

National Grid Gas Transmission NTS Emergency Planning



Gary Dolphin NTS Emergency Planning Manager

Gareth Davies Balancing Code Development Manager

Agenda

- **What is an Emergency?**
- **Legislation and procedures**
- **Managing an emergency**
- **Pre-Emergency**
- **Stages of an Emergency**
- **Significant Code Review**
- **National Grid Communications**
- **2015 NEC Emergency Exercise Wolf**
- **Further Information**

What is a Network Gas Supply Emergency?

- Definition
- Types of emergency

What is a Network Gas Supply Emergency?

“A potential or actual supply emergency on the primary system”

(NEC Safety Case)



Supply emergency: Defined in the HSE Gas Safety (Management) Regulations 96 (GS(M)R), an emergency endangering persons and arising from a loss of pressure in a network or any part thereof.

Primary system:
The National Transmission System (NTS)

In other words...

A Network Gas Supply Emergency is a potential or actual loss of pressure on the network, affecting the NTS, which could endanger people.

Network Gas Supply Emergencies

Three types of NGSE:

1. Gas Deficit Emergency (GDE)

- Could be caused by a shortage of gas supplies, failure of market to supply demand, a major supply disruption etc
- Available National Supply < Required National Demand

2. Safety Monitor Breach (SMB)

- 2 storage monitors (space and deliverability) applicable throughout Winter period:
 - Not enough gas in store to safely isolate non-protected loads
 - Not enough gas in store to support protected loads in a 1in50 winter

3. Critical Transportation Constraint (CTC)

- Could be caused by damage to an NTS pipeline, compressor station etc
- A physical failure that impedes localised gas transmission
i.e. not a national supply deficit

Legislation, procedures and roles

- **Legislation and procedures**
- **Network Emergency Management Team (NEMT)**
- **Network Emergency Coordinator (NEC) role**

Legislation & Procedure Hierarchy

**Gas Safety
(Management) Regulations
GS(M)R**



**National Emergency
Plan: Gas (NEP-G)**



**NEC & Transporter
Safety Cases**



**UNC TPD (Q)
& OAD (C)**



**Network Gas Supply
Emergency Procedure
(E/1)**



**Detailed Gas Supply
Emergency
Procedures (E/3)**



Network Emergency Management Team

Incident Controller

Provides direction and manages the NEMT. Presents strategy to the NEC.

Supply

Works with and manages actions on the supply side (e.g. terminals and storage)

Shipper

Coordinates and communicates demand side actions with the NTS direct connections and Shippers

