

Hazardous Installations Directorate

Gas & Pipelines

Gas Safety Management Regulations 1996

Safety Case Assessment Manual

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7.0	Incorporate Penfield Review requirements into assessment timescales; revise references to administration and tracking processes; clarify GSMR exemption processes to cover lost certification, amendments to existing exemptions and change of duty holder; refer to generic HSE Exemption processes.

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1 INTRODUCTION

Introduction

1 The Gas Safety (Management) Regulations 1996 [GSMR] apply to the conveyance of natural gas (methane) through pipes to domestic and other consumers and cover four main areas:

- a) the safe management of gas flow through a network, particularly those parts supplying domestic consumers, and a duty to minimise the risk of a gas supply emergency;
- b) arrangements for dealing with supply emergencies;
- c) arrangements for dealing with reported gas escapes and gas incidents;
- d) gas composition

2 The manual provides a framework for assessing GSMR safety cases within which Inspectors exercise professional judgment. It also includes advice on how to take forward assessment into inspection.

Gas Conveyors' Safety Cases

3 GSMR requires gas conveyors to prepare a safety case containing the information required by Schedule 1 of the Regulations and have it formally accepted by HSE before conveying gas.

Network Emergency Co-ordinator's [NEC] Safety Case

4 Where more than one business is conveying gas in the network a Network Emergency Co-ordinator (NEC) must be appointed. The NEC also has to prepare a safety case containing the information specified in Schedule 2 of the Regulations and have it accepted by HSE. Currently National Grid Gas plc undertakes this role. The NEC safety case is primarily concerned with establishing adequate arrangements for co-ordinating the actions of a number of conveyors to prevent a network supply emergency and for managing such an emergency should one occur.

5 The NEC has powers to require gas conveyors and others to take action to prevent a network supply emergency, or to co-operate with the NEC during its management of one if it can't be prevented.

Revising Safety Cases

6 The Regulations require that safety cases should be kept up to date. Where a revision would make a safety case materially different from the last accepted version, the gas conveyor or NEC should resubmit the safety case and have it accepted by HSE before the changes are made. In addition, each gas conveyor has to carry out a thorough review of their safety case at least every three years, and provide HSE with a written report of that review. Non material revisions can be sent to HSE at any time for review but HSE need to agree that the changes are non-material before the duty holder implements them. If a 3 Year Review identifies that changes to the safety case are necessary the revision may be submitted with the 3 Year Review report. It should always be clear what, why and where amendments have been made to a safety case to enable assessment/review to be effective.

Duty to Comply with a Safety Case

7 Gas conveyors and the NEC have a duty to follow the arrangements and procedures described in their safety cases.

Scope of the Manual

8 This manual sets out the arrangements HSE uses for assessing GSMR safety cases. In certain circumstances, HSE can issue exemptions from the Regulations.

9 Chapters 2 & 3 set out HSE's internal arrangements for assessing safety cases, including roles and responsibilities, documentation and performance standards. Information is also given on reviewing 3 year review reports and non-material revision changes.

10 Chapter 4 covers the arrangements for assessing exemptions.

11 Chapter 5 provides an overview of HSE's assessment principles and decision-making framework.

12 Chapters 6-10 give detailed guidance on assessment criteria for major gas distribution networks and the National Transmission System (NTS).

13 However, there are a number of smaller GSMR networks where the depth of detail necessary in a safety case for a major distribution network is not required. Chapter 11 provides guidance and criteria for these smaller networks.

14 Criteria on assessing an NEC safety case is not covered in this manual.

15 Further guidance on GSMR can be found in HSE publication L80 'A guide to the Gas Safety (Management) Regulations 1996'.

Assessment Timetable

16 GSMR safety case assessment is classed as a 'non planning consent' and HSE Gas & Pipelines are a 'consenting agency' for the assessment process. The Government imposes a 13 week maximum timescale for the majority of non-planning consents, including GSMR assessment. HSE aims to assess new safety cases and material revisions within 13 weeks of receipt. For some large and particularly complex new safety cases or material changes a timescale of 13 weeks might not be possible. As an example, experience has shown that major material revisions in a large distribution network can require a significantly longer period to assess; in such circumstances it may be possible for the duty holder to submit two or more smaller, iterative, safety case changes that can each be assessed within 13 weeks.

17. HSE will agree the timescale with the conveyor. The 13 weeks starts only when HSE has received all the required information to complete the assessment. If it is clear at the outset - or at any point during assessment - that the new case or material change will require further discussion and information from the duty holder such that assessment is likely to exceed 13 weeks then the assessment manager should agree an extension with the Head of Unit and with the duty holder.

18. These timescales will depend on the extent and quality of the safety case and how quickly duty holder's deal with any issues raised during the assessment. It is therefore important that conveyors start discussions with HSE as soon as possible to avoid undue delays. The assessment time starts when the conveyor submits the safety case and not during preliminary discussions.

19. The assessment may involve a number of iterations, including discussions with the conveyor and provision of further information, until such a time that the assessment team has all the information required on which to make decisions on the case. However, despite this process, HSE will give the conveyor written conclusions on the case within the agreed timescales. This could be to accept the case or conclude that the necessary demonstrations have not been made.

20. Where it is possible to complete an assessment earlier than outlined above HSE will agree this with the conveyor e.g... a material revision resulting purely from a company name change may only take a short time to process. HSE monitors whether it is meeting agreed assessment timetables.

Associated Legislation

The Pipelines (Safety) Regulations 1996 [PSR]

21. While GSMR deals with the safe management of the flow of gas through the network, PSR is principally concerned with pipeline integrity and aimed at securing safety in the design, construction, installation, operation, maintenance, and decommissioning of pipelines. They impose general duties in relation to all relevant pipelines and additional duties with regard to major accident hazard pipelines [e.g. for the gas transportation and distribution network, major accident hazard pipelines are defined as those operating at pressures in excess of 7 barg].

22. A GSMR safety case is likely to refer to integrity aspects of the gas network, for example, by referring to British Standards and industry codes.

23. Both PSR and GSMR cover management systems and emergency procedures. However, the management systems and procedures required by PSR are concerned solely with pipeline integrity and the consequences of loss of containment. GSMR, on the other hand, requires that there are systems and procedures in place for preventing supply emergencies and for managing them should they occur.

24. To minimise duplication, those parts of any documents which are prepared under the requirements of PSR, or any other relevant statutory provisions, such as the Control of Major Accident Hazards Regulations 1999 (COMAH), can be referred to in GSMR safety cases.

25. Further guidance on PSR can be found in HSE publication L82 'A guide to the Pipelines Safety Regulations 1996'.

The Gas Act 1995 & Utilities Act 2000

26. The Gas Act 1995 is the enabling legislation, through amendment to the Gas Act 1986, which allows competition in the supply of gas to domestic households in Great Britain. Regulation of the market is principally achieved through a system of licensing operated by the Office of Gas and Electricity Markets (Ofgem) under the Utilities Act 2000. Ofgem issue licences to:

- a) gas transporters [GTs], who operate the pipelines;
- b) gas suppliers, who contract to sell gas to consumers;

c) gas shippers, who arrange for gas to be conveyed by a gas transporter from where it enters the network to where it is to be supplied.

27 Some of the requirements placed on gas conveyors by their gas transporters licence conditions (e.g. they are required by standard conditions of their GT licence to produce a Network Code setting out their transportation arrangements) will have safety implications and may be referred to in the safety case. Gas conveyors should summarise how these will deliver the safety case requirements.

2 RECORDS AND DOCUMENTATION

Introduction

1 This chapter describes the records and documents to be used for assessing safety cases.

Case registration

2 New/revised safety cases, all Exemption requests and 3 year review reports should be sent to:

Gas and Pipelines
Health and Safety Executive
Foundry House 2nd Floor
3 Millsands
Riverside Exchange
Sheffield
S3 8NH

Any queries about submitting a safety case/Exemption report/3 year review reports to HSE or about the details described in this manual can be sent to the address above or emailed to: gsmrscam@hse.gsi.gov.uk (this email address is only used for this purpose)

3. Gas conveyors and the NEC will normally be asked to submit both hard and electronic copies; the number of copies will be agreed by the Case Manager. An electronic copy should be attached to the electronic recording system's assessment record. The other copies will go to the Case Manager and assessment team members as working copies.

4. The Administration Team will create the electronic assessment record, obtain the Unique Reference Number [URN] identified from it and record an entry in the electronic assessment tracking workbook (on the GSMR page); The Administration Team's Job Guide 26 covers these arrangements. The team will set up a case file to contain copies of all correspondence, both internal and external, relating to the safety case, including Issue Notes, Case Notes, the Case Manager's final report, and formal letters of acceptance.

Documents

5 The following documents are used in assessing the case:

- a) Case Notes (CN)/Assessment Records (AR);
- b) Issue Notes (IN)
- c) Standard Letters (SL) which are used for communicating with duty holders and other external parties such as Ofgem (for new safety cases or all Exemptions (refer to chapter 4)).

Assessment Records [AR & Final AR]

6 The basic AR document has two separate uses:

- a) record individual Assessor/Case Manager assessment findings and issues against the assessment criteria [AR]
- b) compilation of agreed final findings and issues [Final AR] where there is more than one assessor inclusive of the Case Manager.

7 The AR template has five sections, corresponding to chapters 6 – 10 of this manual. The Case Manager agrees with each Assessor which sections to complete, i.e. an Assessor may be assigned all, or just nominated, sections. Each Assessor should record their assessment findings on their record against each assessment criterion. The AR template is held on TRIM electronic filing.

8 Where the assessment is undertaken by Assessors as well as the Case Manager, the Case Manager should compile a final version of the AR – the Final AR (which can be just an amended version of the Case Manager's AR) – and send this with the Final Report recommending acceptance or otherwise for the Head of Unit.

9 The Case Manager will track and record progress of any level 2 issues raised with the duty holder, that are due to be resolved post safety case acceptance/review, via the associated electronic intervention plan record.

10 Non material revision changes are reviewed rather than assessed but depending on the nature of the change(s) it can still be useful to use part of the AR template if appropriate.

Case Notes [CN]

11 Assessors should use CNs for recording the outcome of their assessment. CNs and ARs should be notified to the Case Manager and other members of the assessment team. A CN should, as a minimum: include general comments on the adequacy of the safety case; identify specific issues that have not been adequately addressed by the duty holder or where more information is required; indicate the relative importance of the issues identified with regard to accepting the safety case (see severity below); recommend whether or not to accept the case; recommend post assessment inspections topics. The CN should cross refer to the corresponding AR.

12 Chapters 5 – 10 of the manual include guidance and criteria for assessing safety cases that Assessors should use where relevant to the case. Material revisions may be very specific and the use of the general criteria may be inappropriate. Assessors should record their findings against the assessment criteria on the AR and record their assessment outcome on a CN.

13 If there are supporting documents used in assessing the case, these should be attached to the CN.

Issue notes

14 Issue notes are used to confirm to the duty holder matters that need to be resolved before the safety case can be accepted. They should only be raised after discussing the issues with duty holders and agreeing with them actions and, where appropriate, timescales.

15 Issue Notes should be raised by the Case Manager and include those matters raised by individual Assessors via CNs. They will typically raise several separate issues and should give the duty holder an indication of the severity of each of the issues raised.

16 Where comments recorded on the ARs would be helpful to the duty holder's understanding of requirements, e.g. if there are many comments on a first safety case submission, the Case Manager can send a compilation or extract version AR with the Issue Note.

Severity levels

- 17 Each assessor should give the Case Manager an indication of the severity of the matters they raise. Two levels of severity should be used;
- a) severity level 1 - an issue or combination of issues so serious that, if unresolved, would mean that the safety case could not be accepted;
 - b) severity level 2 - for issues that are not crucial to acceptance but which require further information or clarification. This may include matters that can be left until verification inspection and/or non-material amendments to be included in a future version of the safety case if within a year of the current acceptance date.

3 ROLES AND RESPONSIBILITIES

Introduction

- 1 This chapter sets out the stages of assessing a safety case and the roles and responsibilities in the Gas & Pipelines Unit.

Assessment Process

- 2 A safety case is assessed in two stages:

Stage 1

- 3 Stage 1 involves:
- safety case registration carried out by a member of the administration team [AT]. This includes acknowledging receipt of the safety case, creating the electronic assessment record, obtaining the Unique Reference Number [URN] identified from it, recording an entry in the electronic assessment tracking workbook (on the GSMR page) and notifying Ofgem (for new safety cases and all Exemptions (refer to chapter 4)) that the safety case/Exemption request has been received;
 - contents scrutiny carried out by a member of the AT, to check that the case is complete as described in its own contents list;
 - initial screen carried out by the Case Manager. This is an initial read of the case (not an assessment) to determine whether it is generally fit for purpose and contains sufficient information to enable it to proceed to full assessment. Where there is grossly insufficient information, the case will be returned to provide the duty holder with an opportunity to make an improved submission and avoid assessors spending time and effort assessing a safety case which is clearly inadequate or incomplete.
- 4 Stage 1 should normally be completed within 10 working days of receipt of the safety case.

Stage 2

- 5 Stage 2 involves the assessment of the safety case in accordance with Chapter 5 – 10 [although for a material revision only some of the criteria may be applicable, or for one which involves a very specific change, different criteria may need to be developed]. Stage 2 is conducted by a safety case assessment team reporting to the case manager [CM]; however for small or straightforward changes a team of assessors may not be necessary and the Case Manager becomes the sole assessor. The process may involve a number of iterations of assessment, discussions with the duty holder and requests for further information until such time that the assessment team determines that the safety case can be accepted.

- 6 Stage 2 objectives are to:
- identify, clarify and prioritise issues which should be examined further and/or resolved as part of the assessment process;
 - discuss and resolve such issues with the duty holder;

- reach formal agreement on improvements required;
- reach a decision, where possible, to accept the safety case and record why;
- provide reasons, in writing, for rejecting a safety case;
- confirm any level 2 issues to be resolved post safety case acceptance/review
- identify inspection topics.

7 Assessments of new safety cases and of material revisions will normally be completed within 13 weeks (refer to chapter 1).

8 Reviews of non-material revisions will also normally be completed within 13 weeks (refer to chapter 1).

9 Incomplete information from the duty holder, or the assessment of particularly complex new safety cases/material revisions may affect the 13 week assessment timescale (refer to chapter 1).

Administration Team [AT]

10 Admin procedures for processing GSMR safety cases are covered by Job Guide 26 within the Administration Team's Procedures file. The main responsibilities are to:

- receive, register and record the safety case, obtaining a Unique Reference Number [URN] in the process;
- set up hardcopy and electronic case files;
- identify the Case Manager;
- acknowledge receipt of the case and advise Ofgem (for new safety cases and all Exemptions);
- mark each copy of the case with the URN and copy number. Attach an electronic copy to the electronic assessment record;
- carry out the contents scrutiny process, consulting with the Case Manager if necessary. This should be done within 5 days of receiving the case;
- advise the Case Manager whether it has passed the contents scrutiny;
- if the case moves to a stage 2 assessment, send one copy of the case to each assessor;
- update the case file as advised by the Case Manager and assessors. This will include adding case notes, incorporating amendments and further information and keeping appropriate records;
- inform Ofgem of the outcome of the assessment of new safety cases and all Exemptions;
- update the electronic records.

Contents scrutiny

11 The contents of two copies of the safety case should be checked to determine:

- is the case complete (in accordance with its own contents list)?;
- are any pages or attachments missing?;
- are pages correctly numbered and in sequence?

12 The AT should prepare a case note for the Case Manager advising whether the case has passed its contents scrutiny and update the case record of decision.

Non-material revisions

13 There is no requirement to assess non-material changes to a safety case but HSE need to review such changes to confirm that they do not warrant a material change. Sometimes the

conveyor may include, and make reference to, the non-material changes as part of an impending material change submission (or if a 3 year review is due - see below - whichever is soonest) rather than submitting them separately as a non-material revision document. The same electronic assessment record is used for a non-material revision as is used for a new safety case or material revision; Stage 1 of review is broadly similar to assessment but Stage 2 is generally far more simple for a non-material revision. HSE do not charge for reviewing non-material changes unless the changes are deemed to be material.

14 Job Guide 26 covers the administration registration, recording and tracking requirements for a purely non-material safety case change. A reasonable HSE timescale is for the CM to review it within 5 weeks of receipt; this is appropriate for a simple non-material revision but if it is clear at the outset that the review will take longer this will be agreed between the CM and the conveyor but is not expected to take longer than 13 weeks from receipt (refer to chapter 1).

15 The CM and Principal Inspector may not agree with the conclusions of the conveyor and it may be concluded that a material, rather than fully non-material, change is necessary. The AT will take action as directed by the CM and Principal Inspector and record and file any resulting correspondence. The 13 week timescale can either be halted temporarily while the duty holder amends and sends supporting documentation or reset if a revised submission becomes necessary. Working with the Administration Team, the associated documentation/electronic assessment recording and the tracking workbook should be amended to reflect the change from non-material to material revision.

Three-year reviews

16 GSMR requires gas conveyors to make a thorough review of the contents of their accepted case at least once every three years, make a report of the review and send a copy of the report to HSE.

