

Safety Monitor and Firm Gas Monitor Requirements

September 2008

Introduction

This document sets out 'Safety Monitors' and 'Firm Gas Monitors' for the 2008/9 winter, pursuant to National Grid's obligations under the Uniform Network Code (UNC), Section Q.

Safety monitors were introduced in 2004 to replace the so-called 'Top-up' monitors, which had existed (through the Network Code) since 1996. The safety monitors define levels of storage that must be maintained through the winter period. The focus of the safety monitors is public safety rather than security of supply. They provide a trigger mechanism for taking direct action to avoid a potential gas supply emergency (as defined in the Gas Safety (Management) Regulations).

The firm gas monitors represent the storage levels required to support firm demand in a severe winter. They are published for information only.

Operation of Safety Monitors

It is a requirement of National Grid's safety case that we operate this monitor system and that we take action to ensure that storage stocks do not fall below the defined levels. The levels of storage established by the safety monitors are those required to underpin the safe operation of the gas transportation system. They ensure the preservation of supplies to domestic customers, other non-daily metered (NDM) customers and certain other customers who could not safely be isolated from the gas system if necessary in order to achieve a supply-demand balance and thereby maintain sufficient pressures in the network.

The monitors define minimum levels of stored gas required in each type of storage facility, on each day of the winter. We monitor the level of gas in each of the three storage facility types throughout the winter to ensure that the actual stock level does not fall below the relevant monitor level. If this were to occur, there would be insufficient gas left in storage to underpin the safe operation of the system in a 1 in 50 cold winter, and we would therefore be obliged by our safety case to take action to remedy this situation. In the lead-up to such a situation, we would advise the market with the objective of encouraging mitigating action. If necessary, however, the Network Emergency Co-ordinator (NEC) may require the relevant storage operators to reduce or curtail flows of gas out of storage. In this situation, we would expect the market to rebalance in order to achieve a match between supply and demand.

We would continue to provide information to the market as the situation developed. While National Grid would seek to minimise the extent of any intervention in the market, the balance between allowing the market to resolve the situation and taking action via the NEC will clearly depend on the severity of the situation and the associated timescales.

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Approach to the Monitor Levels

This note is published in conjunction with the Winter 2008/9 Outlook Report, which contains our Central View of supply forecasts for the coming winter. This Central View was composed of our 2008 Transporting Britain's Energy (TBE) forecasts being updated with new up-to-date intelligence regarding supply developments and feedback and intelligence received via the winter consultation process. In particular, the document noted that:

- A significant level of uncertainty remains with regard to non-storage supply levels for the coming winter, in particular with import supplies. This is especially so with both the construction and commissioning of new LNG importation infrastructure, and the availability of supplies to utilise the infrastructure;
- The purpose of the safety monitors is to ensure that an adequate pressure can be maintained in the network at all times and thereby protect public safety. A prudent approach is therefore required.

The following sections explain the approach that we have taken to the safety monitor calculation in relation to supply and demand respectively.

It should be noted that we will continue to review the safety monitor and firm gas monitor levels throughout the winter and, if necessary, we will revise them to reflect material changes to the supply-demand balance.

National Grid will continue to provide winter feedback to industry regarding supply assumptions and resulting changes to safety monitors by means of monthly updates via Operational forums and our website.

Supply Assumptions

There is still considerable uncertainty associated with the supply background for winter 2008/9. For the calculation of the safety monitors we have used the Central View supply assumptions from the Winter 2008/9 Outlook Report.

Whilst our latest views are still subject to uncertainty we believe this is a prudent approach to setting the monitors as there is more upside than downside to the Central View.

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Table 1 – Non-Storage Supply Assumptions by Supply Source

Supply source	Assumed flow (mcm/d)	CV¹ (MJ/m3)	Assumed flow (GWh/d)
UKCS ²	195	39.30	2129
Norway	81	40.00	900
IUK	20 ³	38.82	216
BBL	30	39.00	325
LNG imports	10	39.63	110
Total	336		3680

Table 2 shows the anticipated availability of storage capacity in winter 2008/9.

Table 2 – Storage Capacity Assumptions⁴

Storage type	Space (GWh)	Deliverability (GWh/d)
Short (LNG)	2058	526
Medium (MRS)	8251 ⁵	300 ⁶
Long (Rough)	35545 ⁷	455
Total	45854	1281

Demand Assumptions

The basis for the calculation of the safety monitor levels is our 2008 demand forecasts for 2008/9, using the severe (1 in 50 cold) load duration curve.

