internal escalation to NEMT
NEMT Mobilisation Incident Team & NEMT Upstream Processes (DECC)	• Backdrop of operational issues and market based actions presented • Full NEMT mobilised and convenes in National Grid incident room • GAS report data received and teleconference held with terminals • Request detailed DN requirements and Storage availability
Convene NEMT Feedback GAS Reports & U-JRT Determine Strategy	• Situational awareness provided to simulate supply loss scenario • Produce analysis and gather facts to support strategy • Multiple strategies and processes simulated • Stage 1 & 2 Emergency Actions required to maintain system balance
Update Scenario Declare Emergency NEMT Updates	• Simulated scenario updates provided to NEMT and strategies reviewed • Emergency strategy actions agreed by NEMT Officers • Incident Controller engages NEC to deliver strategy in line with the NEC Safety Case and the E1 Emergency procedure • NEC Emergency Declaration signed and issued to all NTS Users • NEMT officers issued emergency actions to deliver NTS balance
Exercise all Gas Deficit Emergency Stage 1, 2 actions with **all** NTS Users	• NEMT Officers mobilise their respective teams to deliver NEC actions • All NTS Entry points contacted to test NEC flow directions • All NTS Exit points contacted to test GS(M)R firm load shedding process • All Shippers notified of NEC actions issued directly to NTS Entry & Exit points • Transporters, HSE, DECC, ICE Endex and other key stakeholders contacted
Update Scenario Develop restoration strategy Exercise Stage 4 actions	• Simulation moves forwards 3 days, updated scenario presented to NEMT • NEMT develop and agree restoration strategy with NEC • All NTS Entry points contacted to test revocation of NEC flow directions • All NTS Exit points contacted to test GS(M)R restoration process • All Shippers notified of restoration actions • Transporters, HSE, DECC, ICE Endex and other key stakeholders contacted

All the above activities were completed within the timeframes allotted for the exercise and the discussion during these activities is invaluable for NEMT development. Feedback and observations of all activities were collected on the day and will be used to refine and improve National Grid's emergency procedures and processes. Specific recommendations resulting from exercise feedback are provided below while further detail regarding the firm load shedding contact performance is provided later in this report.

No deviations from the Procedure for Network Gas Supply Emergency were observed during the exercise. All participants responded appropriately and in a timely manner to the NEC directions issued by the NEMT.

The E1 procedure is complimented by National Grid's own internal emergency procedure. This is the Management Procedure for Gas National Control Centre Response to Gas Supply Emergencies (Ref T/PM/GNCC/E/3) otherwise referred to as the "E3" Procedure. This procedure details the NEMT actions in response to a developing emergency including forms and task cards for driving efficient management of NTS supply and demand and was tested throughout Exercise Viper.

Updated E3 Emergency forms and NEMT task cards were developed and issued to participants prior to the exercise for familiarisation and these were used to drive all formal emergency communications from the NEMT to industry participants. Feedback from exercise participants was positive and no negative comments were received regarding the communication of emergency actions.

NEMT Training had been developed and rolled out more widely within the National Grid - Gas System Operation department throughout 2014 by providing further role specific training for each NEMT sub team and more than doubling the total trained number of staff. Many new NEMT members were involved in various stages of Exercise Viper and subsequently further requests have been made by NEMT members to undertake more desktop exercises in the future to aid development and learning.

Recommendation 2: Desktop NEMT emergency exercises to be scheduled more frequently

During development of initial mitigation strategies, the NEMT was furnished with the GAS report outputs prior to receipt of the DN demand breakdown information (the "NETMAN1 form" DN data request). The NEMT recommended this data be requested at the same time the GAS report is to ensure a complete picture is obtained to inform strategy development.

Recommendation 3: NETMAN1 requests should go out same time as GAS report requests in any potential GDE scenario.

Real time network analysis of NTS constraint scenarios provides key information for articulating supply risks to the NEC. It was chosen not to include this element during the NEC exercise as this would be tested 4 times via each DN CTC exercise. The NEC made clear he would always expect extracts of network analysis results to be presented along with the articulation of risk and proposed strategy to enable the NEC to declare an emergency with improved clarity in both CTC and GDE scenarios.

Recommendation 4: Ensure network analysis results utilised in <u>all</u> future NEC exercises.

The NEMT Technical Secretary role was successfully introduced in 2013 to support the Incident Controller during all NEMT briefing sessions and strategy development meetings. Feedback suggested that this role could support the wider NEMT further by preparing and circulating internal action/incident summaries for circulation within the NEMT in between all NEMT meetings.

Recommendation 5: **Update Technical Secretary task cards to include internal NEMT situational report management responsibilities.**

The workload required of the Support Team throughout an emergency peaks as emergency stages are declared. There is a need to redistribute this team's resource as the emergency progresses. A better understanding of workload distribution is required to efficiently manage the support team resource and provide guidance for the Support Officer with this for future.

Recommendation 6: Review support team task cards to include NEMT resource management and workload distribution responsibilities.

The end of an emergency must be declared prior to 10am for normal market conditions to apply for the following gas day. The decision to enter Stage 4 and develop a restoration strategy prior to declaring the end of emergency requires absolute confidence in Shipper nominations. The reliance on the accuracy of this data was discussed during the exercise and recommendations were made to notify shippers in this scenario to request updates directly via ANS. This could not be simulated with systems, but there is a need to drive more focus on this check within the emergency procedures.

A recommendation was made following Exercise Ulysses to develop and run a "restoration exercise" and focus on the key points of restoring isolated customers and the total system balance. This exercise was not undertaken in 2014, but should still be planned for the future and the points raised during Exercise Viper regarding the Shipper Nominations accuracy and timeliness should be tested as a key objective for this exercise.

Recommendation 7: Predetermined messages for Shippers to be included in the E3 emergency procedure to request the most accurate available nomination information to be entered into Gemini ahead of restoration.

Recommendation 8: Guidelines to be included in the E3 emergency procedure to specify screens within Gemini system that can be used to report shipper balance information.

Recommendation 9: Include Shipper Nomination and balance elements as objectives in any future restoration exercises.

4.1.2. **Objective 2**: Test the new external Fax and SMS mass communications system

Following recommendations from previous exercises and in conjunction with the Active Notification System (ANS) replacement project a new mass communication system was introduced in preparation for testing both Fax and SMS systems during Exercise Viper. Furthermore, a significant amount of work was undertaken throughout 2014 to review all Shipper and Site contacts details. The new system to be trialled for managing contact information and delivering mass emergency communications to all NTS users was implemented well ahead of the exercise with a view that the outputs of the exercise would provide go/no-go criteria and benchmarking prior to full live implementation.

The following table provides an overview of the main mass communications sent to industry using the Fax and ANS replacement system.