Demand

Coordinates and communicates demand side actions with DN's and interconnectors

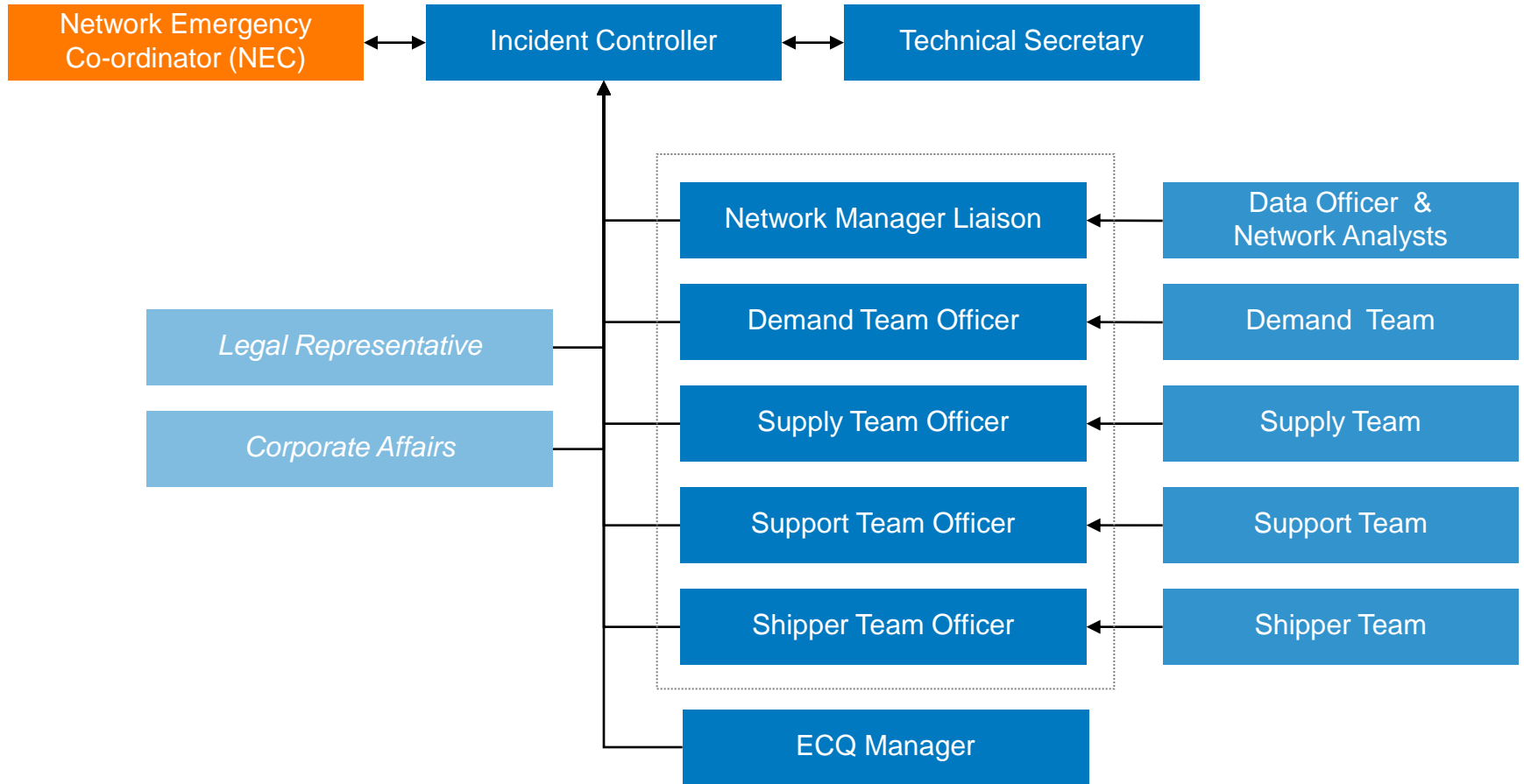
Network Manager Liaison

Liaises with the GNCC and ENCC and provides technical expertise of the network

Support Team

Provides resources and support to the NEMT and external communications

The Network Emergency Management Team (NEMT)



Total NEMT consists of over 100 volunteers from across National Grid Gas System Operation allowing for 3 shift rotations plus 1 full backup team

Network Emergency Coordinator (NEC)



Role performed by National Grid but NEC independent of System Operator



Co-ordination of actions of gas industry to prevent or minimise safety consequences of a supply emergency



Independent from any commercial interests of industry, including National Grid. Focus is on **public safety**

Network Emergency Coordinator (NEC)



Industry parties have a duty to co-operate with the NEC under GS(M)R



NEC has the authority to direct gas consumers to reduce or cease consumption or increase supply within a given timeframe



Failure of NTS Users to co-operate with NEC directions could result in prosecution under criminal law

Key NEC Obligations

- Prepare the NEC Safety Case and gain HSE approval
- Run annual NEC Emergency Exercises
- Review and approve any NTS emergency strategies
- Make Emergency Declaration
- Inform industry of Emergency Stages
- Maintain compliance with GS(M)R
- Coordinate actions to protect the public
- Report on any NGSE or Emergency Exercises to HSE

Network Gas Supply Emergencies

- Pre-emergency - Constraint Management
- Emergency Stage Framework

Constraint Management (Pre-emergency)

Business as Usual & Constraint Management

- Shipper Balancing & Incentives
- Transporter Balancing/Capacity Actions & Incentives
- ANS Messages & Notices