17 When a report required by regulation 9(1)(e) is received, the AT will copy the report to the Case Manager. The duty holder report may comprise one of the following:

- standalone report concluding no change to safety case required;
- report recommending/accompanied by non-material changes to safety case or;
- report recommending/accompanied by material revision of safety case, with or without additional non-material changes

18 The Case Manager will review the report and assess (material) and/or review (non-material) any accompanying safety case changes against the currently accepted safety case to determine agreement or otherwise with the conveyor's conclusions.

19 The CM and Principal Inspector may not agree with the conclusions of the conveyor. For example, it may be concluded that a material, rather than non-material, change is necessary. Working with the Administration Team, the associated documentation/electronic assessment recording and the tracking workbook should be amended to reflect any changes e.g. from non-material to material revision.

20 The Administration Team's Job Guide 26 covers the administration registration, recording and tracking requirements for 3 year review reports and any associated safety case changes. If there are no accompanying safety case changes the expected review timescale for the report is up to five weeks from receipt. The timescales specified in Chapter 1 will apply if there is an accompanying safety case change associated with the 3 year review.

Case Manager [CM]

21 The Principal Inspector heading the Gas and Pipelines team with responsibility for the conveyor submitting the case will nominate the Case Manager, who in the case of existing conveyors will usually be the existing lead lead safety case manager for that conveyor. .

Deciding on the composition of the assessment team

22 The CM will determine the composition of the assessment team, which for a new safety case or significant material change may include a pipelines inspector/gas safety specialist and one or more regulatory specialists. However, the numbers and expertise of the Inspectors on the assessment team will depend on the nature of the case and the topics to be assessed and in some straightforward circumstances e.g. a simple change to the safety case, the CM alone may be sufficient.

Case Manager's main responsibilities

23 The main responsibilities are to:

- carry out an initial screen of the safety case;
- plan the assessment to identify what should be assessed, who the assessment team is and which topics each team member should look at, timescales for assessment and how findings should be recorded.
- ensure assessment is carried out in accordance with the manual;
- ensure that the duty holder is aware that assessment of the safety case is chargeable;
- entering and amending the assessment dates, required and actual, on the electronic assessment record and also attaching/filing all notes and correspondence (other than that handled by the AT as explained above);
- monitor progress against agreed timescales and take corrective measures as appropriate;
- co-ordinate issues raised by assessors for discussion with the duty holder;
- manage formal communications with the duty holder and in particular ensure that any issues affecting acceptance of the case are brought promptly to the duty holder's attention;
- where the assessment is undertaken by a team rather than by the CM alone, compile a Final AR at the end of assessment as agreed with the assessment team;
- prepare a report for the Head of Unit at the end of assessment/review recommending acceptance or not (new safety case or material change) or agreement or not (3 year review report and/or non material revision) and indicating any issues that should be pursued in the planned inspection programme;
- prepare or amend an intervention plan;
- track and record progress of issues raised with the duty holder, that are due to be resolved post safety case acceptance/review, via the associated electronic intervention plan record;
- ensure AT advised of: assessment/review outcome decision (and date) and 3 year review date

Initial Screen by the Case Manager

24 The purpose of this task is to consider whether the safety case contains the minimum information required to make the assessment process viable.

25 The CM should read (not assess) the safety case to determine whether the operator has provided sufficient information to allow assessment to go to Stage 2 and record the outcome in a CN.

Assessment team meetings

26 The CM may decide that a meeting of the assessment team is necessary to discuss and resolve issues. The CM should chair the meeting and ensure the outcome is recorded on a Case Note.

Final Report and Final AR

27 When the CM compiles a final version of the AR the title on the record sheet should be amended to read 'GSMR SAFETY CASE ASSESSMENT – FINAL ASSESSMENT RECORD'. In the header table, 'Assessor' should be changed to 'Case Manager' and 'Team/unit' to 'Team Assessors' and the appropriate names entered.

28 The CM should then prepare a final report recommending acceptance or not. A recommendation to accept should not be made if level 1 issues remain. The report should go to the Head of Unit to make the final decision.

29 Where comments recorded on the Final AR would be helpful to the duty holder's understanding of requirements, e.g. if there are many comments on a first safety case submission, the Case Manager can make this - or an extract - available to the duty holder NB this can also be done at the Issue Note stage as explained earlier.

30 The final report should contain the following details:

- a recommendation to accept or not with brief comments;
- a brief outline of the case;
- a summary of the level 1 issues raised, responses to them, indicating whether they all have been satisfactorily resolved;
- a summary of any issues, and their urgency, to be followed up in post-acceptance intervention.

31 Individual assessor's CNs should be attached to the report, together with the Final AR (and extract version, if applicable).

Tracking of outstanding assessment issues after assessment decision

32 The Case Manager should record progress on all outstanding assessment issues (as raised with the duty holder) via the associated electronic intervention plan record. The issues will be tracked during verification inspection.

Assessor's Responsibilities

33 An Assessor's main responsibilities are to:

- assess parts of the safety case as agreed with the Case Manager in the assessment plan;
- carry out the assessment to agreed time scales and inform the Case Manager of any difficulties in meeting these;
- assess the case/parts of the case allocated against the criteria set out in Chapters 5 – 10, as appropriate, and record findings on an Assessment Record [AR]; ensure the completed AR is accessible electronically to the Case Manager and the rest of the Assessment Team;
- prepare Case Notes [CN] and send copies to the Case Manager and other assessors; if a CN cross-refers to a corresponding AR clarify where it can be found;
- make recommendations as whether the case can be accepted. Individual assessors are responsible for accepting the duty holder's response to issues raised during assessment;
- participate in internal assessment team meetings and external meetings with duty holders on issues raised as required;

- identify inspection topics.

Head of Unit Responsibilities

34 The Head of the Gas & Pipelines Unit has line management responsibility for the assessment team(s) and makes the final decision on acceptance based on the advice of the Case Manager. The authority to accept, or reject, a safety case is delegated to the Head of Unit by the Executive.

35 The Head of Unit is responsible for ensuring that an appropriate audit system is in place so that the assessment process can be monitored.

36 If an appeal against non-acceptance of a safety case or Exemption request is made to the Executive, the Head of Unit will represent HID in accordance with requirements of the appeal procedures.

37 The Head of Unit is responsible for ensuring that this manual is reviewed and revised; this includes:

- making arrangements for a controlled document in the form of a HID Permanent Manual to be made available on the internet and intranet;
- reviewing and updating the content;
- responding to queries from users of the manual;
- consulting within HSE and with other users of the manual in the event of major changes;
- ensuring HSE users of the manual are informed of changes to the manual and arranging training as required;
- representing the Unit in any formal review of safety case / permissioning regimes used by HSE.

Arrangements for an appeal against rejection of a safety case

Commencing appeal procedures

38 Where a safety case has been rejected, the duty holder may appeal to the Executive for the decision to be reviewed.

39 The appeal should be made in writing to the Director General within 21 calendar days of receipt of the letter of rejection. This written notice of appeal should:

- summarise the reasons for making the appeal;
- include views or opinions and any supporting documentation obtained from third party experts;
- indicate whether the appellant wishes to make personal representations to the Executive; and, if so, the name(s) of the persons who will be attending the review meeting.

Actions prior to the review meeting

- 40 Where an appeal is made, the Executive should normally:
- respond within 10 days suggesting the date, time and place of the review meeting and informing the appellant which of its team will be attending;
 - hold the review meeting within 21 calendar days of receipt of the written notice of appeal;
 - determine whether the further information provided materially affects the original decision to reject the safety case; and
 - advise the appellant and ask them to clarify matters raised in the written notice of appeal.

The Review Meeting

- 41 The review meeting should be conducted in accordance with the following guidelines:
- the Executive will normally allocate up to a half day for the review meeting, although this may be extended in appropriate cases;
 - the quorum for the review meeting will be two of the members of the Executive, assisted by the HSE Solicitor;
 - the conduct of the meeting will be informal but a written record will be made;
 - the appellant will be asked to present their case against rejection based on the information previously provided with the notice of appeal, followed by questions from members of the Executive;
 - the Executive will indicate when the appellant can expect to receive their decision. This will normally be within 14 days of the review meeting.

42 Where an appellant does not wish to attend a review meeting the Executive will inform the appellant of the Executive's decision within 28 days of the receipt of the appeal notice.

43 The Case Manager should inform Ofgem in writing that an appeal has been made and advise them of the outcome.

Arrangements for Peer Review

44 Peer review is an important part of ensuring that the Gas & Pipelines Unit maintains standards and should provide the Head of Unit with assurance that the arrangements are being carried out in accordance with the Manual.

45 As the number of safety cases submitted is now small, a recently assessed safety case should be identified and peer reviewed periodically as deemed appropriate by the Head of Unit. A guideline interval is 3 years.

- 46 The peer review team should comprise:
- a Principal Inspector from the Unit who did not act as Case Manager or Assessor for the safety case;
 - a pipeline specialist who was not involved in the assessment of the safety case; and
 - a member of Admin Staff to act as secretary, if appropriate.

Special Peer Reviews

47 This review is used to provide independent input on a specific case where there is uncertainty about accepting a safety case or not, or where there is a difference of views about a decision.

Resolving Disputes

- 48 A difference of view or a dispute could arise when:
- an Assessor disagrees with the Case Manager on the recommendation to accept or reject a safety case; or
 - an Assessor or a Case Manager disagrees with the Head of Unit on the final decision to accept or reject a recommendation.

49 Every effort should be made to resolve disputes. However, for those instances where it has not been possible to achieve consensus, then the arrangements described below should be followed.

50 The essential elements that result in a difference of view or a dispute should be clearly identified and agreed between the parties involved. These elements should be formally recorded on a Case Note in sufficient detail to explain the difference of view or dispute.

51 The procedure to resolve differences of view or a dispute should take the following path:

- Case Manager arranges a formal meeting of the Assessment Team to consider the issue(s) with a view to resolving them;
- A peer review with a team comprising members not involved with original assessment is held;
- Raise to Head of Unit level to resolve. However, this may not be appropriate where a difference of view exists between the Case Manager and Head of Unit.
- Raise to Energy Division Head of Division level to resolve issues involving differences of view between Head of Unit and others.

52 Notes should be taken to record the main points of the discussion and any decisions made.

53 The Case Manager shall make a full record on a Case Note, agreed by the parties involved, of the process followed to resolve the problem and the decisions reached. The Case Manager's final report should include a summary of the issue(s), the problems and the final outcome.

Audits

54 Auditing the process of GSMR safety case assessment is an important part of demonstrating that the Gas & Pipelines Unit:

- ensures that the regulations are being enforced properly;
- maintains high standards of decision-making;
- has comprehensive records of the decision-making process which are transparent;
- adopts a fair, reasonable and consistent approach with all gas conveyors;
- is actively monitoring the arrangements and procedures with a view to introducing necessary improvements.

55 The Head of Unit may arrange for an audit of all or any part of the safety case handling and assessment process over and above any peer review arrangements.

56 The small number of safety cases and duty holders suggests that audits/internal reviews should be carried out periodically to a timescale deemed appropriate by the Head of Unit. A guideline interval is every 3 - 5 years. Where possible, audits should be planned to coincide with major reviews or audits of permissioning regimes within HSE or after significant changes to the GSMR regulations or requirements have been made.

4 EXEMPTIONS

Introduction

1 Regulation 11 of GSMR enables HSE to exempt duty holders from any of the requirements or prohibitions imposed by the Regulations if it is satisfied that the health and safety of persons likely to be affected by the exemption will not be prejudiced in consequence of it. Duty holders may also request to be exempted from certain of the requirements of GSMR (such as the duty to produce a safety case) while still having to comply with other parts of GSMR.

2 On receipt of such a request the Case Manager and Assessors will determine:

- whether or not the operation described by the duty holder is suitable for exemption;
- whether or not the information provided by the duty holder is sufficient to demonstrate that the risks arising from the operation are adequately controlled and that an exemption certificate can be issued without compromising safety standards.

3 HSE Gas and Pipelines has a long established procedure for processing GSMR exemption requests but where:

- a new type of GSMR exemption request is received that would set a precedent;

- the request has wider political or GB-wide implications;
- the request has significant cross industry issues or;
- the request has other unusually sensitive issues;

the Case Manager should raise this with the Head of Unit. They should then refer to HSE's generic Exemptions granting procedures to ensure that HSE responsibilities in respect of processing the request and arranging any consultation are assigned correctly.

4. A request for exemption is usually submitted as a report which for clarity and ease of assessment may use the same headings and basic content as a standard safety case. The duty holder needs to explain how the aspects that would have normally been covered in a safety case, but for which exemption is requested, are covered adequately elsewhere in their safety management system. Crucially, arrangements to safely discontinue and restore gas supplies, currently part of safety case requirements, would still need to be covered as if they were written into the general body of GSMR. General HSWA responsibilities and PSR duties still apply in full (with duties to design properly and install and maintain pipes).

5 The process of assessing a request for an exemption is essentially no different than for assessing a safety case, including charging for assessment at the applicable GSMR chargeable rate, and the arrangements described elsewhere in this manual should be followed. The expected assessment timescale is within 13 weeks from receipt. However, there are some specific aspects for dealing with requests for an exemption that differ and these are covered below. The Case Manager should decide if it is appropriate to use ARs on a case by case basis.

Retention of and amendments to existing exemption certificates

6 The onus is on the duty holder to retain exemptions issued to them by HSE together with any associated documentation produced and held by the duty holder (e.g. exemption request report). The duty holder should also review the validity of the basis of those exemptions periodically in line with their changing assets and the conditions under which they operate their network. Where a duty holder cannot find its original exemption certificate(s) and request details they will, unless agreed otherwise with HSE (e.g. if HSE hold a copy), need to submit a new exemption request.

7 If the basis under which an exemption has been granted changes the onus is on the duty holder to contact HSE in order for HSE to discuss and assess the impact of the change:

- if the exemption remains valid and no amendment is required to the certificate HSE should confirm in writing that the exemption remains valid. This should come from the Head of Unit after a recommendation memo by the Case Manager.
- if the exemption remains valid but amendment is required to the certificate e.g. another section of named pipe, HSE should confirm in writing that the exemption remains valid but that the certificate will be amended and reissued. This should come from the Head of Unit after a recommendation memo by the Case Manager.
- If a change would critically affect the wording on the certificate the duty holder will, unless agreed otherwise, need to re-apply formally for an amended exemption.

8 Where an existing exemption certificate has to be amended in any way then HSE, once the amendment has been agreed, should revoke the whole certificate and issue a new one. The Case Manager will agree the extent to which the information submitted under the previous exemption remains valid and any new arrangements thus ensuring HSE have sufficient information through the exemption process to issue a new certificate in the usual manner.

9 If HSE becomes aware of changes to a duty holder's arrangements that might affect the status of an exemption already held by them, HSE will inform that duty holder that they are responsible for reviewing their arrangements and deciding whether their existing exemption remains valid or whether further evidence in support of a new exemption is required. Where

required HSE will then discuss with the duty holder the timescale for the submission of that further evidence.

Status of existing exemptions upon change of GSMR duty holder

10 Clarification is given here regarding the implications of a change of GSMR duty holder on the status of any existing GSMR exemptions granted by HSE to the previous duty holder. Given the change in legal ownership the exemption certificate will not automatically transfer. NB Where the existing particular exemption does not exempt the duty holder from having to submit a safety case, it should be noted that a change of ownership constitutes a Material Change to their safety case.

11 The onus is on the new duty holder to ensure they have obtained full information from the previous duty holder (ideally prior to sale) to ensure they know the background to the exemption request. The new duty holder is also required to contact HSE in order to re-apply for an exemption in their own right.

12 Experience has shown that several different scenarios can be associated with a change of ownership. As such any particular exemption will need to be judged on a case by case basis in line with the usual GSMR exemption procedures described in this chapter but key scenarios are described below:

- a) Change of company name only; the Safety Management System (SMS) and basis for exemption remains unchanged.
 - Case Manager should ask the new duty holder to write to us explaining this fact and confirming management systems remain unchanged and meet the appropriate standards expected. HSE can then re-issue the new exemption certificate – and revoke the old - and can verify standards via future inspection.
- b) Change of name and SMS arrangements and/or basis for exemption - either initially or planned in future
 - The duty holder must re-apply for exemption.
 - Through discussions with the new duty holder the Case Manager will agree the extent to which the information submitted under the previous exemption remains valid and any new arrangements thus ensuring HSE have sufficient information through the exemption process to issue a new certificate in the usual manner. The old certificate is to be revoked.

Content of the Final Report

13 The Case Manager prepares a final report and includes a recommendation for exemption or not. A recommendation to exempt should not be made if severity level 1 issues remain unresolved.

- 14 The report should contain the following:
- a recommendation on acceptance with brief comments;
 - a brief outline of the case for exemption;
 - a summary of the level 1 and 2 issues raised, responses to them, indicating whether they all have been satisfactorily resolved;
 - a summary of any issues, and their urgency, to be followed up in post-acceptance intervention. Agreed action programmes and time scales should be included.

Head of Unit Responsibilities

15 The Head of Unit reviews the recommendation to issue a certificate based on the advice of the Case Manager. The authority to accept or reject an exemption is delegated to the Head of the Unit by the Executive.

Appeals

16 If an appeal against the decision not to issue an exemption certificate is made to the Executive, the appeal procedures in Chapter 3 - Roles and Responsibilities, should be followed.