	Communication	Sent Time	Type	Total Sent	Successful Delivery		Unuccessful Delivery		Average Delivery Time
1	Start of Exercise	08:52:14	ANS	101	96	95%	5	5%	00:08:40
2	Start of Exercise	09:02:41	FAX	250	195	78%	55	22%	00:08:02
3	Stage 1 & 2 Declaration	11:14:09	FAX	250	190	76%	60	24%	00:16:58
4	Stage 1 & 2 Declaration	11:17:29	ANS	101	97	96%	4	4%	00:02:40
5	Stage 2 Shipper Notice of FLS	11:23:27	ANS	101	95	94%	6	6%	00:02:43
6	Stage 2 Terminal Actions	11:51:59	FAX	26	18	69%	8	31%	00:03:04
7	Stage 4 - Restoration Notice	15:11:11	ANS	101	97	96%	4	4%	00:05:24
8	End of Emergency	16:08:12	FAX	252	197	78%	55	22%	00:18:00
9	End of Emergency	16:10:12	ANS	101	97	96%	4	4%	00:09:51
10	End of Exercise	16:18:04	FAX	252	196	78%	56	22%	00:58:08
11	End of Exercise	16:20:01	ANS	101	96	95%	5	5%	00:05:19

Table 2: NEMT communications - statistical overview

A significant amount of work was carried out to populate all shipper SMS contact numbers in preparation for the switch from ANS to the new SMS system. Around 95% of shippers were contactable on the day of the exercise, doubling the performance seen in some previous exercises. Improvements with terminal fax contact details have been recommended following the DECC Upstream exercise and regular tests of all contacts will continue to take place outside the exercises.

The mass fax communication system performed well and the issues raised previously via participant feedback related to the old system were eliminated. One issue was noted when reviewing the fax statistics whereby the average delivery time for notice #10 was observed to be far higher than other faxes delivered. Post analysis confirmed that the fax system had stalled and sent half of the fax received confirmation notices back ~50mintues late. This was raised with the service provider and subsequently changes were promptly made to the setup of the server. This has been tested again following the exercise and confirmed that the same issue cannot occur following the changes made.

Fax as a communication method is less favoured, so issues are likely to remain where fax machines are turned off or out of paper etc. However there are benefits with respect to separation from IS systems and internet activity and the updated system will continue to perform an integral part of National Grids emergency communication process.

Following the successful trial of the new FAX and SMS system during Exercise Viper and positive feedback from operators and participants, this has now been fully implemented and embedded in National Grid's emergency processes.

4.1.3. **Objective 3**: Test the new NEC emergency forms through all emergency stages

Ahead of Exercise Viper, all participants were issued a brief by National Grid providing an overview of the exercise objectives and the updated forms to be tested during the exercise. This Exercise Brief was issued using internal contact lists as well as the Joint Office of Gas Transporters industry mailing lists and included a full suite of updated emergency forms to be tested in Exercise Viper.

Following recommendations made in Exercise Ulysses (2013) work was undertaken to throughout 2014 to review all existing emergency forms. A process of standardisation, simplification and consolidation has improved the emergency communications process whilst significantly reducing the number of separate forms issued to the industry.

Positive feedback was received from a number of Users and only relatively minor changes were proposed which have since been implemented. The final version of these emergency forms will be hosted on the emergency section of National Grid's website for information along with the form summaries and guidelines included as part of the supplementary information provided with the Exercise Viper Brief.

Provision of swift, accurate and clear information to all NTS users is paramount to the success of any mitigation plan in an emergency scenario. The immediate issues highlighted from Exercise Ulysses in 2013 have been addressed with these updates but work will continue within the Emergency Planning Team to look at continually improving communication methods and industry understanding.

4.1.4. **Objective 4**: Test the DECC Upstream Oil & Gas Crisis Management procedure and UJRT comms

The DECC Upstream Process test has raised a number of points for clarification but overall provided a full test of all upstream communication routes. Some terminals were not aware that DECC were running a parallel process test alongside Exercise Viper whilst others did not know where to find the forms and process information. In the end all participants were contacted and participated in the exercise, but this has highlighted again the need to maintain contact lists on an ongoing basis.

Recommendation 10: National Grid and DECC to compare Terminal & Storage contact information ensure the accuracy of critical distribution lists.

Although there were some minor issues with contact details, all required upstream NTS entry flow capability data for D & D-1 was received via the GAS reports from all Beach Terminals, Interconnectors and LNG terminals as expected.

The DECC Upstream test was complimented with a 1 day workshop hosted by Steelhenge Consulting on behalf DECC and supported by National Grid's Emergency Planning Team. This workshop was well received by participants representing the majority of UK gas supplies, providing good engagement and knowledge sharing. Positive feedback was received regarding the value of the session and proposals made to conduct these annually.

A number of responders to the GAS report test questioned why this report was not managed via the same DECC online portal that was used for the SITREP. This was also raised during the DECC Upstream workshop as an action following similar comments there.

Recommendation 11: National Grid and DECC to look into possibility of hosting the GAS report on the DECC online portal.

Some responders to the SITREP reports stated that the request for SITREPs came too soon after the request for the GAS report. In response to this, responders are reminded that prompt information sharing is vital in these scenarios and the early request for information represented a realistic test.

Feedback has been provided directly to DECC following the exercise and associate Upstream Process workshop and National Grid continues to work with a range of stakeholders in this area providing assurance for these critical processes.

Recommendation 12: DECC to host annual pre-winter workshops to serve as a refresher for UK Gas Suppliers with respect to both upstream and downstream emergency procedures.

4.1.5. **Objective 5**: Test the updated GS(M)R Curtailment/Restoration process

A database system called Curtailment Manager was previously utilised to manage NTS firm load shedding requests. A new simplified process was successfully implemented and tested this year which has now removed the need for the complicated database. The simplified form and log process worked well and eliminated the need for systems trained personnel to manage NTS firm load shedding whilst achieving satisfactory timeliness when completing actions.

All NTS directly connected sites were to be contacted during Exercise Viper. In total, 58 sites were involved and all of these sites were contactable and confirmed they would be able to cease gas consumption with a given lead time.

The task of contacting NTS directly connected sites is managed by the Shipper Team within the NEMT. A total of 5 people undertook this task and all sites were contacted, issued directions over the phone, issued a GS(M)R fax notification and all details noted in the curtailment log in a total of 70 minutes.

Chart 1 below shows that the call rate to NTS users was steady and minimal delays were observed between calls. Due to the ongoing work of the Emergency Planning Team, all site were contactable and the majority of those contacted were aware of the exercise and were expecting a call which kept the call. This kept call times down to a minimum providing good call time performance of around 1 ½ minutes per call on average.

Whilst this performance could be improved further by bringing more people into the Shipper team there is little to suggest that this current performance is anything other than satisfactory.