¹ An estimated CV has been applied to assist conversion of data published in both volumetric and energy terms

² Assumes average availability of 90% max UKCS

³ IUK is assumed to flow below forecast unless demand is well in excess of aggregated non-storage supplies

⁴ Excludes Operating Margins gas and Scottish Independent Undertakings

⁵ Lower than Winter Consultation due to omission of Aldbrough space

⁶ Lower than Winter Consultation due to omission of Hole House Farm and Aldbrough deliverability

⁷ Reflects latest information from Centrica Storage Limited on anticipated space for winter 2008/9

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Safety Monitor Levels

Table 3 shows the initial safety monitor requirements.

Table 3 – Stored Safety Gas Requirement

Storage type	Assumed storage capacity (GWh)⁸	Space requirement (GWh)	Space requirement (%)
Long duration storage (Rough)	35545	3917	11.0%
Medium duration storage (MRS)	8251	621	7.5%
Short duration storage (LNG)	2058	102	5.0%
Total	45854	4640	10.1%

Storage Safety Deliverability Requirement

Table 4 – Peak NDM & Priority Demand and Peak Day Supply

Demand	GWh/d
Peak ⁹ NDM & Priority Demand (A)	4157
Peak Supplies	
Non-storage supplies	3680
Storage	1281
Total Supplies (B)	4961
Supply Surplus (B) – (A)	804

⁸ Excludes Operating Margins Gas and Scottish Independent Undertakings

⁹ Day 1 of the Severe (1 in 50 cold) diversified load duration curve

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Stored Firm Gas Requirement

The firm gas monitors represent the storage levels required to support all firm demand in a severe (1 in 50 cold) winter. *They are published for information only.* Note that they are calculated using the Winter Outlook 2008/9 Central View of supplies and our 2008 demand forecast.

Table 5 – Space Analysis (GWh)

Storage type	Assumed storage space (GWh)	Firm Stored Gas Requirement (GWh)	Firm Stored Gas Requirement
Long duration storage (Rough)	35545	21402	60.2%
Medium duration storage (MRS)	8251	5923	71.8%
Short duration storage (LNG)	2059	2059 ¹⁰	100%
Total	45855	29384	64.1%

Storage Firm Deliverability Requirement

Table 6 – Peak Firm Demand¹¹ and Peak Day Supply

Firm Demand	GWh/d
Diversified 1 in 20 Cold Peak Day (C)	4898
Peak Supplies	
Non-storage supplies	3680
Storage	1281
Total Supplies (D)	4961
Supply Surplus (D) – (C)	63

¹⁰ Short space requirement is capped at 100%

¹¹ Diversified firm demand for a 1 in 20 cold peak day

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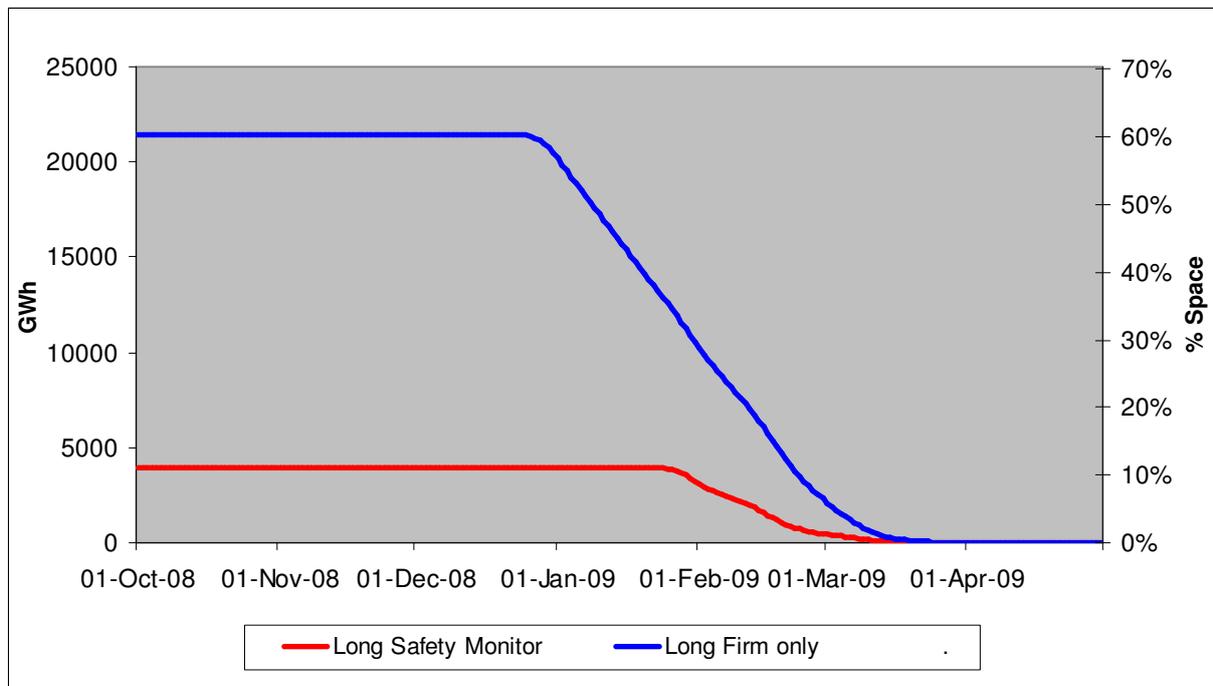
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Monitor Profiles