5 ASSESSMENT CRITERIA AND GUIDANCE

Introduction

1 The purpose of this chapter is to provide assessors with guidance on accepting a safety case. It also provides transparency to duty holders about the standards HSE uses and promotes consistency in the judgments made in the assessment process.

2 Assessment is not an exhaustive analysis of every detail and argument presented in a safety case. Rather, it should be an objective examination to determine whether HSE can be confident that the duty holder has an adequate understanding of their responsibilities under the GSMR and has in place arrangements to manage their operation safely.

3 At the end of the assessment process a decision will be made on whether to recommend acceptance of the safety case. A recommendation to accept a safety case will only be made when the team is satisfied that the safety case meets the criteria specified in Chapters 5 to 10 (or 5 and 11 in the case of a small network) of this manual and in the guidance on the Regulations where relevant.

4 Assessment is an iterative process and duty holders should be given sufficient opportunity to address concerns raised before a case is rejected.

5 The accepted case forms the basis for the future intervention programme, with priority being given to those issues identified as being most critical to the safe operation of the network. It is important, therefore, that during the assessment process assessors should be alert to issues which are best resolved after the case has been accepted. Such issues should be clearly identified, with an indication of their priority, in an appropriate Case Note.

HSE's Assessment Principles

6 The HSE's aims in carrying out assessments are based on the following principles. The duty to comply with GSMR remains with the gas conveyor and no conclusions reached following assessment diminishes that duty.

7 The process of assessment is to establish that the conveyor has met the requirements of the regulations and, as far as can be reasonably determined from the report, within the time scale and scope of the assessment, that the operator has taken appropriate action to minimise the risks.

Assessment is a structured process by which HSE examines the adequacy of the safety case against the requirements in GSMR Schedule 1.

8 HSE should determine whether conveyors have complied with their statutory obligations and in particular whether the safety report:

- contains sufficient information;
- makes the demonstrations required;
- enables HSE to identify whether there are any serious deficiencies.

Risks should be controlled so far as is reasonably practicable [SFARP]

9 HSE expects risks to be avoided or reduced at source. Where risks remain, they should be reduced SFARP in accordance with HSE's published policy.

Assessment is part of an overall enforcement strategy for gas conveyors.

10 The assessment of a safety case should not be seen as an isolated or 'one-off' process. It is part of a cycle. Information gained from assessing the safety report is used to inform the inspection plan for a conveyor's network.

Conclusions about the safety case will be based on the evidence in the case and any further information provided against the assessment criteria.

11 Assessment is a test of the evidence not the activity. The purpose of assessment is to examine the evidence presented in the safety case.

The conclusions of an assessment can be based on an assessment of selected elements of the safety case.

12 HSE will target its resources to ensure that it assesses reports effectively and in a reasonable period of time. To achieve this, HSE may not examine every element of every safety case. The assessment team may recommend accepting the safety case before every issue is fully resolved. However, this does not preclude Inspectors requiring improvements were later found necessary and in accordance with HSE's enforcement policy.

The contents of the safety case will be subject to further scrutiny as part of an ongoing inspection programme.

13 Verifying that the arrangements described in the case are operating in practice will be an important part of the post-acceptance inspection work.

The assessment guidance provides a framework within which inspectors can apply discretion.

Acceptability Criteria and Standards

Demonstrations

14 Many of the paragraphs of GSMR Schedule 1 require the operator to 'demonstrate' safety arrangements in the safety case. For the purposes of a GSMR safety case, 'demonstrate' means 'show', 'justify' or 'make the case/argument' by the information given in the safety case. Demonstration generally involves a higher standard than simply describing the way measures work or are expected to work, and entails the duty holder doing more by providing at least some evidence that the measures described work in practice or that the duty holder monitors to ensure they happen and work.

15 The assessment of the safety case and whether or not the demonstrations required by the appropriate paragraphs of GSMR Schedule 1 are made will be based on a prima facie assessment of the information provided in the safety case; the assessors will only be able to give credit for measures and arrangements that are given in the safety case, and not for anything that they may know from previous experience of dealing with the network operator.

16 In making demonstrations the aim should be to provide all the relevant information in the safety case document. However, where reference is made to company documents, manuals or standards to explain the arrangements in place it may not be practicable to include them; in such cases it is good practice to summarise what the referenced document deals with or aims to achieve. In some cases it may be possible to include a typical example as a reference, perhaps in an attachments section.

17 The standard of demonstration required should be proportionate to the requirements of Schedule 1 of GSMR. Writing and assessing a safety case does not provide proof beyond doubt that safety arrangements will always work, but the assessor will consider whether the duty holder has made a sufficient case that the necessary measures are in place and that the management arrangements can support and maintain these measures.

18 As part of the assessment, the assessor will highlight various key matters dealt with in the safety case that will be the subject of post-assessment verification, so that inspections can be carried out to verify the arrangements claimed in the safety case.
Guidance on acceptability criteria and standards

19 HSE's published Guidance Booklet L80; 'A guide to the Gas Safety (Management) Regulations 1996' contains guidance on the standards expected in safety cases. However, to reflect changes in the industry structure and HSE's permissioning regime, additional criteria and guidance have been updated in this manual.

20 The criteria can now be found in Chapters 5 – 10 and include;
Descriptive and Technical Aspects
(GSMR Schedule 1 paragraph 1, 2, 3, 4a)
Safety Management Systems
(GSMR Schedule 1 paragraph 4b, 5, 6, 7, 8, 9, 10, 11, 14)
Minimising Risk of Supply Emergencies & Gas Quality
(GSMR Schedule 1 paragraph 12, 15, 16, 17)
Response to Emergencies
(GSMR Schedule 1 paragraph 13, 18, 19, 20, 21)
Human Factors
(Applies to most paragraphs).

21 For smaller GSMR networks, where the depth of detail required is not as great, Chapter 11 provides guidance and criteria. The AR may still be a useful means of capturing assessment findings. The Case Manager should decide if it is appropriate to use them, in whole or part, during the assessment process on a case by case basis.

Material Changes to Safety Cases

22 It is for the duty holder, in the first instance, to determine whether or not a change to the arrangements or procedures described in an accepted safety case is material or non-material. While HSE can provide advice, it cannot make the decision on behalf of the duty holder.

23 Where a duty holder proposes changes in its arrangements or procedures that are material, these changes to the safety case must be accepted before the change is made.

24 Regulation 5(1) of GSMR requires conveyors to follow the procedures and arrangements described in their safety case and revision of it. Therefore, when a revision is accepted, the conveyor will be expected to implement the new arrangements as soon as possible or to a defined 'live' date agreed with HSE e.g. an industry Code implementation date.

25 Material changes should be assessed according to the general assessment principles and by reference to the appropriate criteria.

Three Year Reviews and non-Material Revisions

26 Regulation 4(3) of GSMR requires the duty holder to conduct a thorough review of the contents of its accepted safety case at least once every three years. Regulation 9(1) (e) requires a report of the outcome of the review to be sent to HSE.

27 The main purpose of the review is to ensure that gas conveyors re-examine the entire contents of the safety case at regular intervals. The report should set out the conclusions reached and identify any changes to the safety case considered necessary.

28 As a result of the review, the conveyor may determine a need to revise an accepted safety case. Where this revision is non-material, a copy of the revised safety case should accompany the report submitted under 9(1)(e)

29 The three-year period between reports shall be deemed to have started either from the date that the safety case is originally accepted, or from the date of the last thorough review, whichever is later.

30 As a result of the review the duty holder may draw one of three conclusions:

- the accepted safety case is current without the need for revision;
- the accepted safety case needs to be revised although the revisions are non-material;
- the accepted safety case needs to be revised and the revisions are material, with or without additional non material changes.

31 Where the duty holder has concluded that the accepted safety case requires either no revision or a non-material revision the Case Manager should review the report and confirm whether or not the conclusions reached by the duty holder are appropriate. If the Case Manager is content with the conclusions this should be confirmed to the duty holder in writing. The administration team should be advised so that the Central Register can be updated to reflect the completion of a three-year review.

32 If the Case Manager does not agree with the duty holder's conclusions, the duty holder should be advised in writing.

6 DESCRIPTIVE & TECHNICAL ASSESSMENT

Introduction

1 This Chapter covers criteria and guidance for assessing GSMR Schedule 1, paragraphs 1, 2, 3 and 4a, namely:

- Name and address of duty holder;
- A description of the operation;
- A description of the plant and premises;
- Particulars of any technical specifications.

2 The particulars required by paragraph 1 to 3 of Schedule 1 are intended to provide the essential factual, or background, information about the conveyor which HSE needs in order properly to assess the safety case. The person conveying gas in a network, or network operator, is referred to in the Schedule as the duty holder.

Paragraph 1

Schedule 1, paragraph 1: Name and address of the person preparing the safety case (in this Schedule referred to as "the duty holder").

Refs: GSMR guidance L80, paragraph 91.

Criterion 1.1: The SC should provide the above information.

Paragraph 2

Schedule 1, paragraph 2: A description of the operation intended to be undertaken by the duty holder

Refs: GSMR guidance L80, paragraphs 92 – 95.

Criterion 2.1: The description of the operation should cover all operational characteristics to identify risks and to provide an explanation of the organisational arrangements. It is acceptable to provide a high-level summary with references to supporting documents.

- 3 The description of the operation should cover all operational characteristics to identify risks and to provide an explanation of the organisational arrangements. Depending on the nature of the operation this should include such information as:
- a) the purpose of the pipeline;
 - b) the total length of the different types of pipeline in that part of the network;
 - c) volumes of gas likely to be conveyed through the pipelines, the pressure band at which the pipeline is designed to operate (e.g. high pressure above 7 barg), an indication of the location of interruptible consumers, and other large consumers;
 - d) capacity constraints of the pipelines.

Paragraph 3

Schedule 1, paragraph 3: A general description of the plant and premises the duty holder intends to use...in particular the geographical location where any pipes he uses join pipes used by other persons for conveying gas.

Refs: GSMR guidance L80, paragraph 93 – 95

Criterion 3.1: The safety case should provide an overview description of the duty holder's plant and premises, including information to delineate the boundaries of his operation and critical facilities such as control rooms.

- 4 The description should where feasible be supported by overview plans or diagrams which clearly delineate geographical boundaries. Where provided, plans or diagrams should be drawn to a suitable scale for the easy identification of the key features of the undertaking associated with the safe management of the flow of gas.

Criterion 3.2: The location of safety critical plant and equipment, terminal and storage facilities (on and offshore as appropriate) and interfaces with other pipelines and storage systems should be provided.

- 5 Where such interfaces are identified, the names of the operators should be provided.

Criterion 3.3: The safety case should provide details of the control centres established to ensure the safe flow of gas, their geographical location and the boundaries of their areas.

Criterion 3.4: The means of communication between such control centres and

- a) terminal and storage operators;
 - b) other pipeline operators having interfaces with the gas conveyor producing the safety case;
- should be provided.

Paragraph 4a

Schedule 1, paragraph 4a: Particulars of any technical specification

Refs: GSMR guidance L80, paragraph 96 – 97.

Criterion 4a.1: The safety case should give an overview of the technical specification and standards (internal specifications or recognised standards such as BSI, IGE Recommendations). References to specific standards or documents will be acceptable if the duty holder chooses, rather than including full specific details in the safety case.

- 6 Technical specifications or standards need to be restricted to those concerned with the reliability of safety critical plant and 'software' e.g. management of the safe flow of gas or provision of an effective emergency response service. The use of the term 'software' refers to the

management and control arrangements duty holders have in place including appropriate quality management standards. The safety case needs to include an adequate explanation of how these standards and specifications are implemented and complied with.

7 SAFETY MANAGEMENT SYSTEMS ASSESSMENT

Introduction

1 This Chapter covers criteria and guidance for assessing GSMR Schedule 1, paragraphs 4(b), 5, 6, 7, 8, 9, 10, 11 and 14, namely:

- Procedures or arrangements relating to operation and maintenance;
- Risk assessment;
- Safety management;
- Employee competence;
- Contractors
- Arrangements for passing information within the organisation;
- Arrangements for passing and receiving information from other persons;
- Audit arrangements;
- Compliance with regulation 7.

Paragraph 4(b) - Procedures or arrangements relating to operation and maintenance

Schedule 1, paragraph 4(b): Particulars of any procedures or arrangements relating to operation and maintenance which the duty holder intends to follow in connection with the operation he intends to undertake insofar as they affect the health and safety of persons.

Refs: GSMR guidance L80, paragraphs 86-90, 98.

2 The duty holder should show that his operation and maintenance procedures will control the risks from gas being conveyed in the network. The safety case should describe and reference these procedures, including those parts of any documents required under the Pipelines Safety Regulations 1996 that are relevant to duties under GSMR.

3 In addition to the general requirements of paragraph 4(b), criteria 4b.10 – 4b.14 cover the requirements for demonstrating the adequacy of the iron mains replacement programme.

Criterion 4b.1: The SC should give particulars of how the safe flow of gas through duty holder's network is managed.

Criterion 4b.2: Particulars should be given of the operation of associated plant where this may affect safe flow of gas through the network.

Criterion 4b.3: Particulars should be given of how safety inspections & planned preventative maintenance could affect the flow of gas (including closing parts of network).

Criterion 4b.4: The SC should describe how the flow of gas is maintained in event of plant breakdown.

Criterion 4b.5: Particulars should be given of how planned & unplanned maintenance will be communicated to others who may be affected.

Criterion 4b.6: Particulars should be given of how reported leaks (upstream & downstream) and reports of CO emission are dealt with.

Criterion 4b.7: The SC should describe the management & operation of interfaces with other gas conveyors.

Criterion 4b.8: Particulars should be given of audit arrangements, which relate to operation and maintenance.

Criterion 4b.9: Particulars should be given of how the duty holder liaises with enforcing authorities & emergency services.

Criteria 4b.10 – 4b.14 are for demonstrating the adequacy of the mains replacement programme.

Overview

4 The duty holder should demonstrate robust arrangements for managing the Mains Replacement Programme for iron gas mains. The requirement in GSMR to cover this in safety cases is derived from several paragraphs of GSMR Schedule 1. Paragraph 4 (procedures or arrangements relating to operations and maintenance) is a key requirement, but paragraph 5 (concerning risk assessment, which the replacement programme is based on) and 6 (demonstration of compliance with relevant statutory provisions, which includes the Pipeline Safety Regulations recently amended to include approval of mains replacement programmes) are also relevant.

Criterion 4b.10: The safety case should set out the gas conveyor's policies and procedures for implementing and managing a mains replacement programme to meet the objectives of HSE's enforcement policy (www.hse.gov.uk/gas/supply/mainsreplacement/irongasmain.htm) for the replacement of iron gas mains. The safety case should describe the processes used to generate the mains replacement programme.

5 The gas conveyor's policy underpinning the mains replacement programme should be referenced in the safety case. Likewise, the procedures by which the policy will be implemented should be outlined. Company documents can be referenced, and it is not necessary for the detailed content to be reproduced in the safety case, but their content should be summarised. The policy and procedures should demonstrate the link to the requirements of HSE's Enforcement Policy for Replacement of Iron Gas Mains.

6 The safety case should describe the processes on which mains replacement programmes have been based. The ownership of the models, and the arrangements for their use and application in planning mains replacement within the network for which the duty holder is submitting the safety case, should be explained.

Criterion 4b.11: The safety case should detail the arrangements for ensuring that the models are based on industry best practice and kept up to date. This should include the arrangements for sharing between distribution network operators the key information used to update the mains replacement model including new data on individual and generic repairs and topographical survey data. The arrangements for prioritisation of the pipelines marked for replacement should be part of the approved plan.

7 The safety case should include details of how the models are kept up to date. The key information used to update the mains replacement model covers the mains abandoned (decommissioned) and replaced, fracture and corrosion experience, and topological survey data.

Criterion 4b.12: The main details of how the current and future network mains replacement programme are communicated to the HSE should be given, including the numbers/length per year, location, and scheduled timing in accordance with the approved programme

8 The 2003 Amendment to the Pipeline Safety Regulations provided for approval by HSE of annual mains replacement programmes for iron mains under Regulation 13A, see 'A Guide to Regulation 13A of the Pipelines Safety Regulations 1996', (www.hse.gov.uk/gas/supply/13a.pdf). The safety case does not need to repeat the full details of the programme under the PSR Amendment, but the main elements of the programme current at the time of producing the network's safety case should be included in the safety case. A commitment to the planned 5-year projected totals for mains replacement in the network(s) operated by the duty holder should be included in the Safety Case

Criterion 4b.13: The safety case should make a commitment to reduce incidents or risk of incidents as a result of completion of the overall mains replacement programme, with details of the progressive achievement of the programme being provided by the annual PSR programme.

9 The safety case should state the intention of reducing the number of incidents attributable to cast iron mains within 30 metres of buildings to zero over the life of the 30 year programme, and demonstrate the intention of arriving at this point by reference to the decommissioning programme. Where possible, an assessment of the reduction of risk on a year-on-year basis should be given.

Criterion 4b.14: The arrangements for monitoring and reporting progress with the completion of mains replacement programmes should be given.

10 Currently, reporting on mains replacement progress is carried out on a quarterly and annual basis. Sufficient detail of the arrangements should be given in the safety case to enable a view to be formed that adequate information will be provided so that HSE can:

- a) get assurance that operational programme targets are being met in line with the objectives of the replacement programme; and
- b) form a more strategic longer-term overview of the ongoing effectiveness of the 30-year replacement programme.