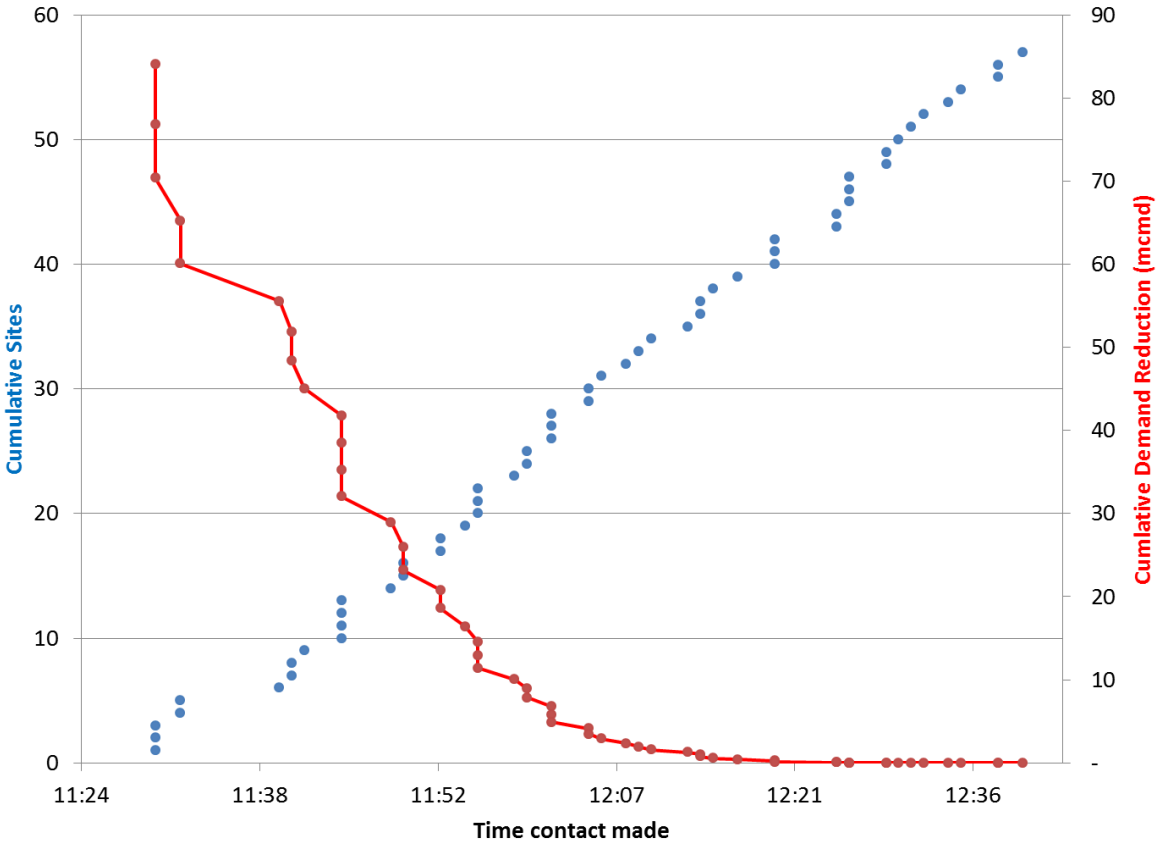


Chart 1: NTS Direct Connect firm load shedding call contact times & associated demand reduction

Recommendation 13: Update the Shipper Team task card to provide for a single person to collect faxes from the callers and send them to ensure callers can issue directions more rapidly.

All NTS directly connected sites were successfully contacted again later in the exercise to update them

with restoration notices allowing flow to commence.

Whilst making restoration calls, some NTS demands (e.g. Power Stations) which had received the direction to cease gas consumption earlier had not passed this information on at shift handover. When called to restore, some sites had no knowledge of the prior conversation. The NEMT call scripts have been updated to prompt site operators to ensure handover information is clear, but in a real load shedding scenario broader operator information would be more apparent due to physical actions.

4.1.6. **Objective 6:** Test the new Emergency Data Support Tool

Recommendations were made following NEC Exercise Ulysses in 2013 to look into improving the situational awareness available to support the NEMT strategy development and decision making. A new "Emergency Data Tool" was trialled during the exercise and an example of the supply, demand and associated forecast NTS linepack information displayed to the NEMT is shown below.

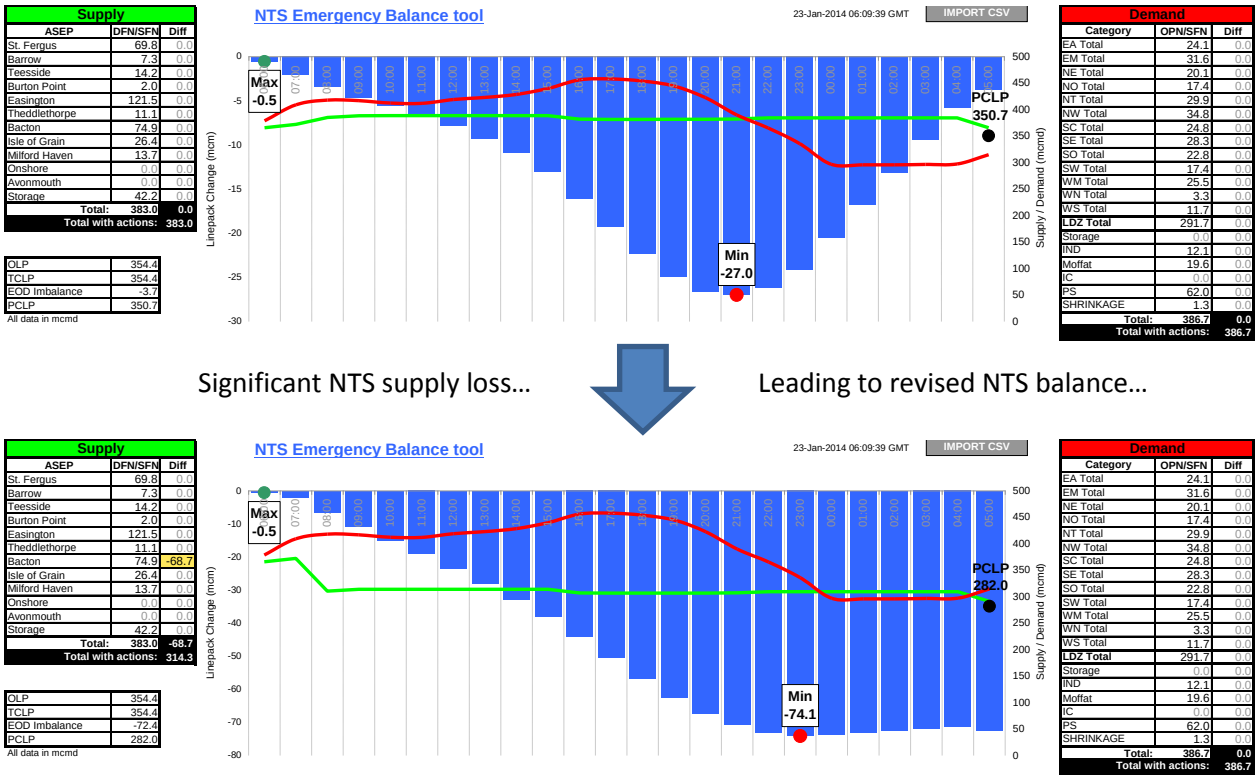


Diagram 1: NTS Emergency Balance tool – Screenshots

The aim of the new data tool is to allow fast manipulation of any NTS supply and demand data providing an immediate understanding of the overall system linepack and associated balance in response to the supply or demand change. The tool then allows the NEMT to layer emergency actions on top of the current NTS scenario to determine the strategy required to achieve an NTS balance in a Gas Deficit Emergency. These emergency actions will be presented to the NEC and underpin decision making along with network analysis and other forecast information.

Positive feedback from the NEMT data officer and Incident controller was received and development of this data tool and other improved situational awareness techniques continues with a view to embedding these tools into the standard NEMT processes.

Recommendation 14: Continue development of situational awareness and decision support tools to aid

the NEMT with a view to embedding these fully prior to the 2015 NEC Exercise.

4.1.7. **Objective 7**: Introduce NEMT Officer shadowing to build wider knowledge and confidence.

To support the development of future NEMT officers, a system of officer shadowing was used throughout the day of the exercise. This approach was very well received by all those involved in the shadowing and feedback indicated this is a must for future exercises. The opportunity to participate in a full exercise provides far richer learning potential and compliments classroom based training activities.

Feedback has been sought individually from those who shadowed during the exercise to ensure this can be even more beneficial during future exercises.

Recommendation 15: Include NEMT Officer shadowing in all future NEC Exercises

4.1.8. **Objective 8**: Test all Site Emergency Telephone & Fax Lines.

