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Human Factors review of gas self-isolation and restoration field trial

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Research Report

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Human Factors review of gas self-isolation and restoration field trial

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The gas distribution network operators (GDNs) must prepare emergency plans to respond to a widespread or prolonged loss of gas supply incident occurring on their part of the network. These plans are a requirement of the Gas Safety (Management) Regulations 1996 (GSMR) and form part of the safety case arrangements made by the GDNs.

The GDNs have proposed procedures to allow members of the public to isolate and restore their own gas supply in the event of a loss of supply incident. The GDNs have carried out a field trial to test these procedures under controlled conditions, using a sample of emergency and non-emergency works.

This report describes a desk-based review of the GDN field trial. The review considers the process and validity of the self-isolation and restoration field trial, as well as the adequacy of the instructions provided to participants (in the form of the leaflets developed by the GDNs). Supporting materials, such as videos and web pages, have also been reviewed.

Review of the field trial data suggests that the trials included a representative sample of properties and meter locations. However, a number of limitations have been identified, including the presence of First Call Operatives (FCOs) during the trial, and these may affect the interpretation of the trial findings.

Areas for improvement have been identified, such as the need to ensure consistency of information and effective linking across all sources (leaflets, videos and web pages).

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KEY MESSAGES

The Gas Distribution Networks (GDNs) used a sample of emergency and non-emergency works to carry out a field trial, to validate their public self-isolation and restoration procedures. The Health and Safety Laboratory (HSL) were commissioned by the Health and Safety Executive (HSE) to carry out a desk-based review of the GDN field trial. The review considered the process and validity of the self-isolation and restoration field trial as well as the adequacy of the instructions provided to participants (in the form of the leaflets developed by the GDNs).

The feedback collected during the field trial focused on the process of consumer self-isolation and restoration, and only limited information was collected on the content and format of information presented in the leaflets. Due to the similar nature of the leaflets used, and the limited nature of the feedback collected, it is difficult to identify best practice (or 'preferred' aspects of the information presentation). Further work is therefore required to confirm that the content and format of information is suitable for the majority of consumers.

Review of the field trial data received by HSL suggested that the trials included a representative sample of properties and meter locations. The majority of participants who took part in the trial were able to self-isolate and restore their gas supplies. However a number of limitations with the trial were identified, for example:

- A First Call Operative (FCO) was present during the trial (where participants were asked to follow the instructions provided to isolate and restore their gas supply);

- Limited feedback was collected regarding the self-isolation and restoration leaflets used in the trial. One open question was used to capture comments on both leaflets, and it is therefore difficult to relate feedback to a specific leaflet;

- The restoration leaflet was presented immediately after the self-isolation leaflet. Therefore the trial did not reflect the real-life time delay or provide opportunity to pilot the use of status identification labels to assist engineers in identifying whether gas had been successfully turned off or whether assistance was required by the consumer.

The self-isolation and restoration leaflets should be recognised as risk controls (in situations where members of the public are asked to self-isolate and restore gas supplies). Consideration should be given to clarifying and emphasising safety critical aspects of the process, and explicitly stating the possible consequences of not following the restoration steps in the prescribed order.

The additional materials developed (i.e. videos and web pages) provide alternative opportunities for consumers to access self-isolation and restoration information. This is beneficial, and may help to address differences in preferences in accessing this type of information. However, care should be taken to ensure consistency of information across

sources, and consideration should be given to how these sources could be effectively linked together.

GDNs should recognise that some of the conclusions made in their summary reports are based on a number of assumptions, and state these assumptions explicitly to enable a full consideration of the implications of the trial findings. In addition, the review of this field trial has identified further work required, including some areas for further consideration and exploration.

EXECUTIVE SUMMARY

OBJECTIVE

The objective of this work was to review a field trial carried out by the Gas Distribution Networks (GDNs) using a sample of emergency and non-emergency works to test self-isolation and restoration procedures under controlled conditions.

The review included:

- Consideration of leaflets used within the trial;
- Comment on the data and implications of the trial (including consideration of the adequacy of the self-isolation/restoration procedure);
- Review of supporting materials (e.g. videos and web pages); and
- Identification of possible areas for improvement and further exploration.

KEY FINDINGS

The feedback collected during the field trial focused on the process of consumer self-isolation and restoration, and only limited information was collected on the content and format of information presented in the leaflets. Due to the similar nature of the leaflets used, and the limited nature of the feedback collected, it is difficult to identify best practice (or 'preferred' aspects of the information presentation). Further work is therefore required to confirm that the content and format of information is suitable for the majority of consumers.