11 Evidence could be provided of the network operator's routine management and monitoring systems for their own programmes where these apply to mains replacement.

12 Full details of the benchmark position for monitoring and progress reporting, including HSE requirements for information to monitor performance, are given in the paper 'Monitoring and reporting of Distribution Networks' Mains Replacement Programmes 2006-2013' (www.hse.gov.uk/gas/supply/mainsreplacement/monitoring.htm)

Paragraph 5 - Risk assessment

Schedule 1, paragraph 5: A statement of the significant findings of the risk assessment he has made pursuant to regulation 3 of the Management of Health and Safety at Work Regulations 1999, and particulars of the arrangements he has made in accordance with regulation 5(1) thereof.

Refs: GSMR guidance L80, paragraphs 99-103.

Criterion 5.1: The safety case should describe the significant findings and arrangements insofar as they relate to risk from the gas itself. All foreseeable events should be identified. Where this information, or part of it, is given elsewhere in the safety case it should be cross-referenced.

Criterion 5.2: Particulars of the risk assessment and the required preventive measures included for the safe management of flow of gas should be given.

Criterion 5.3: The SC should describe the significant findings and the required preventive measures relating to the provision of an emergency response service.

Criterion 5.4: The significant findings should identify foreseeable events & take into account those identified in the NEC's safety case under paragraph 3[a] of Schedule 2 (high consequence, low frequency events such as supply emergencies, major leaks etc.).

13 The significant findings should cover normal operations; operations during planned maintenance; planned changes from the norm; and foreseeable supply emergencies or other abnormal events

Criterion 5.5: The arrangements for periodic review and, if necessary, modification of the risk assessment and consequential amendments of the safety case should be set out. Intervals between reviews should be appropriate in view of the nature of the hazards and degree of risk that a change in operations may produce.

Criterion 5.6: The SC should indicate the form in which detailed procedures and protective measures are documented and the arrangements for making them available to managers, supervisors, other employees, safety reps & safety committees.

Criterion 5.7: The risk assessment should demonstrate that Human Factors have been considered. The assessment should specifically include change management programmes, as well as the factors that influence the matching of employee numbers and skills to organisational needs so as to avoid overload.

Paragraph 6 – Safety management

Schedule 1, paragraph 6: Particulars to demonstrate that the management system of the duty holder is adequate to ensure that the relevant statutory provisions will (in respect of matters within his control) be complied with in relation to the operation he intends to undertake.
Refs: GSMR guidance L80, paragraphs 104-108.

14 The safety management system (SMS) is designed to ensure compliance with the relevant statutory provisions insofar as they relate to risks from gas in the network. The monitoring arrangements should be designed to identify whether the SMS will achieve this end.

15 The duty holder's overall SMS will also deal with general H&S issues but the only relevant aspects for the SC are those relating to the risk from the gas itself.

Criterion 6.1: The SC should demonstrate that the management system is capable of controlling the safe flow of gas in the network.

Criterion 6.2: The SC should demonstrate effective monitoring of appropriate health & safety performance objectives in relation to the management of the safe flow of gas.

Criterion 6.3: The SC should demonstrate effective monitoring of [health &] safety performance objectives in relation to the provision of an effective emergency service.

Criterion 6.4: The SC should explain how other documentation and procedures will be updated in light of lessons learned and changes to other documents such as the risk assessment, Network Code, local operating procedures, etc.

Criterion 6.5: The SC should be clear how monitoring is to be carried out by suitable, competent personnel at prescribed intervals. Managers should be made responsible for monitoring compliance with standards for which they are responsible.

Paragraph 7 – Employee competence

Schedule 1, paragraph 7: Particulars to demonstrate that the duty holder has established adequate arrangements for ensuring the competence of his employees in health and safety matters

Refs: GSMR guidance L80, paragraphs 109-111

16 This section should demonstrate that the duty holder has arrangements in place to identify the essential competence requirements of his employees; that staff are provided with adequate information, instruction and training; and that staff are competent to do the jobs allocated to them.

Criterion 7.1: The SC should demonstrate that the essential competence requirements have been identified.

17 The requirements for competence, and the means of acquiring it (including, where appropriate, specifying standards of training or qualifications) should be determined in the light of an appropriate risk assessment.

Criterion 7.2: The duty holder should demonstrate that the operator has in place a system for providing and maintaining appropriate levels of management and employee competence in health and safety matters.

Criterion 7.3: The SC should show that the demands of a task do not exceed an individual's ability to carry it out such that risks to the health and safety of himself or others are created.

Criterion 7.4: The SC should make it clear that competence requirements need to be taken into account where a change in the nature of the work is proposed.

Criterion 7.5: The SC should describe the general arrangements to ensure that employees are competent 'as regards the safe management of the flow of gas, and in providing an effective emergency response service'.

Paragraph 8 - Contractors

Schedule 1, paragraph 8: Particulars to demonstrate that the duty holder has established adequate arrangements for managing work carried out by persons who are not his employees on or in relation to plant or premises which he owns or controls.

Refs: GSMR guidance L80, paragraph 112

18 The safety case should describe the arrangements for managing work, which has been contracted out in so far as the arrangements cover the safe management of the flow of gas, or provision of an effective emergency response service.

Criterion 8.1: The SC should describe the policy and arrangements for the use of contractors.

Criterion 8.2: The SC should demonstrate adequate arrangements to ensure that contractors have a management system which is capable of meeting safety objectives and consistent with the duty holder's system.

Criterion 8.3: The SC should demonstrate a clear definition of division of responsibility between the duty holder & contractor for aspects of safety management.

Criterion 8.4: The SC should demonstrate adequate arrangements to ensure that contractors draw up and follow safe systems of work, which include the provision, and use of suitable plant & equipment.

Criterion 8.5: The SC should demonstrate adequate arrangements to ensure that adequate supervision is provided where necessary.

Criterion 8.6: The SC should demonstrate adequate arrangements for selecting contractors that have the necessary levels of qualification and competence for the work to be undertaken.

Criterion 8.7: The SC should demonstrate adequate arrangements for monitoring the performance and standards of contractors in so far as this relates to risks from the gas itself. Evidence should be given that the monitoring is carried out in practice.

Criterion 8.8: The procedures described should cover the full range of contracted work, including sub-contract arrangements and how these are monitored, as well as direct contract arrangements.

Paragraph 9 - Arrangements for passing information within the organisation

Schedule 1, Paragraph 9: Particulars to demonstrate that the duty holder has established adequate arrangements for passing information relevant to health and safety to persons within his undertaking.

Refs: GSMR guidance L80, paragraphs 113-115.

Criterion 9.1: The safety case should demonstrate that adequate arrangements exist for passing health and safety information relating to risks from the gas itself up and down the management chain, and that appropriate action is taken as a result.

Criterion 9.2: The SC should demonstrate adequate arrangements for the provision of sufficient information to enable the safe management of the flow of gas on that part of the network.

Criterion 9.3: The SC should demonstrate adequate arrangements for the provision of sufficient information for dealing with supply emergencies on that part of the network.

Criterion 9.4: The SC should demonstrate adequate arrangements for the provision of sufficient information for dealing with gas escapes on that part of the network.

Criterion 9.5: The SC should describe the arrangements for ensuring the upward flow of information from staff concerning serious and immediate danger, or of any manifest shortcomings in the employer's arrangements.

Criterion 9.6: The SC should give details of the systems, including IT systems, which are in place to enable necessary flow of information to employers and others who may need it to maintain the management of the safe flow of gas and prevent a supply emergency.

Criterion 9.7: The SC should give details of the systems, including IT systems, which are in place to enable necessary flow of information to employers and others who may need it to provide an effective emergency response service.

Paragraph 10 - Arrangements for passing and receiving information to/from other persons.

Schedule 1, Paragraph 10: Particulars to demonstrate that the duty holder has established adequate arrangements for passing and receiving information relevant to health and safety to and from other persons who have duties under these Regulations.

Refs: GSMR guidance L80, paragraphs 116 – 117

19 There is a large area of overlap with the requirements of this paragraph and other paragraphs in Schedule 1, in particular paragraphs, 12 (co-operation), 16 (continuity of supply), and 18 (Handling supply emergencies). The relevant information may therefore be more properly

included under those sections. However there may be specific arrangements or facilities for passing and receiving information not detailed elsewhere that could be included here.

20 The aim of paragraph 10 is to ensure that information relevant to the safe management of the flow of gas, or provision of an effective emergency response service, is exchanged between the duty holder and others such as other gas conveyors, shippers, suppliers, terminal operators, storage operators, producers and the Network Emergency Co-ordinator.

Criterion 10.1: The safety case should set out the working arrangements and operational procedures that have been established for co-operation with other duty holders detailed in GSMR Regulation 6. The safety case should detail the arrangements for exchanging information relevant to the safe management of the flow of gas with others who have duties under the Regulations. Where such information is provided in response to a different requirement of GSMR Schedule 1, the safety case should explain where in the safety case the information can be found

21 The range of persons or organisations that the exchange of information is relevant to will include producers, terminal and storage operators, other gas conveyors, shippers, suppliers, the market operator and the NEC

Criterion 10.2: The SC should detail arrangements for dealing with members of the public & consumers (including those with interruptible contracts) in the event of a supply emergency or escape from the network.

Criterion 10.3: Details should be given of how relevant safety critical information on plant and equipment is passed to other gas conveyors, operators etc.

22 It will be particularly important for specific arrangements to be established for passing on intelligence between gas conveyors of information about potential failures of plant and equipment, and preventative measures to avoid these. Such information may typically come from incident experience, when it will be necessary to pass on such information to operators or users of similar equipment. The arrangements to facilitate this exchange of relevant health and safety information should be clearly set out.

Criterion 10.4: The SC should describe how those who have duties to co-operate with gas conveyors are made aware of the arrangements relevant to them. Where there are specific arrangements or facilities for the passing or exchange of information that are not detailed elsewhere, the safety case should describe them in relation to the requirements of this paragraph.

Paragraph 11 - Audit arrangements.

Schedule 1, paragraph 11: Particulars to demonstrate that the duty holder has established adequate arrangements for audit and the making of any necessary reports.
Refs: GSMR guidance L80, paragraphs 118 – 122, HSE publication HSG 65.
Note: GSMR, Schedule 1, paragraph 22(a) defines the audit as concerning the purpose in paragraph 6

23 This paragraph is intended to ensure that the duty holder has demonstrated that there are adequate arrangements in place to audit those parts of the management system, which deal with the safe flow of gas and provision of an emergency response service.

Criterion 11.1: Particulars should be provided which demonstrate adequate arrangements for auditing the parts of the management system dealing with the safe management of the flow of gas

Criterion 11.2: Particulars should be given which demonstrate adequate arrangements for auditing the parts of the management system dealing with the provision of an emergency response service.

Criterion 11.3: The SC should demonstrate that the audits will be carried out by competent people from outside the line management chain.

Criterion 11.4: The SC should describe how performance standards for audit and review are set.

Criterion 11.5: The SC should describe how audits are scheduled in order to identify the effect of changes that may have been made in the duty holder's organisation.

Criterion 11.6: The SC should demonstrate how results of audits are communicated to those who need to know and how the findings are fed back into the system to allow corrective action plans to be developed and implemented.

Criterion 11.7: The SC should describe the procedures for reviewing the suitability and adequacy of the auditing arrangements themselves.

Paragraph 14 - Compliance with regulation 7.

Schedule 1, paragraph 14: Particulars to demonstrate that the duty holder has established adequate arrangements to enable him to comply with paragraphs (12), (13), (15) and (16) of regulation 7, for co-ordinating the investigation he causes to be carried out pursuant to that regulation with other investigations carried out pursuant thereto, and for participating in such other investigations.

Refs: GSMR guidance L80, paragraphs 134-137.

Criterion 14.1: The SC should set out the arrangements for investigating fire and explosion incidents which occur downstream of the emergency control as a result of an escape of gas, and those incidents upstream of the emergency control which have, or could have, resulted in fire or explosion.

24 Those who conduct the investigation should have the necessary skills, competence and experience to do so.

Criterion 14.2: The SC should describe the arrangements to ensure investigators (in house or external consultants / contractors) have the necessary skills, competencies & experience.

Criterion 14.3: The SC should describe the arrangements for recording factual information, conclusions about causes & recommendations for remedial action, including how the gas conveyor will ensure actions are carried out and how any lessons learned will be disseminated. The arrangements should state clearly how a report would be submitted to HSE.

Criterion 14.4: The SC should set out arrangements for notifying suppliers where CO emissions from appliances have led to death or notifiable injury (RIDDOR Regulation 6[1]) & supply necessary information to enable the supplier to conduct an investigation in line with Regulation 7(14) of GSMR.

8 MINIMISING THE RISKS OF A SUPPLY EMERGENCY AND GAS QUALITY ASSESSMENT

Introduction

- 1 This Chapter covers criteria and guidance for assessing GSMR Schedule 1, paragraphs 12, 15, 16, 17, namely:
- Co-operation;
 - Content and other characteristics of gas;
 - Minimising the risk of a supply emergency;
 - Adequate pressure.

Paragraph 12 - Co-operation

Schedule 1, paragraph 12: Particulars of the arrangements the duty holder has established to enable him to comply with regulation 6 (co-operation) including particulars of the arrangements he has established to ensure that any directions given to him by the network emergency co-ordinator are followed.

Refs: GSMR guidance L80, paragraphs 33-39, 79-80, 123-124

- 2 The safety case should show and explain the working arrangements and procedures for co-operation between duty holders. There is a specific reference to arrangements for compliance with directions from the NEC during an emergency, but the description of arrangements should also cover agreements between network operators as well as with gas producers, storage facilities etc.

- 3 The arrangements (and operational procedures) established with others who have duties under Regulation 6(2) should cover a) normal operating conditions; b) local & national supply emergencies; and c) where gas escapes are reported at the boundary with another gas conveyor (or their emergency service provider)

- 4 There is considerable overlap between the requirements of Schedule 1 paragraphs 12 (Co-operation), 16 (Continuity of Supply) and 18 (Handling emergencies) in respect of requirements to cooperate with others who have duties. Many of the arrangements may therefore be set out in other parts of the safety cases if the duty holder so chooses.

- 5 In addition, the safety case should include other matters concerning co-operation arrangements not detailed elsewhere. These will include the development of new procedures, co-ordination of training and the conduct of emergency exercises.

- 6 A gas conveyor's safety case needs to address the risks that are presented by the interfaces between his operations and the activities of other gas conveyors etc. In preparing or revising a safety case, the gas conveyor should, therefore, consult other parties as far as is necessary to ensure that the safe management of the flow of gas is properly managed at the interfaces, and that there are adequate arrangements for dealing with gas leaks close to the boundary of two (or more) parts of the network.

- 7 The parties will need to be sure that the various activities are compatible with each other and that, taken together, the management arrangements and operational measures will result in effective control of the risks.

- 8 Gas conveyors, the network emergency co-ordinator, holders of a licence issued under section 7A of the Gas Act 1986, producers, terminal and storage operators and others must co-operate with each other to maintain safety across the network. It will be important for gas conveyors to come to workable agreements and operational arrangements with these other duty

holders to maintain safety on their part of the network, and enable them to conform with their respective safety cases. In establishing these arrangements consideration should be given to the extent and manner in which each party is able to contribute to the safe flow of gas, and for which it is appropriate for them to do so, taking account of the extent to which the matters are properly within their control.

Criterion 12.1: The safety case should set out the working arrangements and operational procedures that have been established for co-operation with other duty holders detailed in Regulation 6.

9 The gas network as a whole can only operate effectively and safely if there are workable arrangements between the various parties who operate a part of it. The safety case will need to explain the working arrangements and operational procedures active between the various duty holders under Regulation 6(2), including producers, other gas conveyors, shippers, suppliers, storage operators and the NEC. Many of these arrangements will be covered in sections of the Network Code, and the Offtake Agreement.

10 The arrangements should cover both normal operating conditions, and supply emergencies that could be local, network or national. Particular attention should be given to the arrangements at boundaries and interfaces, including dealing with incidents and escapes close to the boundary with other duty holders and/or where the responsibility is with another network operator, gas conveyor or emergency service provider.

Criterion 12.2: The procedures in place to ensure the directions of the NEC in response to gas supply emergencies are followed should be clearly set out.

11 This is a key part of the requirement of this paragraph, though in practice the information may well be dealt with under Para.16 and/or 18 in connection with continuity of supply or handling emergencies. The details should not simply cover a commitment on behalf of the network operator or supplier to comply with any directions of the NEC, but should include the arrangements established to ensure that directions to cease using gas are implemented in practice.

Criterion 12.3: The safety case should describe the cooperation arrangements agreed with other parties for operation at network interfaces, including the practical measures for sharing information about supply forecasting with gas producers, processors and storage facilities, profiling the demands of large scale consumers, and scheduling of maintenance.

12 An important part of co-operative working on a routine basis across the network is the sharing of information with other duty holders to establish the likely gas supply position (and more importantly, potential interruptions in supply), the gas demands of large consumers, and when operational issues could cause constraints or delays in the ability to deliver gas, such as downtime caused by scheduled maintenance of key plant and equipment. The arrangements for co-operating in the flow of this information should be described in the safety case.

Criterion 12.4: The arrangements, policies and procedures for co-operating in the design, construction and provision of new system connections to the network should be described.