Exercise Viper provided a realistic test of emergency procedures requiring the NEMT to contact all NTS users during one day. On a regular basis, tests are carried out throughout the year to validate emergency phone contact details with sites. This ensured all NTS directly connected demand, interconnectors, distribution networks and terminals were contactable during the exercise. Some issues were encountered with primary emergency contact details and alternative numbers were used to overcome this issue swiftly.

One area of poor performance highlighted by the exercise was the accuracy of Shipper fax contact details. On average there was a 75% successful contact rate which is lower than would be expected. However on average the Shipper ANS contact details were 95% successful which is a significant result and allays the concerns surrounding the fax numbers provided by Shippers.

Out dated Terminal and Storage site fax details taken from the old mass fax communications system were uploaded directly into the new system erroneously. These contact details had been validated throughout the year (along with all NTS User emergency contact details as per Exercise Ulysses recommendation #15), but the details in the live emergency directories were not utilised when sending faxes to all terminals with the new system. Therefore, the performance of this distribution list was less than satisfactory and immediate actions have been taken to update the fax system prior to going live.

Recommendation 16: Review all Terminal emergency fax contact details uploaded to the new mass fax communication system.

Further details regarding the performance of NEMT emergency contact details are provided under the outputs of objectives 2 and 5.

4.1.9. **Objective 9**: Test updated NEMT Task Cards

The E3 NEMT task cards for the Incident Controller, Supply Officer, Shipper Officer, Demand Officer and Support Officer were developed to reflect process updates implemented during 2014 following recommendations from NEC Exercise Ulysses. An overarching objective to simplify and clarify the description of all actions required of the NEMT officers by the task cards gathered positive feedback.

Further feedback was suggested by some NEMT officers to include regular discussion and challenge of all NEMT tasks through provision of desktop exercises outside of the main NEC exercise (desktop exercises were also recommended earlier in this report)

The NEMT task cards were updated once more following Exercise Viper incorporated all NEMT feedback into final set of task cards delivered as part of the E3 procedure review circulated for approval in Dec 2014.

4.2. Output from Critical Transportation Constraint (CTC) Exercises with DNs

During each DN CTC Exercise, the NEMT presented scenarios to the DN which included a mix of pipeline isolations, compressor unit failures, third party pipeline strikes and terminal outages. Each scenario was designed to be particularly onerous for one LDZ specifically. Managing these scenarios is a rare task for all transporters and all four CTC exercises highlighted that better data and information sharing between transporters is a paramount to swift decision making and risk assessments.

The aim of each CTC exercise was to reach a point where the DN could clearly articulate the downstream risk in response to forecast NTS pressure losses. This DN risk assessment is important to support the associated NTS forecast information which would be used to engage the NEC and seek approval to declare a Critical Transportation Constraint Emergency.

All DNs were able to present back a risk assessment which could support the NEC in declaring a CTC emergency. The constraint scenarios presented to DNs did result in a range of responses across DNs which was to be expected. Whilst scenario specifics and geographical network issues drove some differences in the responses and approaches to delivering a risk assessment, a range in DN analytical capability and exercise teams involved also contributed to the differences.

LDZ demand breakdown information is provided by DNs to the NEMT via the NETMAN1 form process. This form is also used to inform the NEMT of the minimum critical offtake pressures required for each LDZ to maintain supply to all users within an LDZ. In all 4 CTC exercises, this information request was found to be interpreted differently to the expectations of the NEMT. In some circumstances, where the NEMT forecast and articulated a breach of LDZ critical offtake pressures the DN analysed this and the lower forecasts were found to be no issue. Testing this information provided by DNs has raised a number of questions around the initial provision of critical offtake pressure information.

Recommendation 17: Improvements to LDZ critical offtake pressure information request process to be discussed and developed for implementation via the E3 Alignment Group

During each exercise, reference was often made to geographical network topology. To support this conversation it was useful to have maps of other transporters networks and maps were shared via email during exercises. Network schematics and maps should be shared on an annual basis in preparation for any potential incident to aid strategic conversation.

Recommendation 18: Up to date network maps and schematics to be shared between all transporters on an annual basis.

Network analysis continues to be one of the best tools available to understand network capability and the associated security of supply risks. The ability to speedily replicate a real gas day and understand the impacts of forecast NTS pressure losses on LDZ operations provides for swift decision making to mitigate a constraint or emergency scenario. All transporters should aim to regularly test their ability to articulate

these risks with the support of real time analytical techniques.

The CTC exercises focused attention on transporters ability to analyse and understand network risks and failure points whilst aiding knowledge sharing, continuous improvement and a broader understanding of constraint management and emergency procedures. All transporters found value in the exercises and would welcome more in the future.

Recommendation 19: Transporters to continue to undertake CTC exercises on an annual basis.

4.3. Distribution Network Firm Load Shedding Performance

All Distribution Network Operators have Safety Case obligations to maintain the contact details for the top 200 sites (in terms of offtake size, largest first) so that they can be contacted in an emergency to cease gas consumption and reduce LDZ demand. During Exercise Titan (2012) and Exercise Ulysses (2013) the NEC requested specific demand reduction volumes from each LDZ and the post exercise reporting focussed on the ability to shed the requested volume rather than the ability to contact the top 200 sites.

In order to assess the Distribution Network Operator's ability to contact the top 200 sites, each of the four Distribution Network Operators were requested to carry out their own firm load shedding exercises separately to the main NEC Exercise. This activity was separated out from the main exercise to allow operators more time to make contact with sites and produce a full set of contact statistics for comparison to recent previous attempts to contact the top 200 sites in 2010 (Exercise Revive) and 2011 (Exercise Saffron).

A total of 2493 sites were contacted as part of Exercise Viper and the statistical overview of this activity across all 13 LDZs is provided below.

LDZ	No of sites attempted to be contacted	No of sites where contact was made		No of sites where contact was made and site would stop using gas		No of sites where contact was made and site would not stop using gas		No of sites who could not be contacted	
East Anglia	145	134	92%	127	88%	7	5%	11	8%
East Midlands	171	144	84%	138	81%	6	4%	27	16%
North London	201	174	87%	164	82%	10	6%	27	13%
North West	173	138	80%	137	79%	1	1%	35	20%
West Midlands	201	154	77%	153	76%	1	1%	47	23%
Northern	201	146	73%	92	46%	54	37%	55	27%
Yorkshire NE	201	141	70%	79	39%	62	44%	60	30%
Scotland	199	169	85%	169	85%	0	0%	30	15%
South East	200	123	62%	123	62%	0	0%	77	39%
Southern	201	149	74%	149	74%	0	0%	52	26%
South West	200	152	76%	111	56%	41	27%	48	24%
Wales North	200	146	73%	89	45%	57	39%	54	27%
Wales South	200	149	75%	106	53%	43	29%	51	26%
Total	**2493**	**1919**	**75%**	**1637**	**66%**	**282**	**15%**	**574**	**23%**

