

Safety Monitor and Firm Gas Monitor Requirements

September 2007

Introduction

This document sets out 'Safety Monitors' and 'Firm Gas Monitors' for the 2007/8 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

On 26 September we published the third and final Winter 2007/8 Consultation Report¹. This contained our Final View of supply forecasts for the coming winter. This Final View was composed of our 2007 forecasts being updated with new up-to-date intelligence regarding supply developments and further feedback and intelligence received via the winter consultation process. In particular, the document noted that:

- Responses to our June 2007 winter consultation update document² broadly endorsed the Revised View on which we consulted. It was recognised, however, that while the Revised View represented a reasonable 'best view', a significant level of uncertainty remains associated with both the construction and commissioning of new 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. We therefore concluded that when the supply-demand background is particularly uncertain, it is appropriate to use a more cautious set of assumptions than the Final View in the safety monitor assessment. For this reason, we have built a risk element into the safety monitor levels.

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 proposes to enhance 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

Given the significant level of uncertainty associated with the supply background, relating both to the construction and utilisation rates of new importation infrastructure, we have assumed a level of supply 20 mcm/d below the Final View across the winter. It is possible to identify a number of different and plausible scenarios in which supply levels could be depressed to this extent.

Table 1 shows the Final View supply assumptions from our third and final Winter 2007/8 Consultation Report, and the additional 20 mcm/d supply risk allowance.

¹<http://www.ofgem.gov.uk/Markets/WhIMkts/CustandIndustry/WinterOutlook/Documents1/WCR%2026%20sep%202007%20final.pdf>

²<http://www.ofgem.gov.uk/Markets/WhIMkts/CustandIndustry/WinterOutlook/Documents1/WCR%20June%2007%20final.pdf>

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Table 1 – Supply Assumptions by Supply Source

Supply source	Assumed flow (mcm/d)	CV³ (MJ/m³)	Assumed flow (GWh/d)
UKCS ⁴	227	39.30	2474
Norway	80	40.00	889
IUK	50 ⁵	38.82	539
BBL	25	39.00	271
LNG imports	33	39.63	363
Supply risk allowance	-20	39.30	-218
Total	395		4318

Table 2 shows the anticipated availability of storage capacity in winter 2007/8.

Table 2 – Storage Capacity Assumptions⁶

Storage type	Space (GWh)	Deliverability (GWh/d)
Short (LNG)	1939	526
Medium (MRS)	8233 ⁷	260 ⁸
Long (Rough)	35295 ⁹	401 ¹⁰
Total	45467	1187

Demand Assumptions

The basis for the calculation of the safety monitor levels is our 2007 demand forecasts for 2007/8, using the severe (1 in 50 cold) load duration curve.

³ An estimated CV has been applied to assist conversion of data published in both volumetric and energy terms

⁴ Assumes average availability of 90% max UKCS

⁵ Based on demands of 450mcm/d or higher

⁶ Excludes Operating Margins gas and Scottish Independent Undertakings

⁷ Lower than Winter Consultation due to omission of Aldbrough space

⁸ Lower than Winter Consultation due to omission of Hole House Farm and Aldbrough deliverability

⁹ Reflects latest information from Centrica Storage Limited on anticipated space for winter 2007/8

¹⁰ Assumes Easington capacity at 98mcm/d, made up of 50mcm/d Langedel, 11mcm/d UKCS and 37mcm/d Rough

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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)¹¹	Space requirement (GWh)	Space requirement (%)
Long duration storage (Rough)	35295	530	1.5%
Medium duration storage (MRS)	8233	0	0.0%
Short duration storage (LNG)	1939	0	0.0%
Total	45467	530	1.2%

Storage Safety Deliverability Requirement

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

Demand	GWh/d
Peak ¹² NDM & Priority Demand (A)	4274
Peak Supplies	
Non-storage supplies	4318 ¹³
Storage	1187
Total Supplies (B)	5505
Supply Surplus (B) – (A)	1231

¹¹ Excludes Operating Margins Gas and Scottish Independent Undertakings

¹² Day 1 of the Severe (1 in 50 cold) diversified load duration curve

¹³ Net of 20 mcm/d supply risk allowance

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Stored Firm Gas Requirement

The firm gas monitors represent the storage levels required to support firm demand in a severe (1 in 50 cold) winter. They are published for information only. Note that they are calculated using the Winter Consultation Final View and our 2007 demand forecast; no supply risk allowance is included.