- Shippers incentivised to balance themselves
- NTS reconfiguration and linepack usage
- National Grid trade to move SMP and drive NTS balance
- Contractual limits enforced (capacity limits, ramp rates etc)
- Scaleback Off-peak Exit Capacity & cease release of further Daily Firm Exit Capacity
- National Grid trade with Shippers to reduce demand (Exit Capacity Buyback, Offtake Flow Reduction & Locational Energy trading)
- Issue Gas Deficit Warning to industry
- Utilise Operating Margins Gas if necessary

Convene NEMT, engage NEC, Prepare Emergency Strategy

Emergency Stages

- NEC Safety Case outlines FOUR emergency stages
- Each Emergency Stage has defined actions, details available in the Network Gas Supply Emergency Procedure (E1)
- NEC authorises the declaration of each emergency stage
- Actions may be taken out of sequence **but** the stage must be declared before actions taken
- NEC will only declare Emergency where National Grid has taken all Commercial and Physical actions available
- Various elements of commercial regime suspended from Stage 2 onwards (See UNC Q - Capacity, Scheduling etc)

Emergency Frameworks Summary

Business as Usual & Constraint Management

- Shipper Balancing & Incentives
- Transporter Balancing/Capacity Actions & Incentives
- ANS Messages & Notices

GAS DEFICIT WARNING

Stage 1
1
(Potential)

- NTS Linepack Usage
- Distribution Network Co-operation & Storage Usage
- GS(M)R Gas Specification range widening

Stage 2
2

- National Grid suspends participation in OCM (not CTC)
- Maximise NTS Supplies
- Firm Load Shedding

Stage 3
3

- Distribution Network allocation & isolation
- Public Appeals

Stage 4
4

- Restoration of Supplies
- Purge & Relight

NEC EMERGENCY ACTIONS

Stage 2: Firm Load Shedding

- Any large gas consumer can be directed to cease gas consumption
- E.g. Gas Fired Power Stations, Large Industrial Users etc
- Location will depend on type of NGSE, impact of potential reduction and NTS pressure requirements
- Phone and fax used to issue GS(M)R notice of cessation to sites
- National Grid enter “Emergency Curtailment Quantity” (ECQ) trades into Gemini on behalf of Shippers nominating at sites which are load shed. This maintains supply nominations and therefore system balance

VLDMCs

>25,000 tpa

Stage 3: Distribution Network Allocation & Isolation

- The physical isolation of sections of a Distribution Network will result in loss of supply to a large number of smaller commercial and domestic gas consumers
- This process is seen as a last resort and is only carried out under extreme circumstances
- Distribution Network Operators are responsible for maintaining isolation plans should an emergency be severe enough that the NEC directs reduction of smaller commercial and domestic gas consumers