Table 3: LDZ firm load shedding contact summary

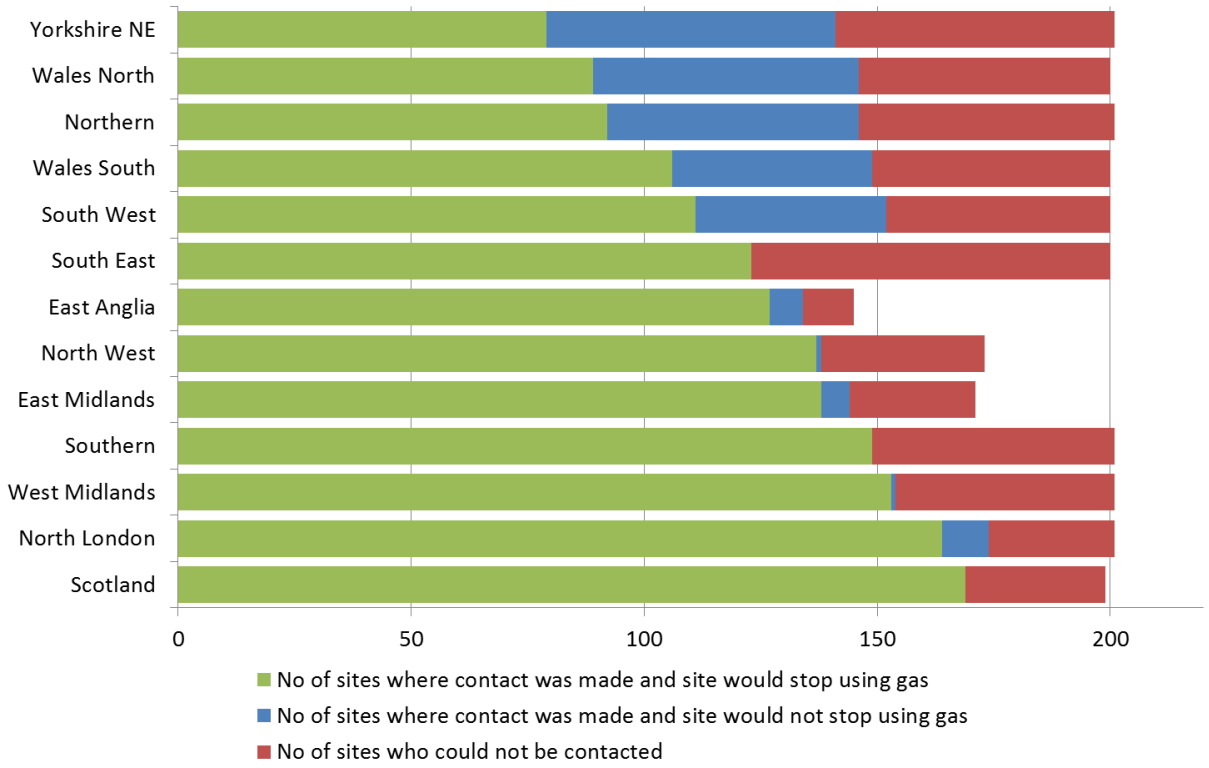


Chart 2: LDZ firm load shedding contact summary

To determine the performance trend in Distribution network Operators ability to contact their top 200 sites, a comparison with similar previous activities is provided below. As can be seen from the above data not all DNs attempted to contact the full top 200 sites.

Recommendation 20: DNs to always ensure all 200 sites contacted during firm load shedding exercises every year

LDZ	No of sites attempted to be contacted			Percentage of sites who could not be contacted			Percentage of sites where contact was made and site would stop using gas			Percentage of sites where contact was made and site would not stop using gas		
	Revive	Saffron	Viper	Revive	Saffron	Viper	Revive	Saffron	Viper	Revive	Saffron	Viper
East Anglia	250	184	145	14%	23%	8%	85%	68%	88%	1%	8%	5%
East Midlands	250	200	171	7%	25%	16%	86%	69%	81%	6%	7%	4%
North London	250	200	201	11%	33%	13%	88%	61%	82%	0%	6%	5%
North West	250	200	173	9%	26%	20%	86%	69%	79%	4%	6%	1%
West Midlands	250	200	201	21%	31%	23%	76%	66%	76%	3%	3%	0%
Northern	250	198	201	30%	25%	27%	53%	54%	46%	17%	23%	27%
Yorkshire NE	250	200	201	27%	40%	30%	55%	60%	39%	18%	1%	31%
Scotland	200	200	199	7%	7%	15%	87%	86%	85%	7%	7%	0%
South East	200	200	200	10%	9%	39%	77%	81%	62%	14%	11%	0%
Southern	200	200	201	9%	17%	26%	82%	73%	74%	10%	10%	0%
South West	200	200	200	26%	6%	24%	75%	88%	56%	0%	6%	21%
Wales North	200	200	200	29%	10%	27%	72%	84%	45%	0%	7%	29%
Wales South	200	203	200	28%	12%	26%	72%	82%	53%	0%	5%	22%
Total	2950	2585	2493	18%	20%	23%	76%	72%	66%	6%	8%	11%

Table 4: Comparison of LDZ firm load shedding performance

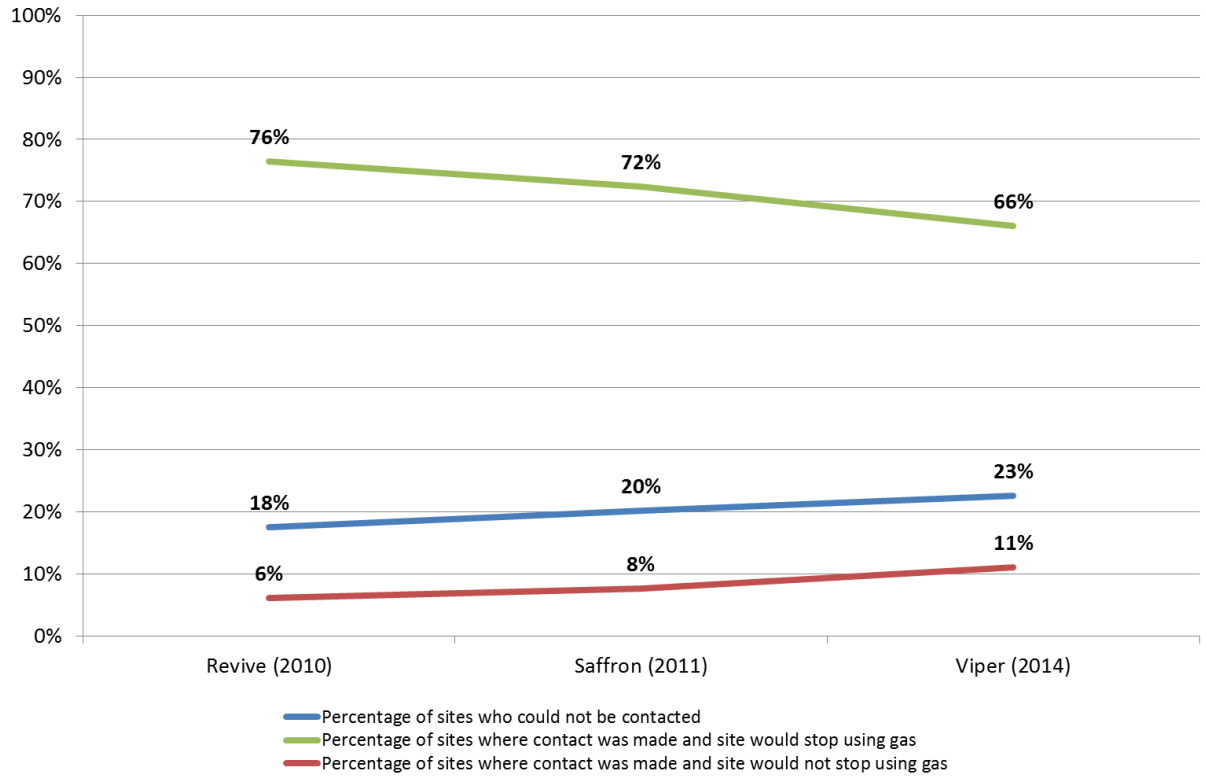
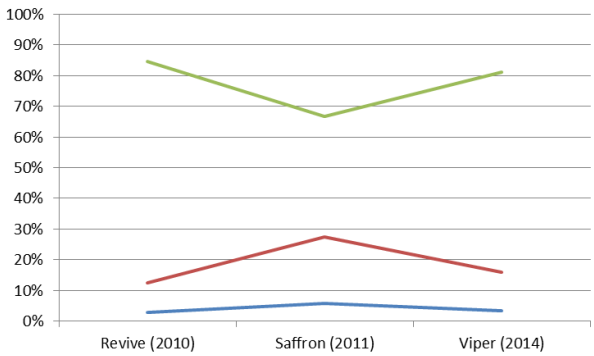