Review of the field trial data received by HSL suggested that the trials had included a representative sample of properties and meter locations. The majority of participants who took part in the trial were able to self-isolate and restore their gas supplies. However a number of limitations with the trial, e.g. presence of the First Call Operative (FCO) and the timing of the leaflets may affect the interpretation of the trial findings.

The self-isolation and restoration leaflets should be recognised as risk controls (in situations where members of the public are asked to self-isolate and restore gas supplies). Consideration should be given to clarifying and emphasising safety critical aspects of the process, and explicitly stating the possible consequences of not following the restoration steps in the prescribed order.

The additional materials developed (i.e. videos and web pages) provide alternative opportunities for consumers to access self-isolation and restoration information. This is beneficial, and may help to address differences in preferences in accessing this type of information. However, care should be taken to ensure consistency of information across sources, and consideration should be given to how these sources could be effectively linked together.

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1. INTRODUCTION

There has been considerable interest across Government in how the Gas Distribution Networks (GDNs) will manage consumer supply restoration in the event of a large scale or widespread gas supply emergency. Due to the requirements of the existing industry procedures it is possible that HSE could be perceived as a 'blocker' to a rapid restoration process.

Current GDN procedures (which form part of their Gas Safety (Management) Regulation (GSMR) safety cases) require consumer self-isolation and subsequent pipework and appliance isolation and restoration to be undertaken by suitably competent personnel (either employed by the GDN or sub-contracted to them). Depending on the scale of the loss of supply incident this could potentially take many weeks or even months to carry out and there is a consequent risk to vulnerable members of the public from hypothermia.

The GDNs commissioned a risk assessment to provide guidance on when it might be appropriate to use the self-isolation and restoration approach, taking into account the predicted number of fatalities from gas incidents during self-isolation and restoration and the predicted number of fatalities from the effects of low indoor temperatures during a gas supply outage[1]. The GDNs have also developed information leaflets for the public and arrangements for checking on vulnerable people and empty houses. A sample of emergency and non-emergency works[2] was then used to carry out a field trial, to validate the GDNs' public self-isolation and restoration procedures

This work will review the field trial, the associated conclusions and recommendations, and examine Human Factors aspects of the GDNs' self-isolation and restoration procedures.

1.1 BACKGROUND

The field trial was intended to test the effectiveness of involving consumers in isolating their own gas supplies (should this be required during a significant gas supply failure). The intention is for this approach to only ever be used where it is believed that significant time savings could be achieved, compared to the current practice of using First Call Operatives (FCOs) to carry out this task (e.g. a local gas supply emergency resulting in the loss of supply to a significant number of properties).

The aim of the field trial was to pilot the approach with consumers, using a real-life loss of supply incident, however no incident occurred during the trial period and so a sample of emergency and non-emergency works was used to test the self-isolation and restoration procedures under controlled conditions. The Health and Safety Laboratory (HSL) were asked to utilise Human Factors expertise to comment on the trial, and the adequacy of the procedures being followed.

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[1] *Cruse, H. (2012) Review of self-isolation and restoration risk assessment models.*

[2] *Emergency works include investigation and repair following reported gas escapes, whilst non-emergency works include a range of planned works such as meter replacement or emergency control valve exchanges.*

All meters isolated by consumers were checked prior to re-gassing the network, to ensure safety was not compromised.

1.2 OBJECTIVE

Therefore, the objective of this project is to review a field trial carried out by the Gas Distribution Networks (GDNs) using a sample of emergency and non-emergency works to test self-isolation and restoration procedures under controlled conditions. The review included:

- Consideration of leaflets used within the trial;
- Comment on the data and implications of the trial (including consideration of the adequacy of the self-isolation/restoration procedure);
- Review of supporting materials (e.g. videos and web pages); and
- Identification of possible areas for improvement and further exploration.

2. METHOD

2.1 PROVISION OF INFORMATION BEFORE THE TRIAL

HSE requested that HSL provide links to useful information to pass on to the Gas Distribution Networks (GDNs). HSL therefore provided links to some general information on 'safety critical communications' before the trial began.

The information was taken from the Human Factors section of the HSE website: http://www.hse.gov.uk/humanfactors/topics/communications.htm, and although the GDNs' focus is slightly different, the key principles still apply e.g. identifying the communication needs, consideration of the format used, method, timing, language (i.e. appropriate to the audience), highlighting safety critical steps, and considering reinforcement of important messages using more than one method (e.g. a written back up to a verbal communication).