13 Gas conveyors will have an obligation to allow new pipes to be connected to the network. These may be designed, constructed, operated and owned by the network operator or by third parties. The procedures in place for arranging such installation and connection should be outlined.

Criterion 12.5: The safety case should describe the co-operative arrangements in place that cover co-ordination of emergency exercises and emergency plan tests.

14 There will be situations where networks in different ownership may need or at least benefit from co-operation with each other in the planning and co-ordinating of emergency exercises and testing of arrangements, especially at the interfaces and boundaries between adjacent networks. The arrangements or agreements should be described in the safety case (for example, if there are mutual aid memoranda of understanding between networks, these should be set out in the safety case).

Criterion 12.6: The arrangements for ensuring the quality of information provided under regulation 6(8) should be described.

Paragraph 15 - Content and other characteristics of gas.

Schedule 1, Paragraph 15: Particulars to demonstrate adequate arrangements to ensure that all gas conveyed complies with GSMR Regulation 8 (Schedule 3, Part I).
Refs: GSMR guidance L80, paragraphs 138 – 143.

15 The safety case should demonstrate adequate arrangements and liaison with terminals and conveyors to ensure that only gas meeting the requirements of Regulation 8 will be conveyed. This includes:

- Contents and characteristics of the gas
- Arrangements for odouring gas ≤ 7 bar g
- Suitable pressure to ensure safe operation of gas appliances

Criterion 15.1: Details of the liaison arrangements with upstream terminals and conveyors should be included in the safety case to show that only gas meeting the requirements of regulation 8 will be conveyed. The information should identify any relationships / obligations set out in contracts / protocols that may affect their ability to do so e.g. Network Code, Network Entry Agreements etc. The arrangements for managing these interfaces should be identified.

Criterion 15.2: Measuring and monitoring arrangements should be described, including necessary tests to demonstrate conformity and the location of all testing facilities & reasoning behind this – particularly important with respect to pressure tests at extremities of the network.

Criterion 15.3: Arrangements for gas blending should be described, as well as arrangements to prevent 'out-of-spec' gas from being used by consumers. The arrangements should include how the gas conveyor will convey any out-of-spec gas from a gas processing facility to treat it to bring it into conformity with Schedule 1.

Criterion 15.4: In some circumstances it may be appropriate to allow out-of-spec gas onto the network. The way in which the duty holder will co-operate with NEC & other gas conveyors in allowing out of spec gas (conforming to Part II of Schedule 3) should be described. The arrangements with producers, terminal operators & shippers or other conveyors for obtaining such gas should be described.

Criterion 15.5: The safety case should describe the pressure management arrangements to maintain sufficient pressure at the end of the service pipe; to ensure appliances which consumers may reasonably be expected to have can operate safely. An outline of pressure management techniques used to deal with expected variations in consumption between peak & normal demands throughout the year should be included.

Criterion 15.6: The arrangements to prevent 'extraneous gases' [including air] from being injected into the network should be described – e.g. by reference to Network Code provisions and publicity where necessary concerning fitting anti-fluctuators / non-return valves where appropriate.

Paragraph 16 - Minimising the risk of a supply emergency.

Schedule 1, Paragraph 16: Particulars to demonstrate that the duty holder has established adequate arrangements to minimise the risk of a supply emergency.
Refs: GSMR guidance L80, paragraphs 144 – 148.

16 Although L80 has the sub-heading 'Continuity of supply' for Schedule 1 paragraph 16, the requirement is actually for the safety case to show that the duty holder has adequate arrangements to minimise the risk of a supply emergency.

17 Minimising the risk of a supply emergency requires a balance between supply and demand to ensure a safe pressure is maintained in the network. Preventing a supply emergency involves arrangements for forecasting gas supply and demand requirements, balancing the network (both forward planning, and on a daily basis), dealing with constraints such as sudden supply / demand changes or work on critical parts of the network, and reviewing performance to inform future arrangements.

18 The criteria are intended to elicit in the safety case a hierarchy of information from the gas conveyor about their arrangements, covering:

- The structure of the arrangements for managing the availability of gas and balancing supply and demand in a 1 in 50 severe winter and on a 1 in 20 peak day.
- Operation of the interfaces between the NTS and distribution network(s)
- Arrangements for gas balancing to ensure adequate pressure including controlling demand where necessary to prevent a supply emergency, e.g. by interruption
- Monitoring flows in the network, and arrangements for handling relatively sudden changes in demand
- Co-ordinating key maintenance and repair work across the network
- Reviewing effectiveness of arrangements against performance standards.

19 The standard required under Schedule 1 paragraph 16 is demonstration, so the duty holder will need to include evidence that the overall arrangements are effective and/or are monitored to ensure they work.

Criterion 16.1: The safety case should describe the structure of the arrangements for managing the availability of gas to the network including the systems for planning, forecasting and allocating gas supplies.

20 The operation of the market to balance supply and demand is managed by the Network Code and a series of contractual arrangements and operational procedures that are used to plan, organise, control and monitor the flow of gas. The gas conveyor's arrangements will be part of an overall framework covering the range of operators in the market, from producers to suppliers.

21 The safety case should set out the duty holder's role in this framework and the procedures and working arrangements with producers, gas processing facilities, shippers and other network operators for:

- a) forecasting long-term, medium term, daily and within-day demand;
- b) monitoring the gas flow to identify imbalances between supply and demand;
- c) balancing supply and demand to prevent a supply emergency developing.

Criterion 16.2: The safety case should describe the gas conveyor's arrangements for forecasting supply and demand in the network in a 1 in 50 severe winter and on a 1 in 20 peak day.

22 Arrangements for minimising the risk of a supply emergency in 1 in 50 severe winter and on a 1 in 20 peak day require detailed supply and demand forecasts. This should include forecasts for the network as a whole and, where necessary, localised supply and demand forecasts.

Criterion 16.3: The safety case should describe the arrangements for balancing supply and demand to minimise the risk of a supply emergency in a 1 in 50 severe winter.

23 The operator of the National Transmission System has the main responsibility for balancing supply and demand in a 1 in 50 winter since they receive gas from the network entry and storage facilities and transport gas into the distribution networks. One possible cause that could lead to a supply emergency is an imbalance during or at the end of a severe winter between demand and the quantity of gas available to the network from beach gas, storage or other sources. The safety case should describe the arrangements for minimising the risks to all consumers (industrial, commercial and domestic). This may include a demonstration that sufficient gas will be available or demand will be controlled.

24 Distribution Networks [DNs] should also describe their arrangements for meeting 1 in 50 winter obligations. This should include arrangements for co-operating with the operator of the National Transmission System or Network Emergency-Co-ordinator, for example by controlling demand when directed to do so.

Criterion 16.4: The safety case should describe the arrangements for balancing supply and demand to minimise the risk of a supply emergency on a 1 in 20 peak day.

25 This will require a description of the arrangements to ensure supply and demand can be balanced and include a demonstration that the network has sufficient capacity (as a whole or in part) to transport the gas to prevent a drop in pressure in the network or part thereof, or where necessary to maintain pressure, how demand will be controlled.

Criterion 16.5: The safety case should describe the arrangements for managing operation of the interface between the national transmission system and distribution networks.

26 A key aspect of a gas conveyor's safety case will be the arrangements between the NTS and DN. The safety case should cover systems for data transfer, and communications between the two over forecasting, monitoring and meeting gas demand and the operational status of gas flow from the NTS to DN. Where management or monitoring of parts of a network are carried out on a contract basis (e.g. System Operation Managed Service Agreement – SOMSA) the scope of such arrangements should be described to explain clearly the extent of each network's responsibilities.

Criterion 16.6: The safety case should describe the arrangements for daily balancing the gas in the network to ensure adequate pressure.

27 Balancing gas in the network to maintain a balance between supply and demand needs to be monitored on a continuous basis, and affects both NTS and distribution networks. The safety case should clearly explain the balancing measures and the circumstances in which they are used. These include the operation of the market, Operating Margins gas, gas in storage (including diurnal storage and line pack).

Criterion 16.7: The arrangements for controlling demand where necessary to minimise the risk of a supply emergency should be described.

28 For example, where interruption may be needed as one of the arrangements to control demand to minimise the risk of a supply emergency, the safety case should clearly set out the network operator's arrangements to ensure that an effective level of interruption will be achieved in practice.

Criterion 16.8: The safety case should describe the systems used to control and monitor flows in the gas supply network, and the critical parameters for gas flow to prevent a supply emergency.

The safety case should also set out the arrangements for managing and responding to sudden changes in supply or demand that cannot be met by routine system operation mechanisms.

29 The facilities and arrangements for controlling and monitoring key parameters of gas flow management should be described (including flow, pressure, temperature etc).

30 The safety case should also identify circumstances where the normal balancing arrangements may not be effective, such as following a supply failure, whether onshore or offshore, or significant change in demand forecast. This may be caused by national or localised requirements that cannot be met through normal market mechanisms. The conveyor should identify circumstances when this could occur and describe the measures to address these situations.

Criterion 16.9: The safety case should describe arrangements for ensuring work on plant, pipes and equipment within the network is co-ordinated to minimise the risk of a supply emergency.

31 The case should describe how planned or emergency work in the networks is co-ordinated to minimise risk of a loss of pressure. This should include communications with other network operators, and how maintenance and other work are planned such that the ability of the network to operate effectively to deliver gas is not compromised.

Criterion 16.10: The safety case should explain what performance standards the gas conveyor uses to determine the effectiveness of the arrangements described for minimising the risk of a gas supply emergency.

32 Part of the obligation to make a demonstration of adequate arrangements to minimise the risk of a supply emergency involves providing some evidence of the effectiveness of the arrangements – i.e. do they work in practice?

33 The safety case should provide outline details of the performance indicators the duty holder uses to monitor the effectiveness of the arrangements for meeting gas supply standards such as 1 in 20, 1 in 50. Examples could include numbers of abnormal system operation events, number of interruptions required, use of OM gas, compressor downtime etc. The arrangements for reviewing, auditing and reporting on performance should be covered.

Paragraph 17 - Adequate pressure.

Schedule 1, paragraph 17: Particulars to demonstrate that the duty holder has established adequate arrangements to ensure that the gas he conveys will be at an adequate pressure when it leaves the part of the network used by him.

Refs: GSMR guidance L80, paragraphs 149 - 150

Criterion 17.1: The safety case should demonstrate adequate arrangements to ensure that gas will be at an adequate pressure when it leaves the conveyor's part of the network

Criterion 17.2: The safety case should set out the design philosophy, planning and other criteria used in the construction of the network to ensure adequate pressure and flows leaving the network.

Criterion 17.3: The safety case should set out the arrangements to notify the NEC, other gas conveyors, shippers and suppliers that adequate pressures are not being maintained, and the actions proposed.

Criterion 17.4: The safety case should set out the arrangements for monitoring gas pressure at the offtakes from other gas conveyor's networks.

9 RESPONSE TO EMERGENCIES ASSESSMENT

Introduction

1 This chapter covers criteria and guidance for assessing GSMR Schedule 1, paragraphs 13, 18, 19, 20, 21, namely;

- Gas escapes and investigations;
- Supply emergencies;
- Arrangements for conveying out of specification gas in stand-alone networks;
- Discontinuing supplies to consumers;
- Restoring supplies to consumers.

Paragraph 13 – Gas escapes and investigations.

Schedule 1, Paragraph 13: Particulars of the arrangements (a) the duty holder and any emergency service provider appointed by him have established to enable him or the provider...to comply with Regulation 7(4) to (6); and (b) the duty holder has established to appoint emergency service providers

Refs: GSMR guidance L80, paragraphs 125-133.

2 The duty holder should show adequate arrangements for receiving and handling calls concerning suspected gas emergencies, dispatching suitably competent staff, and managing any operational repair and replacement work that may be necessary. Information to monitor the progress with calls should be readily available.

3 National Grid Gas will continue to manage all primary call handling via the existing national call centre network. Suitable arrangements should be shown for transfer and receipt of information and responsibility for response in networks whether operated by National Grid Gas or other operators.

Criterion 13.1: The safety case should describe the facilities, equipment and staffing for handling calls concerning potential emergencies.

4 The facilities managed by each duty holder for dealing with emergency calls will differ. The safety case should clearly set out the facilities and equipment the network has for dealing with these calls, the performance standards for handling calls and how the standards are achieved and monitored. Arrangements for covering staff shortage and absences, and contingencies for loss of communications, should be explained.

Criterion 13.2: The safety case should describe the arrangements for training and competency assessment of persons handling calls and for persons attending reported incidents.

5 The arrangements for training and competence assessment of staff handling emergency calls and dispatching response should be set out. Sufficient details should be given of the assessment programmes to enable a view to be formed of their suitability for ensuring competent staff in these key roles. For example, copies of the assessment criteria that staff have to attain would be helpful. Monitoring and supervisory arrangements should also be explained.

6 For operational staff providing an emergency response attendance service and/or likely to affect 'make safe' or repair and replacement, the training and competence arrangements should also be described. Refresher training or re-assessment requirements should also be included.

7 Where arrangements are covered by detailed company procedures or other documents, reference to these is acceptable but a summary of the basic approach should be given in the body of the safety case.

Criterion 13.3: The organisational structure covering allocation of responsibilities, passing on information about potential emergencies via a dispatch function to other gas conveyors, and receipt of such information in networks to initiate appropriate action should be clearly set out.

8 The arrangements to be described will vary depending on circumstances. Where the safety case is for National Grid Gas, the arrangements will need to describe how calls are received and passed on for action within their retained distribution networks or to independent networks as appropriate. For operators of other networks, the arrangements should describe how calls are received from the National Grid Gas- operated national system and how information is passed on for initiation of appropriate investigation and action.

9 Where company procedures are referred to, it is good practice for the content to be explained in outline and the relevant procedure referenced for more detailed future consideration.

Criterion 13.4: The arrangements for monitoring to confirm that calls transferred from the national call handling system have been accepted in the relevant network and are being dealt with should be explained, i.e. the 'feedback loop' arrangements available for progress checking that appropriate action has been taken.

10 The safety case should explain what information is available and what procedures are in force to monitor that calls received concerning potential emergencies are being handled, and that jobs are closed out when action has been completed.

11 These arrangements should give details of how jobs are given priority and what 'alerts' are given to the dispatch function staff if the appropriate response is delayed. The way in which emergency cases, such cases as when major leaks or explosions are reported to have taken place, are dealt with should also be included.

Criterion 13.5: The safety case should describe the facilities, equipment and staffing necessary for emergency response. Where arrangements for mutual aid in emergency response have been agreed between networks, e.g. by memorandum of understanding or contractual terms, these should be set out in the safety case.

12 The safety case should explain how the facilities and staffing available for emergency response to reports of gas leakage are sufficient to meet the obligation under GSMR Regulations 7(4) and 7(5) with regard to the legal minimum for attending the site of gas escapes and preventing the gas escaping.

13 Agreements for mutual aid contingency arrangements between networks in responding to emergencies may be necessary. Where this is the case, the operation of such agreements should be explained in the safety case. It should be noted that the duty under GSMR Regulation 6 to co-operate is not limited to co-operation with the NEC, and includes amongst others co-operation between gas conveyors.

Criterion 13.6: The safety case should set out the priorities and philosophy that the network operator intends to follow in attending the scene of reported leakage of gas or spillage of CO. This should pay due regard to the safety of service engineering personnel making the response as well as to members of the public and property.

14 Timely and effective response to reports of emergencies is clearly important, but clear guidance about what the priorities are on attending the scene is equally important. The safeguards in place to ensure the action taken is based on a clearly prioritised hierarchy of protection and that the situation is not exacerbated by taking actions where the risks have not been properly assessed should be explained.

Criterion 13.7: The safety case should make clear the standard of make-safe emergency service in response to emergencies such as leakage of gas or spillage of CO that the operator will provide. If a gas conveyor operates a policy of not repairing immediately minor leaks which it determines are non-hazardous, the safety case should describe the way in which repairs are programmed, the criteria or guidelines on which decisions are based, and the level at which decisions are made.

15 The minimum standard of response that the operator commits to providing when attending reports of gas emergencies should be explained in the safety case (for example, the policy on 'make-safe' or a minimum period of free repair work).

16 For small leaks that are considered non-hazardous and which are assessed as not needing immediate attention, the decision may be taken for efficiency and economic reasons to defer repair or replacement for inclusion in planned programmes – this is a reasonable option that recognises the business efficiency aspects and needs of such work. However the safety case should explain the basis on which such decisions may be taken, including guidance on the parameters given to persons responding on site.

Criterion 13.8: The target response time standard for attendance at the site of reported emergencies should be given in the safety case, together with the planned arrangements and organisation in place to enable this target to be met across the extent of the network operated.

17 The standard of response time specified in the Ofgem licence for attendance at reported gas escapes should be given in the safety case (currently attendance within 1 hour to 97% of uncontrolled gas escapes and within 2 hours to controlled gas escapes). The arrangements the operator has for meeting this target, including reaching the furthest parts of the network, should be explained. Network operators monitor performance against the response target, and should include a summary of the performance in support of claims about arrangements.

Paragraph 18 – Supply emergencies.

Schedule 1, Paragraph 18: Particulars to demonstrate that the duty holder has established adequate arrangements for dealing with supply emergencies or other incidents that could endanger persons.