Chart 3: Comparison of LDZ firm load shedding performance

The statistics above show that performance deteriorated for all 3 key measures of contact success when compared to similar activities undertaken in 2010 and 2011.

The following details the breakdown of these results by each of the 4 Distribution Network Operators.

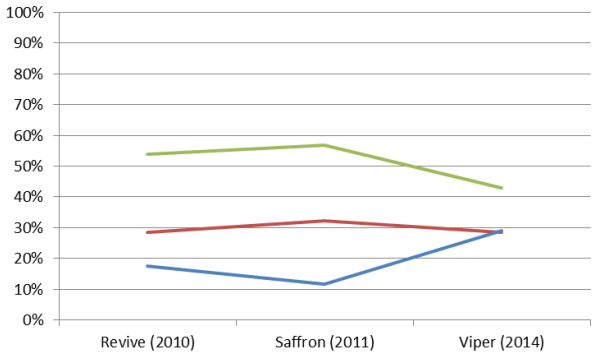
National Grid Gas Distribution (EA, EM, NL, NW & WM)	Revive (2010)	Saffron (2011)	Viper (2014)
Percentage of sites who could not be contacted	12%	27%	16%
Percentage of sites where contact was made and site would stop using gas	84%	67%	81%
Percentage of sites where contact was made and site would not stop using gas	3%	6%	3%



Performance improvements were seen across all three key measurements for National Grid Gas Distribution when compared with the same activity undertaken during Exercise Saffron in 2011 and performance was comparable with the Exercise Revive undertaken in 2010.

81% of sites were contacted and able to cease gas consumption whilst the number of sites where contact was not made dropped by 41% compared to Exercise Saffron.

Northern Gas Networks (NE & NO)	Revive (2010)	Saffron (2011)	Viper (2014)
Percentage of sites who could not be contacted	29%	32%	29%
Percentage of sites where contact was made and site would stop using gas	54%	57%	43%
Percentage of sites where contact was made and site would not stop using gas	18%	12%	29%

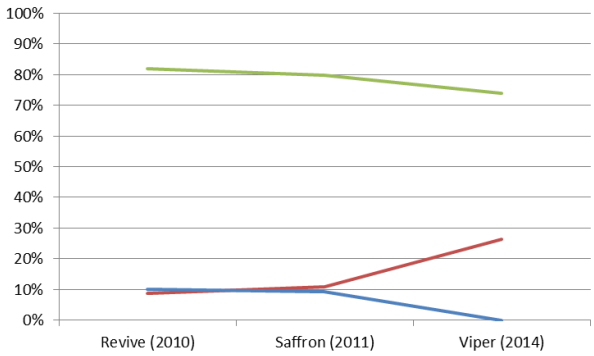


Performance for the 3 key measurements for Northern Gas Networks reduced when compared to both Exercise Revive and Exercise Saffron. Less than half of sites where contact was attempted were both contactable and able to cease gas consumption.

With 58% of sites either unable to contact or unable to cease gas consumption when contacted, improvement actions should be generated to improve this performance ensuring that these statistics do not worsen.

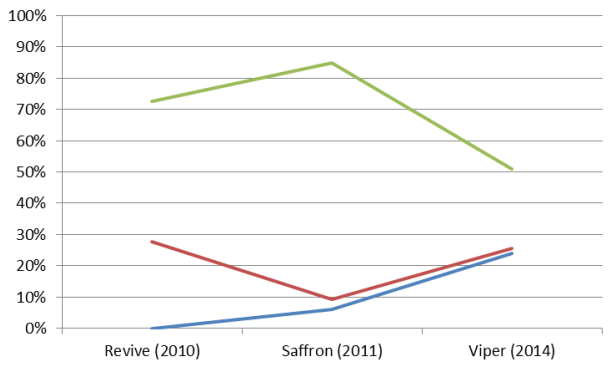
With 29% of sites contacted unable to cease gas consumption, recommendations should be made to improve this by reiterating the emergency obligations to these sites.

Scotia Gas Networks (SC, SE & SO)	Revive (2010)	Saffron (2011)	Viper (2014)
Percentage of sites who could not be contacted	9%	11%	26%
Percentage of sites where contact was made and site would stop using gas	82%	80%	74%
Percentage of sites where contact was made and site would not stop using gas	10%	9%	0%



Whilst firm load shedding performance has dipped for sites in LDZs operated by Scotia Gas Networks, overall performance is still good where contact was made. The number of sites where contact was made but the site would not cease gas consumption has now dropped to zero, but the number of sites not contactable has more than doubled moving up from 11% in Exercise Saffron to 26% in Exercise Viper, suggesting the quality of contact information has significantly deteriorated.

Wales & West Utilities **(SW, WN & WS)**	Revive (2010)	Saffron (2011)	Viper (2014)
Percentage of sites who could not be contacted	28%	9%	26%
Percentage of sites where contact was made and site would stop using gas	73%	85%	51%
Percentage of sites where contact was made and site would not stop using gas	0%	6%	24%



Significant performance variation can be seen in the Wales and West Utilities statistics taken from the 3 firm load shedding exercises. Performance in Exercise Viper was poor when compared with Exercise Saffron in 2011 with only 51% of sites contactable and able to cease gas consumption. With 24% of sites contacted unable to cease gas consumption, recommendations should be made to improve this by reiterating the emergency obligations to these sites.

Recommendation 21: Distribution network Operators and the HSE should seek to set a benchmark for site contact performance and measure each LDZ against this benchmark in future years to drive continuous and/or stable performance.

Site contact performance provides one measure of firm load shedding success, but it doesn't account for the size of sites and therefore the potential volume of load shedding that could be achieved. Table 5 provides the SOQ (System Offtake Quantity) volume statistics associated for all sites where contact was attempted during Exercise Viper and the associated aggregate SOQ for sites where firm load shedding contact was successful.

LDZ	Total SOQ of top 200 sites in LDZ (kWh/d)	Total SOQ where contact made and site would cease gas consumption (kWh/d)	Percentage of total SOQ able to be load shed
East Anglia	41,372,923	39,277,754	95%
East Midlands	73,553,826	68,749,997	93%
North London	36,724,270	33,689,313	92%
North West	84,244,121	73,500,395	87%
West Midlands	46,366,185	40,725,126	88%
Northern	69,688,531	52,458,374	75%
Yorkshire	59,856,701	41,135,604	69%
Scotland	61,162,480	57,690,580	94%
South East	33,939,771	28,455,896	84%
Southern	32,241,583	28,887,624	90%
South West	33,397,783	23,635,312	71%
Wales North	15,294,320	11,032,035	72%
Wales South	36,317,365	28,046,617	77%
Total	**624,159,859** (56.7 mcmd)	**527,284,627** (47.9 mcmd)	**84%**

Table 5: System Offtake Quantity of top 200 LDZ sites

The statistics above show that whilst only 66% of all sites were contactable and able to cease gas consumption, these sites represented 84% of the total offtake volume for all sites where contact was attempted which provides positive assurance to the NEC that significant volumes of LDZ demand can be isolated securely.