Table 5 – Space Analysis (GWh)

Storage type	Assumed storage space (GWh)	Firm Stored Gas Requirement (GWh)	Firm Stored Gas Requirement
Long duration storage (Rough)	35295	5377	15.2%
Medium duration storage (MRS)	8233	220	2.7%
Short duration storage (LNG)	1939	0	0.0%
Total	45467	5597	12.3%

Storage Firm Deliverability Requirement

Table 6 – Peak Firm Demand¹⁴ and Peak Day Supply

Firm Demand	GWh/d
Diversified 1 in 20 Cold Peak Day (C)	4945
Peak Supplies	
Non-storage supplies	4536
Storage	1187
Total Supplies (D)	5723
Supply Surplus (D) – (C)	778

¹⁴ Diversified firm demand for a 1 in 20 cold peak day

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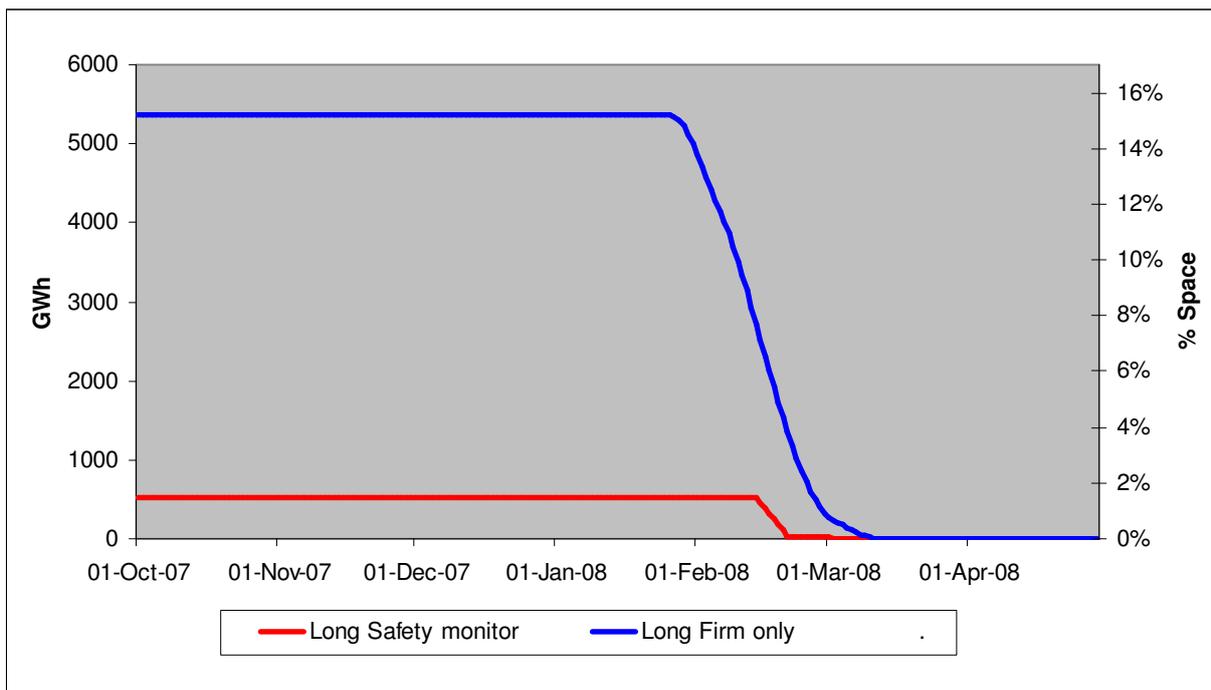
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Monitor Profiles

Figures 1 to 3 show the safety monitor profiles and the firm gas monitor profiles for long, medium and short duration storage respectively. Note that as there is no longer a safety monitor requirement for Medium or Short duration storage, there is no safety monitor profile for Medium or Short.