In addition a reference was provided (acknowledged as having a useful bibliography section with further references):

Instructions for Consumer Products: Guidelines for Better Instructions and Safety Information for Consumer Products by Susan Cooper, Magdalen Page.

2.2 REVIEW OF SELF-ISOLATION AND RESTORATION FIELD TRIAL

The Gas Distribution Networks (GDNs) piloted the self-isolation and restoration procedures during a sample of emergency and non-emergency works. Emergency works include investigation and repair following reported gas escapes, whilst non-emergency works include a range of planned works such as meter replacement or emergency control valve exchanges.

The trial followed the general approach:

- Following completion of emergency or non-emergency works participants were invited to take part in the trial by the First Call Operative (FCO);
- Participants who agreed to take part were provided with the self-isolation leaflet;
- Participants were asked to follow the instructions;
- Participants were then presented with the restoration leaflet and asked to follow the instructions (the FCO was present throughout, but instructed not to intervene unless the participant acted unsafely);
- Feedback was sought by the FCO from the participant, using a pre-determined questionnaire.

Each GDN compiled their data and produced a short summary report. The reports included the leaflets used during the trial as an appendix.

HSL carried out a desk-based review of the GDN's 'self-isolation and restoration' field trial once it was completed. This review was based on:

- GDN summary reports of the field trial (including copies of the ‘self-isolation’ and ‘restoration’ leaflets used by each of the GDNs); and
- Additional materials developed by the GDNs (web pages and videos) which were not included in the trial.

3. REVIEW OF GDN APPROACH TO SELF-ISOLATION AND RESTORATION

A desk-based review of the 'self-isolation and restoration' field trial (carried out by the Gas Distribution Networks) was completed. The review considered the process and validity of the self-isolation and restoration field trial as well as the adequacy of the instructions provided to participants (in the form of the leaflets developed by the GDNs).

3.1 SELF-ISOLATION AND RESTORATION FIELD TRIAL

The field trial was designed and run collaboratively by the four Gas Distribution Networks (GDNs), Scotia Gas Network (SGN), Wales and West Utilities (WWU), Northern Gas Networks (NGN) and National Grid (NG). The target for the trial was to achieve 1000 participants (approximately 250 per GDN). A total of 1034 participants took part in the field trials, however trial participants were not split equally across Distribution Networks (DNs) (see Table 1).

Distribution Network:	**No. participants:**	**Trial:**
Scotia Gas Network	303	May-June 2012
Wales and West Utilities	513	November – December 2011 and March – June 2012
Northern Gas Networks	44	July-August 2012
National Grid	174	Up to October 2012

Table 1 Trial participants across distribution networks

Trial data was collected by the GDNs, and HSL was provided with a summary report from each GDN. The summary reports stated that the breakdown of property type, and meter locations indicated that the field trial included a representative sample of properties/meters.

3.1.1 Leaflet design

Each DN developed and tested a set of leaflets / customer information on the process of self-isolation and restoration. This generally consisted of separate self-isolation and restoration information leaflets or letters and included status identification labels for each property (i.e. to enable occupiers to indicate whether they had been able to isolate or restore their gas supply or if they required assistance).

Although the underlying principles of the leaflets were consistent (and the leaflets themselves subjected to an element of peer review), DNs were able to tailor the 'look and feel' of the leaflets, including the format information was presented in.

A consistent recommendation from the DNs was that the different leaflets should be reviewed for best practice (also one of the DNs' aims for their trial was to 'identify best practice and areas for improvement in the design of the communication material'). Review of the self-isolation and restoration leaflets used identified a number of similarities and only limited differences in the way information was presented. The

main difference was the use of a 'letter' or 'leaflet' format. Table 2 provides an overview of the information provided to consumers across DN self-isolation and restoration letters and leaflets.

	Format of information	
Phase	**Letter** (used by NG and NGN)	**Leaflet** (used by SGN and WWU)
Self-isolation	DN contact details and link to DNs' website, video, Twitter and Facebook. Reinforces importance that gas is not used whilst engineers are dealing with emergency. How to turn your gas supply off (with illustration). Status identification label. What to do if you smell gas (less detail than restoration letter or leaflets).	What to do if you smell gas. Engineers will not turn off your gas supply unless assistance is requested, vulnerable customer or multi-occupancy building. Advice to minimise electricity usage. Link to DNs' website. Advice on when further action required. Status identification label.
Restoration	DN contact details and link to DNs' website, Twitter and Facebook Reinforces importance instructions followed in order listed. Check gas appliances are turned off. How to turn your gas supply on (with illustration). What to do if you smell gas. Turning on appliances (according to manufacturer's instructions). Status identification label.	What to do if you smell gas. Check gas meters and appliances are turned off. How to turn your gas supply on (with illustration). Turning on appliances (according to manufacturer's instructions). Engineers will not turn on your gas supply unless assistance is requested, vulnerable customer or multi-occupancy building. Link to DNs' website.