Refs: GSMR guidance L80, paragraphs 33-39, 79-80 and 151-156.

18 A supply emergency is defined in Regulation 2 of GSMR as “an emergency endangering persons and arising from loss of pressure in a network or any part thereof”. Social and economic consequences of losing supplies to consumers are not covered under GSMR.

Criterion 18.1: The safety case should define the types of supply emergency that could arise on the network, and their potential effects in terms of endangering the safety of persons.

19 For purposes of GSMR Schedule 1 para.18, 'supply emergency' should be construed in its widest sense covering very localised gas supply emergencies through to a large-scale national gas supply emergency. However, Paragraph 18 is not intended to deal with emergencies caused by gas which has escaped from a pipeline, which may be covered by pipeline emergency plans, but rather supply emergencies affecting the conveyance of gas at adequate pressure within the pipeline.

20 'Supply emergency' covers a range of situations of varying severity, from a localised loss of pressure in a small part of a network that results in loss of gas at suitable pressure to a relatively small number of consumers, to a loss of pressure from the national transmission system affecting a much larger area and potentially other energy producers such as power stations. The safety case should first define the types of supply emergency for which it has procedures, to

clarify the basis on which the subsequent demonstration of suitable preventative arrangements in the distribution network will be made.

Criterion 18.2: The safety case should provide examples of the potential scenarios and constraints in the network that could lead to a supply emergency. The actions to be taken and procedures in place to deal with the example scenarios given should be identified. There should be a demonstration that these measures are likely to be effective, e.g. by reference to examples of emergency exercises carried out.

21 There are likely to be a wide range of potential scenarios that may lead to supply emergencies, which will form part of the 'precursors' identified above. This criterion however asks for examples of foreseeable events specific to the network to be given of particular vulnerabilities identified – for example, key plant and equipment (such as compressors, control systems or pipelines) or management systems that if lost would be likely to result in the initiation of a loss of downstream gas pressure.

22 The safety case should then describe the procedures and arrangements in place to prevent or control these factors and so avoid progression to a widespread emergency, and the actions to be taken to respond to and deal with such eventualities. It is not expected that all the potential scenarios identified should necessarily be explained in this way, but the operator should choose a representative sample that includes high-consequence events as well as lesser events. The aim is to ensure that the safety case shows that the operator has considered and established control over the causes leading to supply emergencies, by establishing the appropriate preventative or mitigatory responses to make.

23 Finally, the safety case should provide some assurance that the measures that have been put in place are likely to be effective – one good way of doing this is to show that emergency exercises have been planned and carried out to test the suitability of the planned measures in practice.

Criterion 18.3: The safety case should set out the criteria used to invoke gas supply emergency procedures. The procedures in place for managing the stages of a network gas supply emergency should be described

24 The information provided should cover:

- a) the declaration of the emergency;
- b) adopting load shedding and the arrangements for implementing such measures;
- c) arrangements for isolation in the event that the network is not allocated sufficient gas;
- d) the details of safe restoration of supplies following a supply emergency.

25 A network gas supply emergency may have several stages, each of which will need careful management to maximise the chances of avoiding progression to the next stage. The safety case should set out the criteria that will be used to invoke the emergency procedures for managing the situation on the network, and describe the procedures in place to manage any direction from the NEC. The safety case should clearly describe that there are procedures in place to deal with the initial declaration of the emergency, procedures for implementing interruptions and load shedding, making isolations where insufficient gas is available to the network, and arrangements for subsequent safe restoration of gas supplies in a controlled manner after the emergency is over.

Criterion 18.4: The safety case should set out the arrangements in place for co-operating with other parties in the event of a gas supply emergency, including communication routes.

26 Effective communications and cooperation in the lead up to a potential network supply emergency and during the event after one has been declared will be essential for the safe management of the emergency. Of primary importance will be communication with the NEC that

will co-ordinate action in response to the emergency, and the safety case should explain how this will be done and who is allocated responsibility for doing it.

27 In addition, communication routes should be established in advance with the full range of other parties that may be involved so that a two-way information process can be maintained and so that action can be initiated – these may include for example producers, gas processing facility operators, storage facility operators, gas shippers. The safety case should set out the arrangements in place for achieving this communication and co-operation.

Criterion 18.5: Where a network operator has different procedures or arrangements for a local gas supply emergency, the safety case should additionally detail these in the same depth as for national supply emergencies – i.e. identifying potential scenarios; monitoring the network; the procedures and criteria applicable to the a local supply emergency; arrangements in place for managing the stages of the emergency; and the cooperation and communication arrangements with other parties.

28 A local gas supply emergency will be different in scale to a network supply emergency, and it is likely that different procedures appropriate to such events will be in place. The safety case should describe these just as comprehensively, the aim being to ensure that the operator can demonstrate control over the management of these lesser events just as the more serious ones.

Paragraph 19 - Arrangements for conveying out of specification gas in stand-alone networks.

Schedule 1, Paragraph 19: Where the duty holder is the only person conveying gas in a network, particulars to demonstrate that he has established adequate arrangements to decide when and for how long gas not conforming with the requirements of Regulation 8(1) should be conveyed in the network pursuant to Regulation 8(4).

Refs: GSMR guidance L80, paragraph 158.

29 Where necessary to prevent a supply emergency, Regulation 8(4) permits gas conforming to Schedule 3 Part II to be introduced to the network where the duty holder is the only person conveying gas in the network. Where this is the case:

Criterion 19.1: The safety case should demonstrate adequate operational arrangements and criteria for introducing and controlling the flow of out of specification gas.

Paragraph 20 - Discontinuing supplies to consumers

Schedule 1, Paragraph 20: Without prejudice to Paragraph 18 above, particulars of the procedures that the duty holder has established to discontinue safe supply to consumers, when it is known there is insufficient gas to satisfy demand.

Refs: GSMR guidance L80, paragraphs 159-163.

30 Where it is necessary to interrupt consumers, the criteria that the duty holder will use in determining how this will be achieved safely and effectively should be given. This should cover not only the priorities that the duty holder may apply to different types of consumer, but also the procedures for ensuring that consumers directed to cease using gas actually do so and do so safely.

Criterion 20.1: The safety case should give a description of the criteria to be used for determining the sequence in which supply to customers will be discontinued (This may require a hierarchical approach to disconnection, taking account of the risks and contractual obligations to different types of consumer). The demonstration requirement could be met by referencing previous emergency exercises, if the outcome of these has indicated the arrangements are effective.

Criterion 20.2: The arrangements for co-ordinating action to discontinue supply where other gas conveyors may be affected by a local emergency situation.

Criterion 20.3: The safety case should detail the procedures for ensuring that consumers directed to cease using gas actually do so and do so safely. This should cover industrial consumers as well as the particular arrangements for domestic consumers such as communicating instructions, visits to properties etc.

Criterion 20.4: The safety case should explain the procedures in place to monitor that consumers have responded to any direction given and the action to be taken in the event that they have not.

Paragraph 21 – Restoring supplies to consumers.

Schedule 1, Paragraph 21: Particulars of procedures that the duty holder has established to restore safely the gas supply to consumers following an interruption to supply.

Refs: GSMR guidance L80, paragraphs 164-165.

31 Safe (and timely) restoration of supplies will be an important issue following an interruption in supply. If there were to be a large-scale interruption, restoring supplies to large numbers of consumers would be a long task that would require the co-operation and co-ordination of resources from across the gas distribution networks.

32. The safety case should explain the procedures and agreements in place that will be adopted from the declaration of the end of a supply emergency through to safe reconnection of affected consumers.

Criterion 21.1: The safety case should set out the criteria for declaring when a local supply emergency is over and the arrangements for ensuring continuing co-operation between gas conveyors where necessary between during reinstatement.

Criterion 21.2: The safety case should describe the arrangements for reinstating supply safely following either a local or a national supply emergency. These should address procedures for repressurising those parts of the network, which have been shut down, and the sequence in which supplies would be restored to consumers.

Criterion 21.3: The arrangements for reinstating supplies to domestic consumers should be described.

10 HUMAN FACTORS ASSESSMENT

Introduction

1 Schedule 1 paragraphs 4b, 5, 6, 7, 12, 13, 18 and 21 all embrace human factors issues.

2 Human factors can be defined as the organisational, job and individual characteristics that influence behaviour at work and can affect health and safety. Human factors are important to controlling gas incidents, providing emergency service response, and threats to safe management of the flow of gas, just as they are increasingly being recognised as an important aspect of safe management of hazards and risk in other industries.

3 Human factors cut across various aspects of any organisations' operations. In this Chapter they have been grouped to cover 5 broad areas where human factors are interpreted as applying to GSMR:

- Managing procedures;
- Ensuring competence of staff;

- Risk Assessment and Management System;
- Communications;
- Availability of adequate numbers of staff.

4 In addition to the GSMR-specific guidance in this document, generic guidance on human factors is contained in a HSE publication – ‘Reducing error and influencing behaviour’ (Booklet HSG48 – ISBN 0 7176 2452 8, from HSE Books).

5 Details of further guidance on specific topics can also be found on the HSE’s website, (www.hse.gov.uk/humanfactors)

Criteria

Managing Procedures

(Includes Schedule 1, paragraphs 4 (b), 13(a), 21)

Usability, consistency, fitness for purpose, compliance

Criterion HF 1.1: Particulars should be given in the safety case as to how operating & maintenance procedures are managed, for example, descriptions of how procedures are developed, revised and how compliance with them is assured or checked.

- 6 Assessors will look in the report for evidence in the following areas:
- Is there evidence in the safety case that there is a ‘procedure for developing and maintaining procedures’? It is not expected that the following matters will be covered in detail in the safety case, but there should be some evidence that supporting procedures exist covering the following areas:
 - Is there a process for ensuring that procedures are valid and remain up-to-date?
 - Does the development of procedures include addressing their usability, in addition to technical content?
 - Are end users involved in the development of such procedures?
 - Is there a process to ensure that procedures are appropriate to the nature of the task, its criticality and the users experience?
 - Is there a formal process to ensure that staff are trained in new/updated procedures?

Criterion HF 1.2: Information should be provided on the process that ensures that procedures are accurate, complete and appropriate to the situations that they are provided for.

7 Is there evidence that the duty holder follows a structured approach to producing procedures and that there is a system in place to ensure that all foreseeable circumstances are covered by procedures (e.g. high level statements, step by step instructions for safety critical jobs, emergency response to different types of gas events etc).

Criterion HF 1.3: Reference may be made to other company documents or procedures, but where this is the case the overall philosophy of how procedures are managed should be set out and a high level summary of their contents given.

8 How is compliance with critical procedures assured, and how does the duty holder check and provide evidence that procedures are followed? It is often assumed that employees will always follow procedures or work instructions. However, procedures are not always adhered to for a variety of reasons (i.e. procedural violations) e.g. because they may be inaccurate, do not describe best practice, are out of date, too complex or time consuming. This would be a concern where compliance with procedures is given in the safety case as means of ensuring the safe flow of gas or effective emergency response.

Competence of Staff

(Includes Schedule 1, paragraphs 4(b), 7, 13(b), 18)

Selection, training, competency assessment, refresher training

Criterion HF 2.1: The safety case should describe how competence is ensured and managed for all staff involved in the control of gas safety, with particular reference to:

- safe management of the flow of gas; and
- effective emergency response

Criterion HF 2.2: The competency management system should include:

- Identification of safety critical roles, responsibilities and tasks at all levels, including management and contractors;
- Identification of foreseeable emergency scenarios, from smaller gas escapes to major emergencies;
- Selection, training, assessment and reassessment arrangements;
- Audit and review arrangements (e.g. where the nature of the work changes).

9 The focus in the Safety Case should be on competency in relation to safe management of flow of gas and gas incidents rather than personal safety. The competency requirements for gas safety should be identified, including the underpinning knowledge of equipment, processes, hazards and consequences. This will be informed by the hazard and risk analyses.

10 Competency should not just focus on front line personnel. The competency assurance of those managing (i) the safe flow of gas and (ii) emergency response should be addressed. 'Soft' competencies such as team management, communications, event recognition, delegation etc. should be covered in addition to task specific / technical competencies.

11 Responsibilities and resources for the process of competence assessment should be identified. (Training / competency assessment is often under-resourced).

12 Selection: The case should describe how the selection of key personnel ensures ability to perform to the required levels of competence. Staff should be recruited and selected against defined criteria for the job.

13 Training: The competency assurance system should not rest solely on generic national standards (e.g. NVQs) unless these have been adjusted to match the duty holder's specific operations and risks. On the job training should be well structured with specific training/learning objectives. The trainers/assessors should be 'trained trainers' and have relevant experience to undertake these duties. There should be clear links between competency and safety critical procedures.

14 Assessment/reassessment: The case should include a description as to how staff are assessed (and re-assessed at suitable intervals) against the criteria. There should be reference to the skills, knowledge, behaviours and working practices against which performance is judged. Reassessment is necessary to ensure that effective performance is consistently maintained.

15 Audit and review: individual competency and the competency assurance process itself should be reviewed. This is particularly important during any organisational change process, such as business restructuring, contractorisation, multiskilling, or demanning.

Risk Assessment and Safety Management System

(Includes Schedule 1, paragraphs 5 and 6)

Human reliability, identification of safety critical tasks, types of human failures

Criterion HF 3.1: The safety case should describe how human factors have been taken into account in the risk assessment, particularly with respect to safe management of the flow of gas and effective emergency response.

Criterion HF 3.2: The human factors aspect of the risk assessment and safety management system should include consideration of:

- how human performance is assured or monitored in relation to the safe flow of gas and effective emergency response;
- the full range of types of human failures, including unintentional as well as intentional failures, along with failures in decision making at all levels;
- how factors influencing the likelihood of human failures (e.g. time pressure, working targets, fatigue, morale, training and procedures) have been identified and managed;
- the hierarchy of control (not focussing just on training or procedures, but also considering engineering solutions).

16 Human failures risk assessment should focus on those tasks, roles and responsibilities where human failures could affect the safe flow of gas or hamper emergency response.

17 The assessment should adopt a structured approach to identify potential errors for these key tasks and roles (for example, a task could be completed incorrectly or inappropriately, partially completed, omitted, or performed on the wrong equipment).

18 The assessment should adopt a structured approach to identify potential errors for these key tasks and roles (for example, a task could be completed incorrectly or inappropriately, partially completed, omitted, or performed on the wrong equipment).

19 Different types of failures: The assessment should recognise that there are different types of human failures, and that different controls to manage these will need to be in place to manage these types of failures.

20 It should not be assumed that human performance will be normal in emergency or unusual situations. In these circumstances, human failure may be more likely, for example, due to unfamiliarity with the situation, increased workload or stress (these are examples of Performance Influencing Factors).

21 Hierarchy of control: The approach to managing human failures should not focus exclusively on training or procedures; but should consider that there may be engineering solutions to human factors issues. Consideration should be given to the prevention of human failures by design, for example, addressing shortfalls in the design of tools, equipment, jobs and computer systems. The control measures should not simply rely on people following procedures as the only defence against major accidents.

22 Assessment of human performance should not be limited to the actions of front line personnel, but should consider the actions and decisions of all personnel involved in the safe flow of gas and emergency response arrangements relevant to these regulations. Decisions made by management, for example, in relation to planning, communications or the allocation of resources, have the potential to impact widely. Decisions made by staff monitoring the gas supply market, forecasting demand, conducting network analyses or monitoring gas flow may affect continuity of supply.

23 Note: HSE guidance document 'Reducing error and influencing behaviour' (HSG48) provides further information on risk assessment at pages 49-51 and 31-33. This guidance replaces the earlier HSE document 'Human factors in industrial safety' referred to in paragraph 108 of L80.

Communications

(Includes Schedule 1 paragraphs 12 and 13)
Addressing communication failures.

Criterion HF 4.1: The safety case should show that arrangements for safety critical communications, for example between control centres and other operators or individual key personnel, address the potential for communication failures (such as misunderstandings or incomplete/inaccurate information) that may affect the safe flow of gas or may hamper effective emergency response.

24 Failures in communications should have been addressed, particularly in the event of an emergency or abnormal situation. The communication needs should be considered. For example, what information is required by those managing a large escape, where do they obtain this information from and by what means?

25 Communications failures could relate to the address of an escape, who is required to respond, or plant/equipment to be operated following a network analysis.

26 Where there is a potential for a communications failure to impact on the safe flow of gas or effective emergency response then measures should be implemented, e.g. by addressing the mode (e.g. voice, text/email, pager) or format of communication (use of phonetic alphabet).

Availability of Adequate Numbers of Competent Staff

(Includes Schedule 1, paragraphs 18 and 21)

Criterion HF 5.1: The safety case should describe the process by which the operator ensures that there is adequate availability of competent personnel (including contractors) for the safe management of the flow of gas and for the provision of an effective emergency response service, and that there would be adequate availability for safe restoration of gas supplies in the event of an interruption in supply

27 This criterion relates to determining whether the company has the right numbers of the right personnel in the right place and at the right time. The safety case should refer to the arrangements for ensuring that this is the case, rather than detailing the actual numbers of personnel.

28 The focus should be on safe management of flow of gas (critical events / tasks / roles / responsibilities) and emergency response.

29 These arrangements will be informed by the risk assessments described in the safety case and should also include how the numbers of adequate personnel are monitored and reviewed (particularly in the light of organisational change).