5. Conclusions & Recommendations Summary

Undertaking emergency exercises will always remain an important activity for the gas industry and the recommendations resulting from this report will aid the continuous improvement of these safety critical processes. The annual NEC Exercise is a requirement under the NEC Safety case and GS(M)R and remains a critical annual focal point for all UK Gas industry participants to reflect on their own emergency processes.

This year Exercise Viper approach 3 separate exercise elements and this helped to focus participants on specific areas of the emergency process and procedures. The main NEC exercise and all 4 CTC exercises were scheduled to take place during September 2014 and whilst this was achieved, lessons have been learned around timing of exercises whereby more time should be given between exercises to allow for reflection and continuous improvement. Further feedback will be sought from participants with respect to this year's exercise design and how this should shape future exercises.

For the first time, CTC exercises were included separately to compliment the main NEC exercise. These exercises allowed transporters to explore a range of operating scenarios and risks that are rarely if not ever experienced. The range of discussion, actions and mitigation strategies provide an abundance of useful information and recommendations for understanding each other's (NTS & DNO) issues whilst aiming to achieve the most efficient response for the total system. Whilst more work is required to develop these type of exercises, the step change in the approach was welcomed by network operators and continuation of this approach can only serve to build knowledge and improve response times.

Accurate contact information and knowledgeable operators underpins the successful response to an emergency scenario and these areas remain a focus for exercising and reporting. This year's contact success for NTS Users had improved but reductions for the majority of DN emergency contact performance was also observed. Maintaining contact data is an ongoing task for emergency planning teams, but one that can be supported by all industry participants thorough regular engagement and reminding the industry of their legal obligations in this area.

An overview of the 21 key recommendations made throughout this report is provided below:

No.	Recommendation / Action	Date	Owner
1	Firm Load Shedding statistics developed via the E3 alignment group should be gathered annually to enable consistency when tracking and reporting on the accuracy of emergency contact details.	By next NEC Exercise	E3 Alignment Group
2	Desktop NEMT emergency exercises to be scheduled more frequently	Ongoing	EPT
3	NETMAN1 requests should go out same time as GAS report requests in any potential GDE scenario.	Ongoing	E3 Alignment Group
4	Ensure network analysis results utilised in all future NEC exercises.	By next NEC Exercise	EPT
5	Update Technical Secretary task cards to include internal NEMT situational report management responsibilities.	April-15	EPT
6	Review support team task cards to include NEMT resource management and workload distribution responsibilities.	April-15	EPT
7	Predetermined messages for Shippers to be included in the E3 emergency procedure to request the most accurate available nomination information to be entered into Gemini ahead of restoration.	April-15	EPT

8	Guidelines to be included in the E3 emergency procedure to specify screens within Gemini system that can be used to report shipper balance information.	April-15	EPT
9	Include Shipper Nomination and balance elements as objectives in any future restoration exercises.	Restoration Exercise	EPT
10	National Grid and DECC to compare Terminal & Storage contact information ensure the accuracy of critical distribution lists	May-15	EPT & DECC
11	National Grid and DECC to look into possibility of hosting the GAS report on the DECC online portal.	Ongoing	EPT & DECC
12	DECC to host annual pre-winter workshops to serve as a refresher for UK Gas Suppliers with respect to both upstream and downstream emergency procedures.	Ongoing	EPT & DECC
13	Update Shipper Team task card to provide for a single person to collect faxes from callers and issue to ensure callers can issue directions more rapidly.	April-15	EPT
14	Continue development of situational awareness and decision support tools to aid the NEMT with a view to embedding these fully prior to the 2015 NEC Exercise.	Next NEC Exercise	EPT
15	Include NEMT Officer shadowing in all future NEC Exercises	Ongoing	EPT
16	Review all Terminal emergency fax contact details uploaded to the new mass fax communication system.	April-15	EPT
17	Improvements to LDZ critical offtake pressure information request process to be discussed and developed for implementation via the E3 Alignment Group	By next CTC Exercise	E3 Alignment Group
18	Up to date network maps and schematics to be shared between all transporters on an annual basis.	April-15	All Transporters
19	Transporters to continue to undertake CTC exercises on an annual basis.	Ongoing	All Transporters
20	DNs to always ensure all 200 sites contacted during firm load shedding exercises every year	By Next NEC Exercise	All DNs
21	Distribution network Operators and the HSE should seek to set a benchmark for site contact performance and measure each LDZ against this benchmark in future years to drive continuous and/or stable performance.	Ongoing	All DNs

6. NEC Exercise Ulysses (2013) Recommendations & Updates

No.	Action	Target Date	Owner	Status	Comments & Updates
1	Future NEC Exercises should follow a similar schedule to Exercise Ulysses to include a pre-emergency strategy exercise day allowing for a smooth start to the external NEC Exercise industry communications and loads shedding tests.	Next Exercise	EPT	Complete	Pre-emergency actions were not exercised directly as part of the NEC exercise this year. Instead these actions were involved in the DN CTC exercises (as part of the constraint build-up) and also during the GNCC Winter Operations workshops which have took place with all GNCC shift teams.
2	Review the NEC declaration forms to ensure clarity of instruction and ease of use for the operators issuing them, consulting feedback received from industry participants and internal observers.	Mar-14	EPT	Complete	A thorough review of all E3 forms was undertaken prior to Exercise Viper and the new suite of forms was tested during Exercise Viper. Positive feedback from both internal and external stakeholders has been received and these new forms will be embedded in our E3 and published on the national grid website by the end of November.
3	Consider allowing more time between initiating an NEC exercise and Emergency declaration, especially if the Exercise moves immediately to a Stage 2 emergency, to allow Shippers time to exercise their own commercial interruption procedures.	Next Exercise	EPT	Complete	We allowed for 2 hours this year between starting the exercise and initiating Stage 2. We have received no feedback to suggest these timeframes caused Shippers issues.
4	Consider including the emergency contact details in same fax communication as the NEC1 form and not sent as a separate fax afterwards (Linked to Recommendation 2)	Mar-14	EPT	Complete	The contact details for the NEMT are now included as page 2 of the NEC declaration form.
5	Include guidelines on emergency proforma on the National Grid website	Apr-14	EPT	Complete	All existing forms and supporting information is now on the website. The new forms will be uploaded in the near future once all updates to E3 are approved. A short URL has been provided (nationalgird.com/NEC) to allow for swift access should it be required in an emergency
6	Arrange NEMT/DNO workshops to improve general awareness of processes and the communication interfaces	April & May 2014	EPT & DNOs	Complete	Workshops were held with each of the 4 DNs during June/July. This aided with understanding of each other's emergency processes and helped to develop the requirements for Exercise Viper. Overall, feedback was very positive and the EPT intends to make this an annual meeting.