Figures 1 to 3 show the safety monitor profiles and the firm gas monitor profiles for long, medium and short duration storage respectively.

The objective of the safety monitor profiles is to ensure that at any point in time sufficient gas will remain in store to underpin the safe operation of the gas transportation system for what remains of the winter period. They allow for the possibility of late winter cold weather patterns, based on analysis of historical temperatures. However, in the event of cold weather earlier in the winter, the monitor levels may be reduced at that time. This methodology is explained in more detail in our Safety & Firm Gas Monitor Methodology document¹². This document was last updated in December 2006¹³.

Figure 1: Long duration storage Safety Monitor and Firm Gas Monitor Profiles



¹² <http://www.nationalgrid.com/NR/rdonlyres/B4ACC5F8-A8AF-48B4-A8AA-04BE3743E1C9/13676/20067SafetyFirmGasMonitorMethodology.pdf>

¹³ It is not planned to update the methodology document to reflect the 2008/9 calculations, as the methodology has not been changed.

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Figure 2: Medium duration storage Safety Monitor and Firm Gas Monitor Profiles

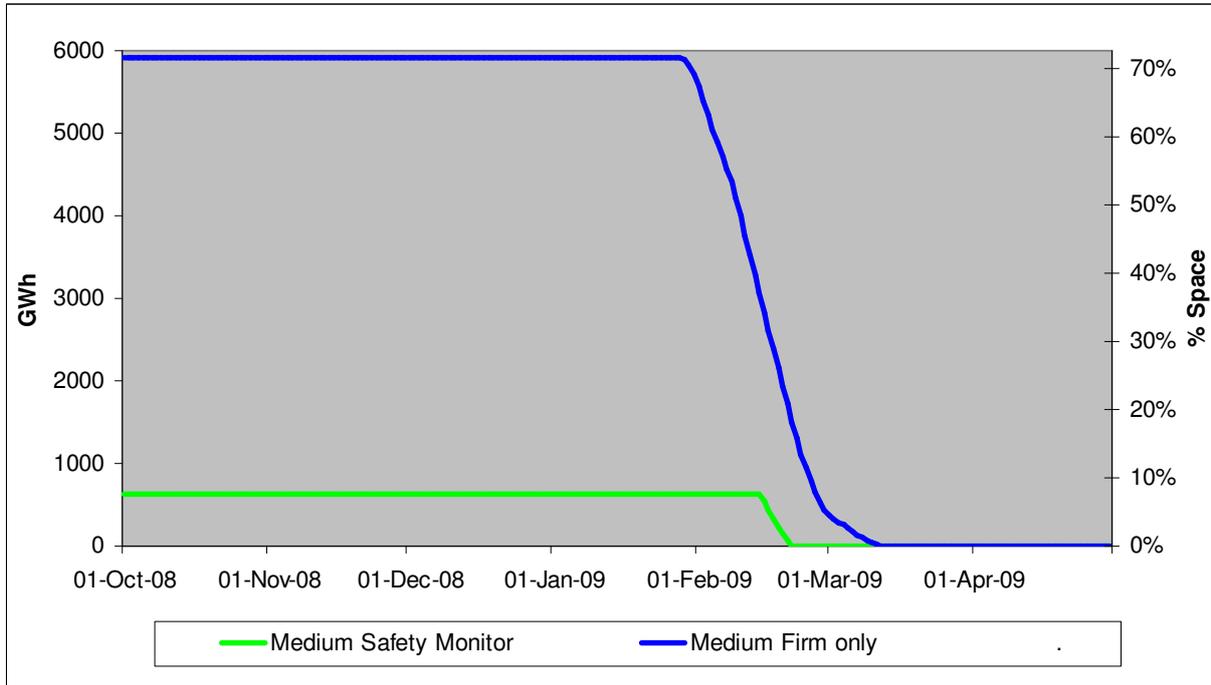
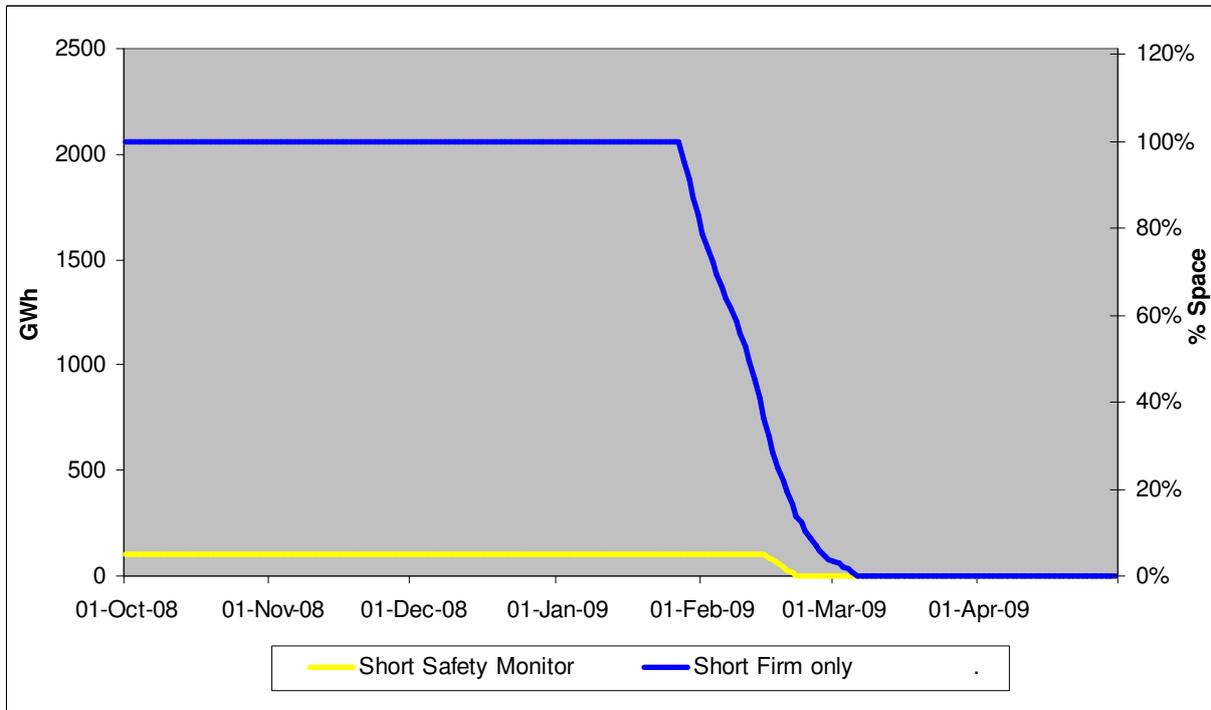


Figure 3: Short duration storage Safety Monitor and Firm Gas Monitor Profiles



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Storage Facility Designation

1. Short duration storage facilities now exclude Grain which is included under imports.
2. Medium duration storage facilities now include Hornsea, Hole House Farm, Hatfield Moor and Humbly Grove for space; and Hornsea, Hatfield Moor and Humbly Grove for deliverability. Aldbrough has not been included within the safety monitor calculations, as we believe this is the most prudent approach for winter 2008/9.

Notes on Demand Assumptions

National Grid forecasts both diversified demand and undiversified demand. The diversified peak day is the peak day for the whole country, whilst the undiversified peak day is the peak day for each area of the country added together.

For planning and investing in the network, National Grid uses 1 in 20 cold peak day undiversified demand conditions (in addition to analysing other less severe weather conditions). This allows for the fact that there is no single profile of demand across the country associated with a 1 in 20 cold peak day, and therefore ensures sufficient transportation capacity is available to meet 1 in 20 cold demand under a range of conditions.

For safety monitors, National Grid uses diversified demand forecasts, which is the appropriate basis for assessing the balance between supply and demand on a national basis.