11 GUIDANCE ON GSMR SAFETY CASE REQUIREMENTS FOR SMALL NETWORKS

Introduction

1 This Chapter provides guidance on what needs to be included in the safety case of a duty holder who has a simple, small scale, gas network where the requirements of GSMR apply. It can also be used where the duty holder has just a few of these networks (see below at paragraph 3).

2 The duty holder should still consult L80 - 'A Guide to the Gas Safety (Management) Regulations 1996 - Guidance on Regulations', particularly 'Content of safety cases: general guidance (paras 76-90) and Schedule 1: Particulars to be included in safety case of a person conveying gas (GSMR Schedule 1 text and paras 91-167). However, this is aimed at larger gas networks and the guidance given in this chapter helps to interpret these sections in respect of having just one or a few small networks. This will help the duty holder to produce a safety case that is proportionate to the scale of the operation. The amount of detail which needs to be included will depend on the nature and complexity of the network(s) and extent of the risks.

3 'Few' needs to be interpreted on a case-by-case basis depending on the scale or complexity of each network in the duty holder's overall operation. It could, for example, mean 2-3 simple networks on small industrial estates or housing estates, or up to say 10 small housing plots, or a mixture of each.

4 Where a duty holder operates more than just a few small networks they would be expected to meet their full obligations as gas conveyors under GSMR, as outlined in L80. An example would be the independent Gas transporters (iGTs) who can have hundreds or even thousands of such 'small network' sites. The same rationale would apply to a small, but high risk, network.

5 Gas networks supplying housing stock, estates or blocks of flats are substantial e.g. some LA and Housing Association/Trust networks; this chapter is not aimed at those as they are indistinguishable, in terms of GSMR and the safety regime needed, from networks operated by the larger conveyors and iGTs.

6 For a simple operation we might expect about 10-20 pages (plus any appendices e.g. network diagram(s), risk assessments etc.) but this is only a guideline – the main consideration is that the accompanying requirements should be met as appropriate to the network(s).

7 Regulation 4 (2) of GSMR requires that where any proposed modifications have a material effect on the safety case, it should be revised and resubmitted to HSE for acceptance. This would apply to a small conveyor who expands the overall size, scale and operation of its network. More guidance on what constitutes a material change is given in L80 paragraphs 27-29.

Content of safety cases: general guidance

(L80 guidance paragraphs 76 – 90)

8 The principles behind what to include in all safety cases, and in what detail, are embodied within paragraph 76-78. 'Safety cases should contain sufficient information to demonstrate that the duty holder's operations are safe and that the risks to the public and employees are as low as reasonably practicable'.

9 L80 paras 86-90, and Chapter 1 of this SCAM paras 21-25, describe the association between GSMR and the Pipelines Safety Regulations 1996 (PSR), in terms of what PSR requirements (e.g. pipeline integrity issues) can and should be incorporated in a GSMR safety case. An iron mains replacement policy, if appropriate to your network, would also be covered here (PSR reg 13/13A).

10 Many of the paragraphs of GSMR Schedule 1 require the network operator to 'demonstrate' safety arrangements in the safety case. For more detailed information see Chapter 5 of this SCAM paras 14-18. For the purposes of a small networks safety case 'demonstrate' still means 'show', 'justify' or 'make the case/argument' by the information given in it. However, the standard of demonstration required should be proportionate to the requirements of the guidance paragraphs as set out below.

11 A suggested contents headings list for the safety case is provided at the end of this chapter.

GSMR Schedule 1: Particulars to be included in safety case of a person conveying gas

(L80 Schedule 1 paragraphs 1 – 22 and accompanying guidance paragraphs 91 – 167)

- The duty holder referred to in the Schedule is the person conveying gas in a network, or network operator.

General

• Paragraphs 1 – 3 require essential factual/background information about a) you as the duty holder and b) your network(s).

1 Name and address of the person preparing the safety case (in this Schedule referred to as “the duty holder”).

- Self explanatory

2 A description of the operation intended to be undertaken by the duty holder.

• Describe the operation and oU¥à ½~ ½¹mer types in high level terms e.g. “<duty holder> owns and manages premises which includes a gas distribution network which conveys gas from National Grid’s main to 24 domestic consumers, four workshops and a small office”; ensure the purpose of the network is clear

- if there is more than one network/site provide a simple overview of each
- Provide a brief history of the network(s) including any significant upgrading and/or decommissioning.

3 A general description of the plant and premises the duty holder intends to use in connection with the operation including, in particular, the geographical location where any pipes he uses join pipes used by other persons conveying gas.

• Describe the: network; materials of construction; size and length of different types of pipe in the network(s) including mains and services; dimensions and details of the position of isolation valves available to the network owner and consumers.

• State the: a) volumes of gas likely to be conveyed in each network and; b) range of pressures in the system; safe operating limits; pressure control arrangements (including how monitored) and ownership

• Provide a detailed site plan/diagram/drawing of each network in an appendix, clearly identifying parts (pipework, valves, regulators etc.), materials (PE/steel etc.), location of safety critical plant and equipment, and boundaries; clearly define the start and end of each network

• Clearly define the interface with other conveyors; usually this would be at an offtake valve or a pressure reduction station. Provide the names of the other parties.

4 Particulars of any –

- a) technical specifications;
- b) procedures or arrangements relating to operation and maintenance;

which the duty holder intends to follow in connection with the operation he intends to undertake insofar as they affect health & safety of persons.

• Provide references to the codes and standards to which the network(s) has been constructed. There is no need to describe the codes themselves – the primary purpose of these references concerns the safety and reliability of critical plant and the management of the safe flow of gas

• Describe arrangements that the duty holder has for undertaking checks, preventative maintenance and actual repairs/maintenance of the network(s)

- [If applicable] Describe your iron mains replacement policy (the policy itself can be included in an appendix to the safety case) for 'at risk' mains. For more information see Chapter 7 of this SCAM paras 4-8
- Describe arrangements that the duty holder has for: a) undertaking leak surveys of pipework and associated plant and; b) operation of this plant where it might affect the safe flow of gas through the network(s)
 - Where you have existing written procedures, which are not covered by more specific requirements later in this schedule, you can provide high level summaries with references to these supporting documents
 - Ensure you reference, and differentiate between, your procedures for routine and non-routine operations
 - Explain how you ensure your procedures remain valid and up to date.

Safety Management

5 A statement of the significant findings of the risk assessment he has made pursuant to regulation 3 of the Management of Health & Safety at Work Regulations 1992, and particulars of the arrangements he has made in accordance with regulation 4(1) thereof.

- Identify the events which would give rise to leakage or loss of supply to the consumers which may include but not be necessarily limited to damage to the network. You may use the list of risks identified at the end of this chapter, adding to/omitting from them as applicable to your network(s)
 - Consider these under a) normal operations; b) maintenance or planned changes from the norm and: c) foreseeable unplanned or abnormal events e.g. supply emergency
 - State the measures which are in place to prevent such events and minimise the risk
 - In addition explain the means of isolating the network in the event of an escape of gas from the network
 - If you have detailed documented procedures and protective measures then refer to them from here.

6 Particulars to demonstrate that the management system of the duty holder is adequate to ensure that the relevant statutory provisions will (in respect of matters within his control) be complied with in relation to the operation he intends to undertake.

- Provide a high level description of the duty holder's organisation and details of who within the organisation has knowledge of and responsibility for the layout of the network and its isolation valves
 - Provide a management organogram
 - Describe the arrangements you have for monitoring the health and safety performance of your company/organisation; this should include internal monitoring, reporting and recording of abnormal events, and how you communicate and address lessons learnt*.

* The duty holder's overall safety management system will also deal with general H&S issues but the only relevant aspects for the safety case are those relating to the risk from the gas itself.

7 Particulars to demonstrate that the duty holder has established adequate arrangements for ensuring the competence of his employees in health and safety matters.

- Describe the arrangements that you as the duty holder have to ensure that relevant persons in your organisation have the competence* to manage the system as a whole, and to cater for emergency situations (e.g. gas escapes) as well as normal operations
 - The focus should be on safe management of the flow of gas (critical events, tasks, roles and responsibilities) and emergency response
 - Describe: a) who does the assessment and; b) how this is achieved
 - Review and update if necessary in order to ensure that the right number of the right personnel are in the right places at the right times

- Review and update if necessary in relation to the findings of the risk assessments referred to under 5. above
- Explain how you ensure that personnel are trained in new/updated procedures

* 'Competence' means persons having the necessary skills, experience, knowledge and personal qualities to carry out their tasks safely. To achieve this they will need to have had adequate information, instruction and training (including refresher training where appropriate). Competency should not just focus on front-line personnel.

8 Particulars to demonstrate that the duty holder has established adequate arrangements for managing work carried out by persons who are not his employees on or in relation to plant or premises which he owns or controls.

- Describe: a) the arrangements for how contractors are appointed to undertake work on the network(s) and; b) how that work is managed
- Describe the arrangements for the monitoring and supervising contractors and associated records/reporting
- Clearly define and describe any division of responsibility between you and your contractor(s) for specific aspects of safety management.

9 Particulars to demonstrate that the duty holder has established adequate arrangements for passing information relevant to health and safety to persons within his undertaking.

- Describe how information related to the layout of the network, its isolation valves and what to do in an emergency is made available to persons inside and outside (including consumers) the organisation.

10 Particulars to demonstrate that the duty holder has established adequate arrangements for passing and receiving information relevant to health and safety to and from other persons who have duties under these Regulations.

- Describe your arrangements for ensuring that details relevant to the provision of an emergency response service are exchanged with others who need to know e.g. your suppliers, shippers and upstream/any downstream gas conveyors
- Describe your arrangements for dealing with members of the public and consumers in the event of a gas escape from your network or a supply emergency under paras 13 and 18, respectively, rather than here.

11 Particulars to demonstrate that the duty holder has established adequate arrangements for audit and the making of any necessary reports.

- Describe the arrangements for independent auditing (and its associated reporting) of: a) the management system and; b) the provision of an emergency response service. See definitions under 22.

Co-operation

12 Particulars of the arrangements that the duty holder has established to enable him to comply with regulation 6 (co-operation) including (except where he is the network emergency co-ordinator) particulars of the arrangements he has established to ensure that any directions given to him by the network emergency co-ordinator are followed.

- Describe the arrangements and lines of communication you have with National Grid and/or other gas conveyors*, Gas Suppliers/shippers, customers/consumers and the HSE.
- Describe the arrangements you have to ensure your list of contacts are kept up to date

* including all owners of upstream/downstream networks with which your own network(s) may [directly] interface.

Gas escapes and investigations

13 Particulars of the arrangements –

a) the duty holder and any emergency service provider appointed by him have established to enable him or the provider, as the case may be, to comply with regulation 7(4) to (6);

b) the duty holder has established to appoint emergency service providers.

- Explain how you as the duty holder respond to the discovery of/reports of escapes of gas from the network including circumstances where that gas may have entered buildings.

- Explain the arrangements you have with any emergency service provider you have appointed (note that your upstream conveyer may agree to provide this service); who are they, what does their service provide (including making safe and beyond) and what are the contractual turnaround times? e.g. for controlled and uncontrolled escapes of gas

- Ensure you give as laid plans and drawings of your network(s) to your emergency service provider

- The above should detail the actions taken as a response to any emergency call

- Describe your arrangements for dealing with members of the public and consumers – including any vulnerable consumers - in the event of a gas escape from your network

- Describe your arrangements for passing information to customers (including use of signs) in the event of a gas escape or other emergency

- Ensure you explain your procedures for controlling, directing and monitoring the situation from initial response to reinstatement of normal services

- Describe your arrangements for where gas escapes are reported at or near the boundary with another gas conveyer (or their emergency provider)

- Describe your arrangements for covering staff shortages and absences

- Describe the arrangements for training and competence assessment of staff handling emergency calls and dispatching response. Explain monitoring and supervisory arrangements.

14 Particulars to demonstrate that the duty holder has established adequate arrangements to enable him to comply with paragraphs (12), (13), (15), and (16) of regulation 7, for co-ordinating the investigations he causes to be carried out pursuant to that regulation with other investigations carried out pursuant thereto, and for participating in such investigations.

- Describe the arrangements you would make to undertake investigations* where releases of gas from the network result in fire or explosions or where carbon monoxide poisoning results from an escape of fumes

- Describe the arrangements for: a) notifying HSE prior to commencing investigations of certain incidents and; b) submitting a report of these and other investigations to HSE

- Describe rights of entry to site premises where network pipes and equipment are located

* Those who conduct the investigation should have the necessary skills, competence and experience to do so.

Content and other characteristics of gas

15 Particulars to demonstrate that the duty holder has established adequate arrangements to ensure that all gas he conveys complies with regulations 8.

- Not generally applicable if gas is supplied from a distribution network; otherwise refer to L80 paragraphs 138-142. However if any consumers use equipment which is liable to produce a pressure of less than one atmosphere, or might inject extraneous gases (including air) into any part of your network, you should describe the arrangements you have to prevent this happening – see L80 para 143.

Continuity of supply: minimising the risk of a supply emergency

- Paragraphs 16. and 17. are aimed at minimising the risk of a supply emergency and maintaining the safe flow of gas at an adequate pressure as it leaves your network(s)

- Requires a balance between supply and demand to ensure a safe pressure is maintained in your network(s).

16 Particulars to demonstrate that the duty holder has established adequate arrangements to minimise the risk of a supply emergency.

- See under 12.
- Describe how you ensure sufficient gas is available to maintain supply to consumers on your network(s), including: a) forecasting demand on a within-day, daily and medium-term and long-term [including seasonal/future planning] basis; b) control of gas flow and; c) monitoring gas flow
- Describe demand reduction arrangements.

17 Particulars to demonstrate that the duty holder has established adequate arrangements to ensure that the gas he conveys will be at an adequate pressure when it leaves the part of the network used by him.

- Describe any pressure control and monitoring arrangements, including at connections and extremities, and how these are recorded
- Consider reliability, checks and maintenance of pressure control fittings e.g. regulators & pressure reduction equipment
- State whether, to meet this requirement, there is reliance on correct design of network(s), fittings (e.g. regulators) and gas load stipulation.

Supply emergencies

- A gas supply emergency arises when the pressure of the gas in any part of, or all, the pipeline network is reduced, causing danger
- It may be Local or National, ranging from a very localised gas emergency to a large scale National Gas Supply Emergency (NGSE)
- It is caused by insufficient gas supplies being available to satisfy expected demand and could be due to a number of factors
- The NEC (National Emergency Coordinator) or a Gas Transporter can declare a Gas Supply Emergency
- As a small network operator you will probably be advised of the emergency, its status, and a request for your co-operation, by your upstream conveyor – FIND OUT
- Effective communications and co-operation* (see under 18. below) would be essential in the lead up to, and during, a supply emergency. Communication routes should be established in advance so that a two-way information process is maintained [for action purposes] with other conveyors, shippers etc.

18 Particulars to demonstrate that the duty holder has established adequate arrangements for dealing with supply emergencies or other incidents which could endanger persons.

- Describe the criteria that will be used to invoke your emergency procedures for managing the situation on your network(s)
- Describe the arrangements in place for achieving effective communication routes to meet GSMR co-operation requirements (see under 12. and * above)
- Describe your arrangements for dealing with members of the public and consumers in the event of a gas supply emergency
- Describe any procedures you have to deal with events identified in risk assessments under 5.

19 Where the duty holder is the only person conveying gas in a network, particulars to demonstrate that he has established adequate arrangements to decide when and for how long gas not conforming with the requirements of regulation 8(1) should be conveyed in the network pursuant to regulation 8(4).

- Not applicable

20 Without prejudice to paragraph 18 above, particulars of the procedures that the duty holder has established to discontinue safely supply to consumers, when it is known there is insufficient gas to satisfy demand.

- Explain what you do when the supply to each of your networks fails
- Specify the sequence of the steps you would take*
- Describe your procedures for ensuring that all consumers directed to cease using gas

do so safely

- Describe your arrangements and priorities for ensuring the safe disconnection of domestic – including vulnerable -and other consumers*

* If you rely on your emergency service provider to carry out disconnections this should be covered in your contract with them.

21 Particulars of the procedures that the duty holder has established to restore safely the gas supply to consumers, following an interruption in supply.

- Explain what you do in order to re-establish the gas supply to consumers
- Specify the sequence of the steps you would take*

* If you rely on your emergency service provider to carry out restoration this should be covered in your contract with them.

Interpretation

22 In this schedule –

a) “audit” means systematic assessment of the adequacy of the management system to achieve the purpose referred to in paragraph 6 carried out by persons who are sufficiently independent of the system (but who may be employed by the duty holder) to ensure that such assessment is objective;

b) “management system” means the organisation and arrangements established by the duty holder for managing his undertaking;

c) any reference to an operation intended to be undertaken by the duty holder is a reference to his intended operation of conveying gas in a network.