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 document¹⁵. This document was last updated in December 2006¹⁶.

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



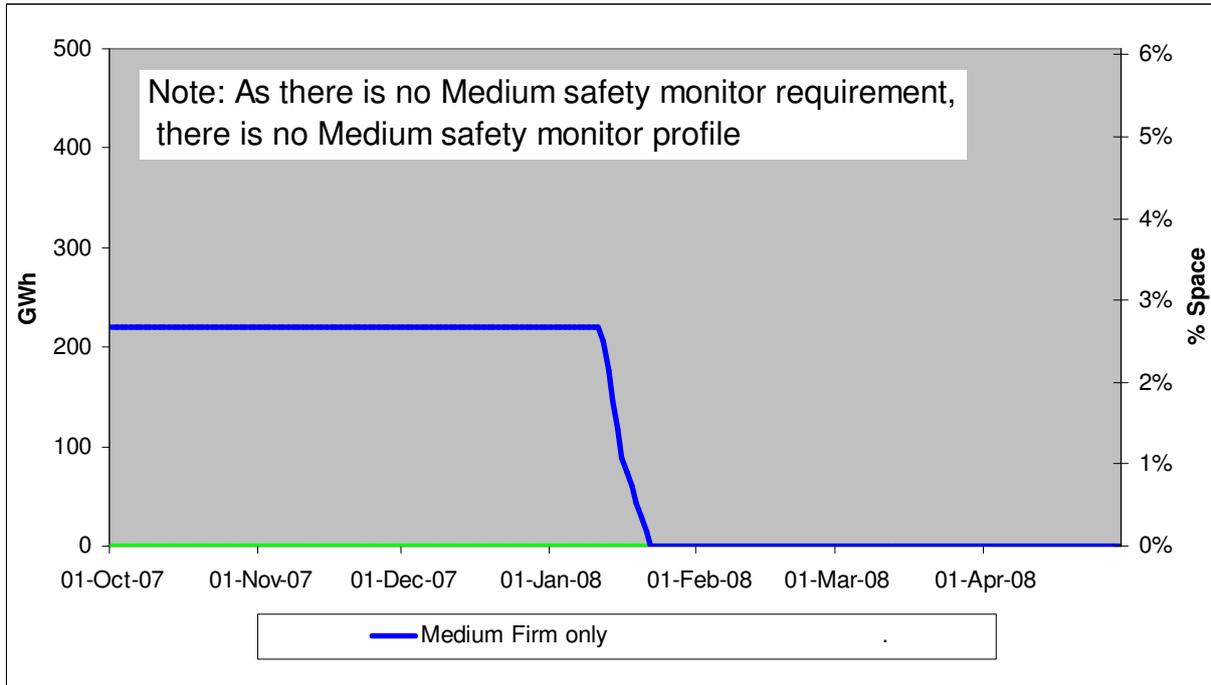
¹⁵ <http://www.nationalgrid.com/NR/rdonlyres/B4ACC5F8-A8AF-48B4-A8AA-04BE3743E1C9/13676/20067SafetyFirmGasMonitorMethodology.pdf>

¹⁶ It is not planned to update the methodology document to reflect the 2007/8 calculations, as the safety monitor levels are currently at very low levels, with the Medium and Short monitors now both zero.

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



Note: As there is no Short duration Safety Monitor requirement or Short Firm Gas Monitor requirement, there is no Short Safety Monitor or Short 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.

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.