Gas Security of Supply Significant Code Review (SCR) - Overview

- Background
- Areas of change
- Emergency Cash-Out arrangements

Background

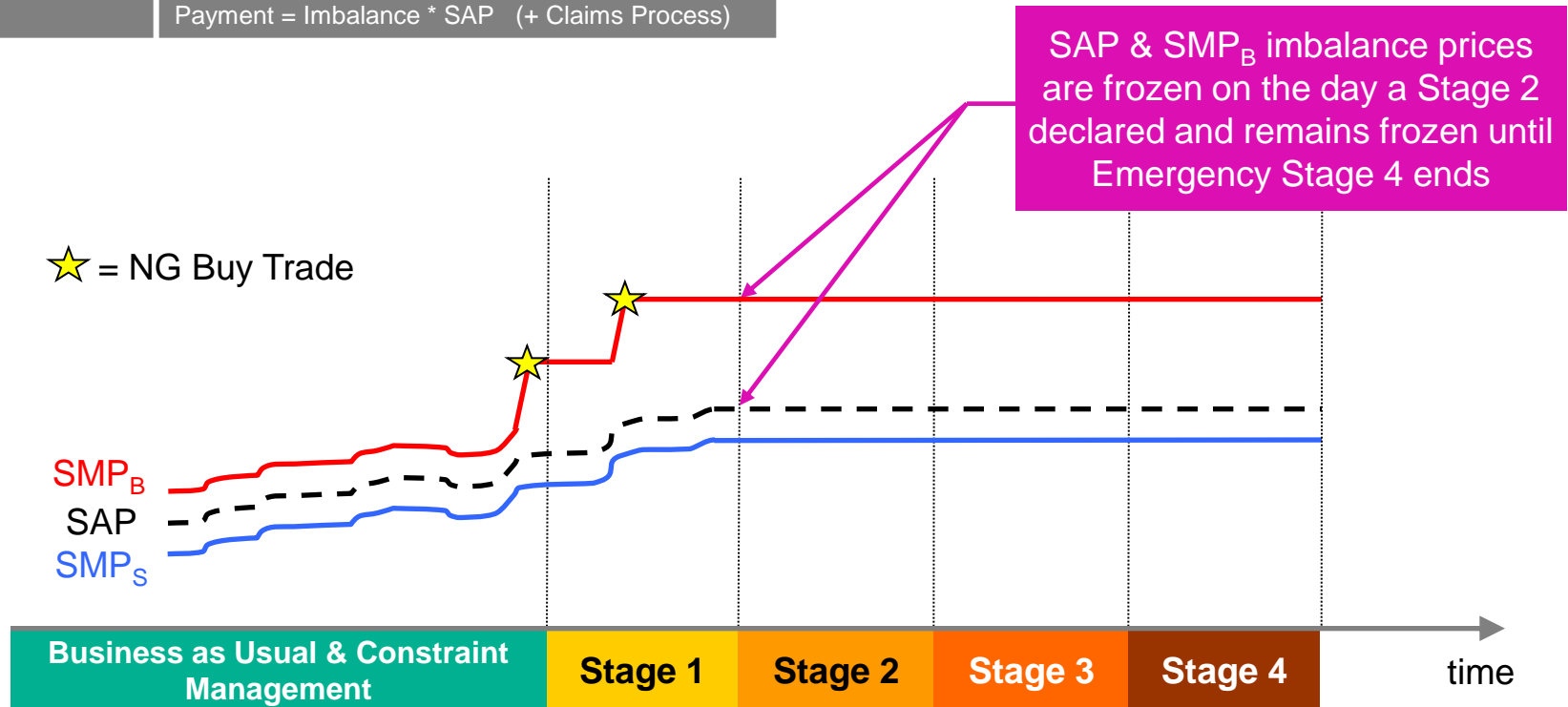
- Project Discovery (2009)
 - Concerns regarding ability to attract gas supplies to GB in an emergency (frozen cashout price)
- SCR Aims
 - Minimise likelihood of a Gas Deficit Emergency (GDE) occurring;
 - Minimise duration if a GDE occurs; and
 - Make payments to firm consumers for curtailment
- SCR duration January 2011 to September 2014
 - Ofgem direction to modify the UNC under Section 36C of the Gas Act 1986; and
 - Supporting modifications of Shipper and Supplier Licences
 - To be implemented by 1 October 2015

Gas SCR - Areas of Change

- Cash out charges in an emergency unfrozen to better reflect cost of consumer interruptions
- Involuntary disconnection payments to consumers are priced into cash-out
- Funds recovered from cash-out charges are used to make payments to consumers for their *involuntary* DSR service they provide
 - DM – 30 day average SAP
 - NDM - £14/therm for first day of disconnection (Stage 3)
 - ~£30/day - only applies to days when any new network isolation is initiated
- Obligation on shippers to pass on compensation to customers

Emergency Cashout Arrangements

Balance Position	Imbalance Charge/Payment
Balanced	Zero
Light	Charge = Imbalance * SMP_B
Heavy	Payment = Imbalance * SAP (+ Claims Process)