- Self explanatory

Suggested safety case contents headings

Key Schedule 1 paragraphs indicated - for suggested application only

Introduction - Para 1

Description of the operation - Para 2

General description of plant, premises and location - Para 3

Operational and Maintenance procedures - Para 4

Risk assessment - Para 5

Health and safety arrangements - Paras 6, 9, 10

Monitoring health and safety performance - Para 6

Competence and training - Para 7, 9

Management of contractors - Para 8

Audit and review of management systems - Para 11

Co-operation with other parties - Para 12

Gas escapes and Investigations - Paras 13, 14

Content and other characteristics of gas - Paras 15, 19

Continuity of supply and supply emergencies - Paras 16-18, 20, 21

Continuity of supply

Local supply emergencies

National supply emergencies

Handling of other incidents – as identified from risk assessment - Para 5 (+ other paras as applicable)

Glossary – here or after the Introduction

Appendices (to include):

Gas Network diagrams

Mains replacement policy

(Risk assessments – see next page for suggestions as to main risks)

Suggested main risks - all relate to natural gas only as source risk

Type of incident and consequence

Overpressurisation of the network

Inadequate pressure in the network

Inadequate gas supply to the network

Overpressure of internal pipework/end user installation

Inadequate pressure of internal pipework/end user installation

Escape of gas from the network: i) controlled and ii) uncontrolled

Corrosion/fracture/joint failure

Failure of safety critical equipment

Failure in network due to interference/3rd party damage

Interruption of supply due to primary meter shut off by upstream conveyer

Only where applicable: Introduction of out of specification gas into the network

Where the above apply, identify for each:

Cause

Preventative measures

Protective measures

Monitoring

12 INSPECTION GUIDANCE

Introduction

1 When a safety case has been assessed and accepted by HSE, the Case Manager will agree a post assessment inspection plan. The purpose of the plan will be to verify that the arrangements described in the case are working in practice, as well as to explore in greater detail particular issues raised during assessment.

2 The responsibility for monitoring compliance with the inspection plan rests with the Team Leader responsible for the relevant GSMR network.

3 In addition to the specific inspection plan raised during assessment, the guidance below is designed to provide a framework for verification inspections. They are designed to provide a structured approach that leads the inspector through the requirements of GSMR and provides a simple method of consistently recording the inspection. Guidance, together with a number of sample questions, is provided in a proforma to help inspectors in the structuring of their inspection plans.

Purpose and Scope of a Verification Inspection

4 The purpose of a verification inspection is to determine whether a gas conveyer is operating in conformity with its safety case by following the procedures and arrangements described – it is not to reassess the safety case.

5 The inspection is principally to check if GSMR reg. 5 is being complied with, i.e. “Where a person has prepared and had accepted a safety case pursuant to these Regulations he shall ensure, so long as he conveys gas in the network to which the safety case relates or remains a network emergency co-ordinator, as the case may be, that the procedures and arrangements described in the safety case and any revisions thereof are followed.”

6 If the procedures and arrangements described in the safety case are found to be inadequate then the matter should be referred back to the Team Leader and for possible enforcement action.

Pre-Inspection Preparation

7 The safety case is an important reference document for management, safety representatives, those who have to co-operate with the gas conveyer and for HSE as a starting point for verification inspections.

8 An up-to-date copy of the safety case should be obtained prior to the inspection, together with relevant documents referred to in the case. Copies of duty holder audit reports may also be useful.

Verification Inspections

9 As with other inspections, these will involve visits to the duty holder's offices as well as visiting the network. This may include witnessing construction activities, operations and maintenance or examining plant such as pressure regulating installations.

Verification Proforma

10 Below is a proforma that can be used to structure an inspection and record the outcome.

Sch 1 para No	Verification Issues	Assessment
1	General	
	Is the name and address of the duty holder as stated in the safety case?	
2 & 3	Description	
	Is the extent/location of the network/pipeline systems as per the safety case or as notified to HSE? Are maps and drawings available with the system clearly marked? Are interfaces with other gas conveyors clear? Are drawings to an appropriate scale and are the necessary features to assist with the safe management of gas supply clear?	
	Note: The safety case probably will not identify every location or system but gas conveyors are required to send to HSE, from time to time, a list of sites/locations to which the safety case applies.	
	Are all relevant consumer types/premises covered by the safety case – e.g. if a mix of industrial and domestic is this covered?	
	Are any interruptible consumers clearly identified on the system?	
	If different supply systems are operating at Low Pressure and Medium Pressure does the safety case reflect this?	
	Is the full inlet operating pressure range covered by the safety case? Do the systems cope with the full range of inlet pressure swings that were predicted? How is this monitored?	
	Are patterns of consumption the same as predicted in the safety case? How well is the supply system coping with the actual consumption/demand?	
	Are the materials and construction methods used the same as declared in the safety case – e.g. is polyethylene pipe used exclusively or are parts of the system(s) in steel?	
	What are the jointing methods used?	
	Are control rooms, their mode of operation and extent of control still reflected in the safety case?	
	What are the means of communication with other parties (e.g. terminals, storage sites and other gas conveyors) and how well do they work? Are these systems tested?	
4	Technical specifications and operations and maintenance procedures	
	A number of technical specifications are likely to be referenced in safety cases.	
	It is important to remember that the primary purpose of referencing standards in the safety case concerns the safety and reliability of critical plant and the management of the safe flow of gas. It is not to repeat all the detailed system integrity requirements that might be covered by, say, materials and welding standards, etc.	

A check should be made that technical specifications quoted are readily available to those who need to use them.
Are they current versions/editions?
Are they being used and being used appropriately – who checks? For example, are IGE/TD Recommendations used across the system or are other standards preferred in certain circumstances – because they may offer cheaper or easier solutions?
Are standards and recommendations enhanced or otherwise modified by company standards or requirements?
A set of standards or Recommendations may be selected by the inspector and used to assess part of a network during an office and site visit.
For example, Section 5 of IGE/TD/3 could be used to test the construction planning arrangements while at the gas conveyor's offices. Then, if a visit is made to a site where polyethylene mains are being installed then further compliance with IGE/TD/3 could be checked – e.g. the management of materials quality, jointing, ensuring the correct depth of cover and position of pipes in relation to other services, testing arrangements, etc.
If service installation works are being undertaken then these should be checked against IGE/TD/4. The issues that may be covered include the management of materials quality, depth of cover and proper service entry.
For medium pressure services, with their higher risks, particular note could be taken of the means of isolating services, recording their position, controlling pressure to the consumer's appliances, safe venting of meter boxes, measures to ensure no gas can enter the building via the meter box, ensuring the general condition and security of meter boxes, etc. . Compliance with IGE/TD/15 should be checked.
Pressure regulating installations could be visited to be checked against IGE/TD/13 for site location and protection, site isolation valves, housing type, number and type of downstream protection devices on gas streams, arrangements for regulating/ controlling pressure, etc.
IGE/GL/1 may be used by the gas conveyor for medium or low-pressure network design. A check could be made of the design of a selected network or system with particular reference to the following:
- what source pressures were used in the design? How were these established? How are they monitored?
- what agreements were made between other gas conveyors at the interfaces at system boundaries?
- what is the breakdown of annual load (domestic, commercial, etc.)?
- what is the maximum design load?
- what diversity factor was applied?
- what is the policy for allowing additional loads to be connected?
- what are the arrangements for periodic network analysis?
Examination of procedures for operations and maintenance - examples:
A number of procedures may be referred to in the safety case and some should be selected for closer examination.
The main purpose of the examination is to check that written procedures are readily available to those who need them; that identification of the need for procedures and their preparation is properly managed; that the issue of revisions is properly controlled; that communications with other interested and affected parties are established and working; that audit arrangements are in place; that proper liaison exists with enforcing authorities and emergency services and that arrangements for the appointment, training and ongoing assessment of the competence of staff with safety critical functions are properly managed.
Examples of procedures for detailed examination might include:
- procedures for carrying out inspections, functional checks and full maintenance of plant and equipment at pressure regulating installations together with reporting and feedback arrangements;

	- procedures for routine and non-routine operations which might affect the safe supply of gas – e.g. making connections, isolations, etc.; and
	- procedures for dealing with reported gas escapes including carbon monoxide emissions.
5	Safety management - risk assessment and health and safety arrangements
	The risk assessment should reflect the network described in the safety case. The risk assessment itself and the processes used need only be verified further if it is found that the networks differ from those described or it becomes clear that certain risks have not been included.
	Is there any evidence that risk assessments are being reviewed periodically?
	Have preventative and protective measures identified in the assessment been implemented?
	Are arrangements in place for making available procedures and protective measures to managers, supervisor, other employees, safety representatives and safety committees?
	Note: All risks assessments must only relate to the source of risk from natural gas.
6	Safety management – an adequate management system
	Some questions which might be asked during an inspection of a gas conveyor:
	In particular:
	Are the key post holders as described by the safety case actually employed?
	Are the key post holders aware of their responsibilities as described?
	In general:
	Bearing in mind the complexity of the operation and supporting organisation is there a “safety-intelligent” directing mind to secure safe gas supply within the organisation or does it rely principally on outside expertise and advice?
	Does the organisation, as described in the safety case, have sufficient technical and managerial expertise to be able to be an intelligent user of technical services (from consultants or engineering services providers), to procure gas supply related services (from contractors) and to understand and evaluate feedback and advice?
	An alternative approach might be to follow the principles used in determining the operator of a pipeline – i.e. is the person able to decide on issues relating to the safe supply of natural gas without having to rely on outside support? If such support is needed how does the gas conveyor decide if those offering support are competent to do so?
	In more detail:
	Does the organisation/management:
	- understand its duties under the law?
	- set, interpret and deliver safety and engineering standards relevant to gas supply safety?
	- understand and support the safety case?
	- maintain and develop a “corporate memory”?
	- ensure suitably and sufficiently qualified and experienced staff are available to make safety related judgements affecting gas supply and at all times?
	- have sufficient breadth and depth of knowledge to understand the safety features of the plant and gas supply system?
7	Safety management – competence and training
	Are the procedures for staff selection, training and supervision as detailed in the safety case being followed?
	Do key post holders have the qualifications, knowledge, experience and skills required?
	Is there sufficient competent staff to cope with emergency situations as well as normal operations? Is there sufficient staff to cover for others on leave or during sickness?
8	Safety management - contractors

<p>If the gas conveyor uses contractors extensively for the above activities then this is an area that should be examined in detail.</p> <p>The key issue is ensuring contractors are competent to design, construct and install, operate and maintain plant and equipment that will be, and remain, fit for the purpose of securing a safe gas supply.</p>	
<p>As a minimum the following issues should be verified at the gas conveyor's offices and during a site visit:</p>	
<p>In the office:</p>	
<p>- are pre-tender assessments available for all contractors currently being used?</p>	
<p>- can the gas conveyor demonstrate that contractors have the appropriate qualifications, knowledge and skills for the work they are employed to do? Are they able to follow safe systems of work in relation to gas?</p>	
<p>- is the level of supervision described in the safety case being applied in practice?</p>	
<p>- is the level of monitoring and inspection by the gas conveyor of contractors' work as described in the safety case?</p>	
<p>- are as laid/as built drawings, material and test certificates provided by contractors?</p>	
<p>On site:</p>	
<p>- are all the contractors employed by companies approved by the gas conveyor?</p>	
<p>- do operatives have the required or specified competencies?</p>	
<p>- are contractors actually working to the standards, specifications, plans and procedures required by the gas conveyor?</p>	
<p>Emergency service provision</p>	
<p>One area normally contracted out by gas conveyors is emergency service provision. All gas conveyors currently employ National Grid Gas or other upstream Distribution Network Owner to carry out this on their behalf. For details refer to paragraph 13 below.</p>	
9 & 10	Safety management - communicating information
<p>In general, are the arrangements as described in the safety case?</p>	
<p>In particular, how well do systems work for feeding back information on gas safety issues to the gas conveyor's management?</p>	
<p>A key issue is the maintenance of records referring to each network or system and how these are kept up to date and distributed.</p>	
<p>Has the gas conveyor passed on as laid plans and drawings of their systems to the emergency service provider?</p>	
<p>Does the gas conveyor have arrangements to capture emergency calls, recording the information and passing it on to the National Grid Gas Freephone Emergency Number? It may be possible to check this via the switchboard and customer help lines.</p>	
<p>Does the gas conveyor have arrangements for identifying the supplier of a property – e.g. for reportable carbon monoxide poisoning?</p>	
11	Safety management - audit
<p>The gas conveyor has to be able to demonstrate that they have established adequate arrangements for audit of those parts of the management system that deal with the safe management of the flow of gas and provision of an emergency response service.</p>	
<p>Consider using HSG(65) as a reference for inspecting audit arrangements.</p>	
<p>If any audits have been conducted how independent were they?</p>	
<p>Who has actually carried out audits – were they from within the organisation but outside the management chain responsible for the areas being audited or were they outside consultants, etc?</p>	
<p>Review any audit reports with particular emphasis on the audit findings, recommendations and action plan. What progress has been made against any action plans?</p>	
12	Co-operation

The main issue here is for the gas conveyor to show that arrangements are in place to ensure that any directions given by the Network Emergency Coordinator can be followed.	
Does the gas conveyor have any written procedures for action in the event of a supply emergency?	
Are the people identified in the procedures available and aware of their responsibilities?	
Does the gas conveyor have up to date contact information for the local National Grid Gas or other upstream Distribution Network Owner's Distribution Network for all of its networks or systems?	
Are the people nominated for communicating with other organisations aware of their responsibilities and available at all times?	
If the gas conveyor has interruptible loads or large firm loads, does it have contact details for these consumers and how often are they validated?	
Does the gas conveyor have the means to record and track a gas supply emergency?	
Can domestic priority consumers be readily identified?	
Does the gas conveyor have sufficient leaflets, and arrangements for distributing to households, asking them to reduce cease or resume consumption?	
13	Gas escapes and investigations – emergency service provision
Can the gas conveyor show evidence of a current emergency service provision contract?	
Does the contract cover the areas described in the safety case?	
If the safety case states that the performance of the emergency service provider is monitored can the gas conveyor show any evidence of this?	
Does the emergency service provider have all the necessary drawings and plans?	
Has National Grid Gas been provided with the information it needs to relay calls immediately to the emergency service provider for each network or system?	
What arrangements are there for recording notifications of emergencies from Transco, action taken in response and time taken to make safe?	
Are the arrangements that are in place to ensure that emergencies are dealt with promptly and effectively as per the safety case?	
Are all foreseeable types of gas escape covered by the arrangements?	
What arrangements are in place to deal with emergency calls received directly by the gas conveyor – are these in accordance with the safety case?	
Are there procedures for dealing with gas escapes, such as those for:	
- controlling, directing and monitoring an incident;	
- minimising the need to interrupt gas supplies;	
- communications with affected consumers;	
- etc?	
Are there procedures for identifying the source of escapes of carbon monoxide or are these all covered by the emergency service provider?	
14	Gas escapes and investigations – arrangements for investigations
Do incident reporting procedures identify the need to notify HSE prior to commencing investigations of certain incidents? Is there evidence that HSE is being notified?	
What are the means of ensuring that people who carry out investigations are competent to do so? What records exist to demonstrate the competence of investigators?	
Do the procedures cover the requirement that investigation reports are sent to HSE? Are they being sent to HSE?	
Are there arrangements for notifying suppliers of emissions of carbon monoxide? Is there any evidence that this is being carried out?	
15	Content and other characteristics of gas
Are the arrangements set out in the safety case being carried out?	

Is there evidence that the gas conveyor is complying with GS(M)R regulation 8 – i.e. that only gas permitted under this regulation is conveyed through pipes in the gas conveyor's system?	
If testing or monitoring is to be carried out are there reports or records of these activities?	
16	Continuity of supply
What arrangements and procedures are in place to ensure that the gas conveyor is able to maintain a secure supply? How are they used?	
17	Gas pressure at outlet of network
What arrangements are in place to monitor gas pressure in networks or systems – particularly at connections and extremities?	
Are records available? How are these used in the management of the flow of gas? What pressure limits are set and does the system work within those limits?	
18	Supply emergencies
Are procedures available to deal with events identified in risk assessments (see paragraph 4 above)?	
Do the procedures deal with arrangements between the gas conveyor and other who may be involved – e.g. other gas conveyors, suppliers and shippers?	
Are procedures available where they have been identified in the safety case as being required under a National supply emergency?	
19	Conveying gas which does not comply with GS(M)R regulation 8
Do the arrangements follow those described in the safety case? [Not likely to be applicable for most gas conveyors.]	
20	Procedures for discontinuing supply (under a supply emergency)
If the gas conveyor relies on the emergency service provider to carry out disconnections then this should be covered in the emergency service provider contract.	
If, however, the gas conveyor carries out its own disconnections (or uses contractors) then the procedures should be reviewed against the safety case.	
Key issues include:	
- how does the gas conveyor determine the order in which disconnections take place?	
- how are vulnerable consumers dealt with?	
- how are disconnections across an affected area co-ordinated?	
- how does the gas conveyor ensure that safe disconnection is achieved and maintained?	
- how does the gas conveyor maintain records of who has been disconnected?	
21	Procedures for restoring gas supplies
If the gas conveyor relies on the emergency service provider to carry out restoration of supplies then this should be covered in the emergency service provider contract.	
If, however, the gas conveyor carries out restoration of supplies itself (or uses contractors) then the procedures should be reviewed against the safety case.	
Key issues include:	
- communication arrangements with National Grid Gas and other gas conveyors.	
- establishing competence of those carrying out purge and relight operations.	
- how will the gas conveyor maintain records of those who have been reconnected?	
- procedures to be adopted when unable to gain access to properties?	
- details of arrangements and actions to be taken if the supply emergency was due to water ingress into the system and has passed beyond	