Table 2 Overview of information provided to consumers

Slight differences in how information on 'what to do if you smell gas' was presented were identified. The self-isolation and restoration leaflets and the restoration letter presented a bulleted list of 'dos and don'ts' (the leaflets also used illustrations and colour coding), whereas the self-isolation letter simply stated: 'If you smell gas at any point call the National Gas Emergency Service' and provided the number to call.

Slight differences in emphasis were found e.g. the letters place more emphasis on the importance of restoration instructions being followed in a specific order by stating this explicitly, whereas restoration leaflets make this emphasis by highlighting the sentence or words relating to this instruction, but without explicitly stating the importance of these steps being followed in order. This is especially critical, as previous work reviewing a risk assessment of the self-isolation and restoration approach (Cruse, 2012) indicated that flashback following delayed ignition of appliances during restoration was one of the dominant causes of possible fatalities identified.

The restoration leaflet did not include a status identification label, whereas the restoration letter included a version for consumers to confirm their 'gas supply is back on/assistance is not required' or 'gas supply is still off/assistance is required'. This may reflect differences in the procedures being trialled, and should be considered for consistency of the self-isolation/restoration approach to be implemented.

Limited feedback on the leaflets and letters was collected from participants during the trial. Information was generally collected in response to a single question for each DN e.g. 'Any comments on the content of the leaflet' or simply 'Comments'. Feedback comments were generally positive, but lacked specific detail, and the question was asked once following use of both the self-isolation and restoration leaflets, and it is therefore unclear which leaflet the feedback comments relate to.

The timings of the leaflet presentation during the trial (i.e. the immediate presentation of the self-isolation and restoration leaflets), and the nature of the information provided in the leaflets means it is unclear whether consumers would be aware they should wait for a second leaflet informing them that work has been completed, and they can restore their gas supply.

Each DN also recorded that some participants could not speak or read English. Consideration should be given as to how these consumers could be supported during a real-life loss of supply incident.

Recommendations identified by the DNs

The SGN and WWU summary reports recommend that 'more guidance on the self-isolation and re-light process should be provided', however the reports do not specifiy what additional guidance requirement had been identified.

Following completion of the field trial, DNs also identified the following good practice/recommendations:

- Highlight 'dos and don'ts' in green/red;
- Self-isolation leaflet should cater for properties without a gas supply; and
- Self-restoration leaflet needs to cover the purge process in more detail, provide guidance on manufacturers' instructions for restoring appliances, advise consumers to open doors/windows until appliances have been re-lit, and to turn

gas off at the meter if the consumer has to stop the restoration process part way through.

3.1.2 Field trial design

The field trial piloted the self-isolation and restoration procedures during a sample of emergency and non-emergency works, to explore the feasibility of using this approach during a real-life loss of supply incident. The trial conditions therefore did not reflect the typical incident where this approach would be employed (i.e. where the potential time savings would be beneficial).

The trial was carried out following completion of emergency or non-emergency works at consumers' premises. Non-emergency works typically involved a First Call Operative (FCO) entering the consumer's property and isolating the gas supply before work began, and restoring the gas supply on completion of the works. Emergency works may have involved consumers being given verbal instructions (over the telephone) to isolate their gas supply, which is likely to affect participants' ability to successfully isolate and restore their gas during the trial.

Once a consumer had agreed to participate in the trial, the FCO would provide them with the self-isolation leaflet, and ask them to follow the instructions. The consumer would then be provided with the self-restoration leaflet and asked to follow the instructions. Although present throughout the trial, FCOs were instructed not to intervene unless the consumer acted in an 'unsafe manner'. The FCO then recorded the trial results on a 'field trial results form' consisting of a series of pre-determined questions.