7	Consider issuing all emergency scenario injects on day 1 of the exercise or alternatively ensure the NEMT are aware no further failure injects remain, to allow the emergency framework and strategy to be tested through to restoration.	Next Exercise	EPT	Complete	This year's exercise was kept to 1 day, but future exercises that run over 2 days will ensure that all scenario injects are issued on day 1 to aid the restoration discussions on day 2.
8	Review the legal guidance provided to GNCC to support liaison with ENCC in an Emergency to ensure all aspects of potential legal issues are covered.	Jul-14	EPT	Complete	The legal guidance in the E3 procedure was reviewed earlier in the year and found to be fit for purpose. NEMT have been reminded that the guidance is in E3 and to ensure that this is consulted where applicable.
9	Initiate a work stream to look into how the NEMT can be better furnished with data to provide situational awareness and potential to analyse “what-if” scenarios	2014 Ongoing	EPT	Ongoing	A new Emergency Data Tool has been developed by the Emergency Planning Team. This was trialled during exercise viper and following further feedback and updates will be implemented in the near future and will replace the existing "ESP" (Emergency Strategy Programme) tool.
10	Ensure the procedures used when implementing naming convention changes in National Grid systems be broadened to include the ESP and Curtailment Manager indexes.	Jul-14	EPT	Complete	Curtailment Manager and ESP will soon be decommissioned and therefore the naming convention problem falls away as new simplified processes have been developed in preference.
11	It is recommended in the future exercises that network analysts support the Network Manager and ESP Operator directly instead of the Incident Controller within the incident room	2014 Ongoing	EPT	Complete	This approach has been noted in the E3 procedure and will continue for future exercises.
12	Future NEMT training sessions delivered by the Emergency Planning Team to enhance role specific training and develop new materials for the Demand, Shipper, Support and Supply teams individually in addition to the training approach already in place.	Feb to Jun 2014	EPT	Complete	Role specific training was developed early in 2014 for all NEMT sub teams. This provided focussed information for the NEMT teams and all NEMT members have received this training during 2014. Total NEMT population has also been increased from ~40 to 90+ during 2014.
13	Remind Users of their obligations and where these are detailed through provision of an overview/summary. This should be shared at the NEC Safety Case Forum before it is published in the Emergency section of National Grids website.	May-14	EPT	Complete	The Emergency Planning Team regularly discusses firm load shedding obligations with all NTS Directly connected sites. The potential for a summary/leaflet is largely aimed at the DN Users and the action was handed over to DNs during our summer workshops and via the quarterly E3 alignment group

14	NEMT Support Team to initiate the development of an NEMT rota earlier on in an emergency scenario to ensure that full NEMT resilience can be met, taking into account a rolling 24 hour requirement	Next Exercise	EPT	Complete	This requirement has been included in the recently updated E3 task cards for the NEMT Support Team. A rota was prepared as part of Exercise Viper with no issues.
15	Ensure regular tests of emergency communications routes with all terminal and storage operators is carried out as is done for all NTS connected offtakes.	2014 Ongoing	EPT	Ongoing	This is now an ongoing requirement of the Emergency Planning Team. All supply contacts (Terminals, LNG & Storage) were contacted during June this year to confirm all emergency communication routes and tested during Exercise Viper.
16	Emergency proforma used to request maximum supplies should clearly indicate that any revised DFN/SFN information should not be issued to the GNCC under an exercise scenario.	Mar-14	EPT	Complete	A complete review of all emergency forms resulted in some significant changes to the supply information and direction forms. Positive feedback from a number of internal and external stakeholders as to the improved clarity of direction was received following Exercise Viper and the new forms will shortly be embedded in the E3 procedure and on the National Grid website.
17	DNOs to confirm assurance to the NEC of abilities to contact greater numbers of sites (top 200 sites) in their own exercise reports or via separate reporting to the NEC and HSE.	Mar-14	All DNOs	Complete	Contact with the top 200 DN sites to request firm load shedding was separated out from the main NEC exercise this year. This allowed for DNs to take more time on each call to remind Users of their obligations under an emergency scenario. Each DN will be reporting on how this exercise went directly to the HSE
18	DNOs to ensure when contacting Users to shed firm load they requested an expected timeframe to stop using gas.	Next Exercise	All DNOs	Complete	See #17
19	DNOs to provide all SOQ data for all sites where Firm Load Shedding was undertaken during the Exercise so that more detailed firm load shedding analysis can be completed to determine exactly how much load was shed in each LDZ after the exercise is complete.	Next Exercise	All DNOs	Complete	A template of the required information was agreed via the E3 alignment group and we expect a complete data set to be delivered with the post exercise reports from each DN by the end of October.
20	All DNOs to issue the load shedding data and their respective exercise reports to the NTS Emergency Planning Team within 1 month of the exercise with a view to all parties (NTS & DNOs) issuing the exercise reports to the HSE no later than 2 months following the NEC exercise.	Next Exercise	All DNOs	Complete	All DN reports received.

21	Undertake desktop exercise to develop a restoration strategy to further understand any potential issues the NEMT may face in this situation.	TBC	EPT	Open	A desktop exercise to specifically explore restoration scenarios was not undertaken during 2014. However, Emergency Stage 4 (Restoration) processes were tested during Exercise Viper and discussions around how to invoke a safe/swift restoration strategy were explored. There is still the potential to look into a wider restoration exercise with DNs.
22	National Grid Emergency Planning Team and DECC to plan an exercise in 2014 to ensure relevant procedures, reports, data and communications routes are tested, aligned and valid	Jun-14	EPT & DECC	Complete	DECC were engaged throughout the exercise planning for 2014, resulting in 2 actions. A full test of the DECC upstream emergency processes was carried out alongside Exercise Viper and an Industry workshop & desktop exercise looking at upstream and downstream emergency processes took place on October 22nd 2014.

7. Feedback on Exercise Report

This report has been produced on behalf of the Network Emergency Coordinator by the National Grid Emergency Planning Team. The Emergency Planning Team wishes to thank all the organisations who participated in Exercise Ulysses or who supplied information or recommendations for inclusion in this report.

The Emergency Planning Team welcomes feedback on the NEC report on Exercise Ulysses. Please forward any comments on the report or suggestions for how future NEC exercises could be improved to the Emergency Planning Team using the following contact details.

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8. Glossary & References

DECC	Department for Energy and Climate Change
DN	Distribution Network
DNCCs	Distribution Network Control Centres
ENCC	Electricity National Control Centre
ESP3	Emergency Strategy Programme
GDE	Gas Deficit Emergency
GNCC	Gas National Control Centre
GNCC/E/3	Network Emergency Management Team's Emergency Procedure
GS(M)R	Gas Safety (Management) Regulations 1996
JRT	Joint Response Team
kWh	Kilowatthour
LDZ	Local Distribution Zone
LNG	Liquefied Natural Gas
MCM	Millions of Cubic Metres
MJ/m³	Megajoules per Cubic Metre
NEC	Network Emergency Co-ordinator
NEMT	Network Emergency Management Team
NGD	National Grid Distribution
NGN	Northern Gas Networks
NGSE	Network Gas Supply Emergency
NTS	National Transmission System
T/PM/E/1	Procedure for Network Gas Supply Emergency
SGN	Scotia Gas Networks
SOQ	System Offtake Quantity
WWU	Wales & West Utilities

National Grid's Emergency Webpages:
http://www2.nationalgrid.com/UK/Industry-information/Gas-transmission-system-operations/Network-Gas-Supply-Emergency/

National Grid's System Management Principles Statement:
http://www2.nationalgrid.com/UK/Industry-information/Business-compliance/Procurement-and-System-Management-Documents/