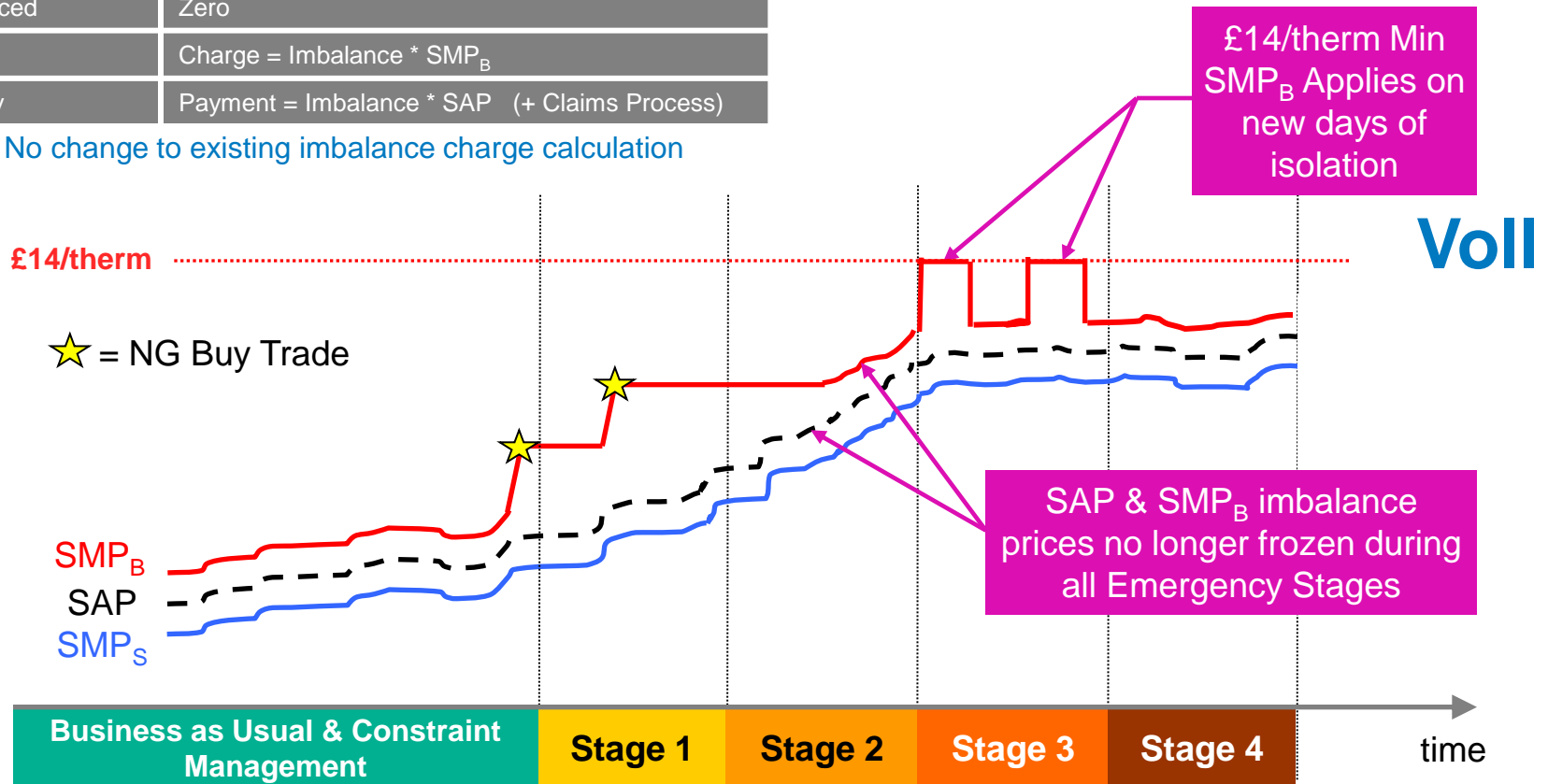


Emergency Cashout Arrangements

2015/16 Onwards (Driven through Ofgem Significant Code Review)

Balance Position	Imbalance Charge/Payment
Balanced	Zero
Light	Charge = Imbalance * SMP_B
Heavy	Payment = Imbalance * SAP (+ Claims Process)

Note: No change to existing imbalance charge calculation



Note: £14/therm minimum SMP_B not applicable if SAP + fixed differential rises above £14/therm

Note: The SMP_B price when entering Stage 2 or 3 is the “floor” price for the remainder of the emergency

Further implementation changes

- New rules for the robustness of SAP in GDE Stage 2+.
- Balancing Neutrality Mechanism revised to deliver cashout changes:
 - Payment arrangements for involuntary supply curtailment
 - Funding (via Energy Balancing)
 - Payments (via Energy Balancing)
 - Exclusion of commercial interruption
 - Rectification of balancing position in case of FLS
- Settlement timescales