The field trial was timed to coincide with the completion of emergency or non-emergency works. However, this increases the likelihood that participants may have been advised (or observed an FCO) isolating and restoring the gas supply immediately prior to the trial. Discussions with a GDN contact suggest that gas supply isolation/restoration is not easy to observe due to the typical location of meters; however gas supply isolation/restoration may have provided some participants with an indication of the meter location, and primed them to successfully isolate and restore their gas supply.

The timings of the leaflet presentation (i.e. the immediate presentation of the restoration leaflet) limits the trial's ability to test the time delay between self-isolation and restoration, which in real-life may introduce additional possibilities for consumer uncertainty or error. There was also no opportunity to test the use of the status identification labels to assist engineers in identifying whether gas has been successfully turned off or whether assistance is required by the consumer.

The presence of the FCO during the trial (although instructed not to intervene unless the consumer acted unsafely) may have affected consumers' behaviours i.e. consumers who took part in the trial may have felt confident to follow the leaflet in the knowledge that the FCO would stop them doing anything unsafe.

In addition, participation in the trial was voluntary, and it is unclear why some consumers chose not to participate. Therefore the sample of participants (and the feedback provided) may differ slightly to that of the general population, and this should be considered when interpreting the trial results and conclusions.

3.1.3 Collection of data

Data was collected through a mixture of FCO observations and verbal questions and answers. Although similar, each DN used a different 'field trial results form' to collect data. The format of the form meant that the majority of the information collected related to the process of the trial (e.g. consumer details, the meter type and location, the property type and whether participants were able to successfully locate, isolate and restore their gas supplies). All DNs included only one opportunity for comment on the content of the leaflets (see section 3.1.1).

Successful participants

The summary reports concluded that the majority of participants could isolate their gas supply (73-84%), however this does not distinguish between consumers who had previously received verbal directions to isolate their gas supply, and those who had not. In addition, the summary reports made the assumption that in a prolonged gas outage consumers would have more time to digest the communication materials (i.e. leaflets) and discuss the information with others, therefore resulting in a higher number of consumers isolating their gas supply in the event of a real emergency.

The summary reports also concluded that during the trial, over half of participants could restore their gas supply (51[3]-86%), and again made the assumption that in a prolonged gas outage consumers would have more time to digest the communication materials (i.e. leaflets) and discuss the information with others, therefore resulting in a higher number of consumers self-restoring their gas supply in the event of a real emergency.

The link between these conclusions and the trial results is unclear, and due to some of the limitations identified with the field trial design (i.e. the timing of the trial immediately after the consumers' gas supply had been isolated/restored, and the presence of an FCO throughout the trial) it is difficult to predict how this would affect the number of consumers able to successfully self-isolate and restore their gas supplies during a real-life loss of supply incident.

DNs should therefore recognise that these conclusions are based on a number of assumptions (and state these assumptions explicitly). This would enable a full consideration of the implications of the trial findings.

[3] *Some participants who were unsuccessful in restoring their gas supply were unable to open the Emergency Control Valve (ECV).*

3.1.4 Adequacy of self-isolation and restoration leaflets

The self-isolation and restoration leaflets outline the procedure consumers are expected to follow to safely and effectively isolate and restore their gas supplies. As such, the adequacy of these procedures is based on:

- The extent to which the procedures are relied upon to act as a risk control during the self-isolation and restoration process;
- Evidence that the procedures are based on the risk assessment for this approach (i.e. do the procedures address aspects identified in the risk assessment for this approach);
- A clear link between the procedure and each task consumers are being asked to complete;
- The appropriateness of the format, style and level of detail used within the procedure for the user, task and consequence (i.e. potential severity of cases where gas is not correctly isolated or restored).

The self-isolation and restoration leaflets were the only materials used during the field trial. It is therefore perceived that the leaflets will be relied upon to act as a risk control in situations where members of the public are asked to self-isolate and restore gas supplies. The information presented within the leaflets relates to aspects that were identified in the risk assessment (i.e. the importance of correctly restoring the gas supply and lighting appliances to prevent flashback or gas explosions), however the link between the risk assessment and the tasks within the leaflet is unclear, and may not be recognised by a consumer.

Consideration should be given to clarifying aspects of the process that are safety critical, and explicitly stating the possible consequences of not following the restoration steps in the prescribed order. In addition, further work should be done to confirm the appropriateness of the format, style and level of detail (including terminology used) for consumers. It should be recognised that involving consumers in the design or review of this information would ultimately support them in following the procedures.