SCR Summary





- Changes to the Gas Deficit Emergency Cashout arrangements that recompense End Consumers for involuntary demand side interruption of supply during a GDE
- Implementation date: October 2015
- Operational Impacts to Industry:
 - Changes to cashout arrangements during an Emergency (SAP & SMP prices are un-frozen)
- Industry Activities:
 - Emergency processes are largely 'AS IS' for external parties
 - Minor changes to National Grid emergency procedures
 - National Grid Emergency Planning Team engaging with ICE Endex wrt ICE system changes
 - Changes to National Grid notifications to ICE Endex
- Gas DSR to be implemented Oct 16 – <http://www2.nationalgrid.com/UK/Industry-information/Gas-transmission-system-operations/Balancing/Gas-DSR/>

Information

- **Communications**
- **Publications**
- **NEC Emergency Exercise Wolf**



NTS Communications Summary

Communication	Description				
		FAX	PHONE	ANS	EMAIL
Short Term System Flexibility	Notice to all Shippers that any flow notifications requesting flow beyond contractual limitations may be rejected			✓	
Margins Notice	Notice to Shippers and any User signed up to receive notification via NG website indicating a potential supply / demand imbalance for the coming Gas Day			✓	✓
Request Constraint Management Offers	GNCC requesting Shippers make constraint management trade offers (Capacity Buyback, Locational trades, etc) via Gemini & APX systems			✓	
Gas Deficit Warning	Warning to Shippers and any User signed up to receive notification via NG website at the discretion of National Grid based on our expectations of the impact of a significant supply or demand event.			✓	✓
NEC Emergency Declarations	Issued directly to all NTS Users and Shippers from the NEC to declare stage 1 – 4 emergency	✓		✓	✓
Emergency Stage Actions	Issued by the NEMT to NTS Users and Shippers to direct emergency strategy actions as agreed by the NEC	✓	✓	✓	✓

External Publications & Information

■ National Grid Website

- Network Gas Supply Emergency Procedure (E1)
- System Management Principles Statement (SMPS)
- Short Term System Flexibility Allocation Methodology (OPN Request)
- Safety Monitor Calculation Methodology
- Margins Notice & Gas Deficit Warning guidelines and email registration
- Constraint Management “Quick Guides”

■ Regular emergency exercises ongoing

■ Quarterly DN Liaison (E3 Alignment Group)

■ Quarterly comms assurance with all NTS Users

NEC Industry Exercise “Wolf”

When: Wednesday 14th & Thursday 15th October 2015

Principal objectives of NEC Exercise:

- Confirm that industry emergency arrangements remain aligned to the Procedure for Network Gas Supply Emergency (reference T/PM/E/1)
- Test of the National Grid and Oil and Gas Authority upstream Oil and Gas Crisis management procedure, web portal and emergency response communications
- Test of the NEMT emergency strategy development, industry communication and processes through emergency stages 1-3
 - Test of the Distribution Networks Allocation and Isolation plans
 - Test National Grid’s external emergency communications system
- Test National Grid’s emergency management instruction pro-formas are clear and concise and embedded into the industry’s emergency procedures
- Test that previous NEC exercise recommendations have been included into the emergency procedures

Three separate support exercises:

- Individual Distribution Network Emergency contact details validation and conformance to NEC instruction exercise (firm load shedding)
 - Individual Distribution Network Critical Transportation Constraint (CTC) exercises
 - National Grid Commercial strategy exercise leading into NEC Exercise Wolf

Further information

- A range of emergency procedural information is available on the National Grid website

www.nationalgrid.com/NEC (shortcut link to NG emergency webpages)

- National Grid Transmission Contacts:

- Gary Dolphin – Emergency Planning Manager (01926 65 6210)
gary.dolphin@nationalgrid.com
- Chris Hewitt – Emergency Planning Officer (01926 65 3846)

- National Grid Transmission Emergency Planning Team:

gasops.emergencyplanning@nationalgrid.com