3.2 SUPPORTING MATERIALS

A number of supporting materials were also developed by the different DNs, however these were not piloted during the field trial. HSL were provided with copies of:

- NG self-isolation video;
- NG restoration video;
- SGN self-isolation web page; and
- SGN restoration web page

NG self-isolation and restoration videos

The NG self-isolation video is a short video (lasting approximately 1 minute 30 seconds) providing a guide to turning off the gas supply in an emergency. The video includes examples of a number of possible meter locations, demonstrates a number of valves being used to turn gas supplies off, and refers consumers to additional sources of information, including updates on the NG website, Twitter, Facebook and NG representatives in the consumers' area.

The information presented in the video is consistent with the information presented in the NG leaflet used during the trial, however the video does not refer to the requirement to assist engineers by displaying one of the status identification labels provided, and unlike the leaflet the video does not explain that the valve can be turned 90° in either direction.

The NG restoration video is slightly longer than the self-isolation video (lasting approximately 2 minutes 30 seconds), and advises consumers to check gas appliances are turned off, provides a guide to turning the gas supply back on, what to do if consumers can smell gas, turning appliances back on (in line with manufacturer's instructions) and National Grid contact details for advice or guidance. The restoration video also does not refer to the requirement to assist engineers by displaying the appropriate label (as detailed in the NG restoration leaflet).

SGN self-isolation and restoration web pages

The SGN self-isolation web page provides an overview of information on how to turn off the gas supply using the emergency control valve, contact details in case assistance is required, and the requirement to assist engineers by displaying the appropriate status identification labels. There is also advice to minimise electricity usage to avoid problems with the local electricity network.

The SGN restoration web page provides an overview of information on how to turn the gas supply back on using the emergency control valve (after checking appliances are turned off), what to do if consumers can smell gas, turning appliances back on (in line with manufacturer's instructions), and contact details in case assistance is required.

The videos and web pages were not included in the trial, and therefore feedback has not been collected from consumers. Overall, the videos and web pages are informative, and provide similar information to consumers in different formats, supporting the communication of the self-isolation and restoration leaflets (and the range of preferences consumers may have).

However, it is unclear how this information will be co-ordinated (i.e. whether web pages would include links to videos). The information should be checked to ensure consistency across the various sources (to minimise any confusion), and consideration should be given to how the sources could link together, for example, by including sources of further information such as the website, Twitter, Facebook, and phone numbers/contact details in the leaflets, web pages and videos.

3.3 AREAS FOR FURTHER EXPLORATION

The feedback collected during the field trial focused on the process of consumer self-isolation and restoration, and only limited information was collected on the content and format of information presented in the leaflets. In addition, feedback was not sought on other communication materials developed (i.e. web pages and videos). Further work should trial the use of multiple information sources, and include consumer feedback on the content, format and terminology used.

One DN stated they plan to conduct focus groups, to identify colour and language preferences. Their intention is to involve office-based employees (i.e. who have a basic knowledge of gas networks, rather than network engineers). Focus group attendees will also include representatives from the Customer Contact Centre, who provide emergency customer advice on a daily basis (including instructing consumers on how to turn off gas supplies at the meter).

The SGN and WWU summary reports recommend that 'more guidance on the self-isolation and re-light process should be provided', however the reports do not specify what additional guidance requirements have been identified. Further work is therefore needed to clarify and address the specific guidance requirements identified by the GDNs.

In addition, the DN summary reports conclude that in a prolonged gas outage consumers would have more time to digest the communication materials (i.e. leaflets) and discuss the information with others, therefore resulting in a higher number of consumers isolating their gas supply in the event of a real-life loss of supply incident. The link between these conclusions and the trial results is unclear, and due to some of the limitations identified with the field trial design (i.e. the timing of the trial immediately after the consumers' gas supply had been isolated/restored, and the presence of an FCO throughout the trial) it is difficult to predict how this would affect the number of consumers able to successfully self-isolate and restore their gas supplies during a real-life incident.

DNs should therefore recognise that these conclusions are based on a number of assumptions, and state these assumptions explicitly to enable a full consideration of the implications of the trial findings.

4. CONCLUSIONS

The feedback collected during the field trial focused on the process of consumer self-isolation and restoration, and only limited information was collected on the content and format of information presented in the leaflets. Due to the similar nature of the leaflets used, and the limited nature of the feedback collected, it is difficult to identify best practice (or 'preferred' aspects of the information presentation). Further work is therefore required to confirm that the content and format of information is suitable for the majority of consumers.

Review of the field trial data received by HSL suggested that the trials had included a representative sample of properties and meter locations. The majority of participants who took part in the trial were able to self-isolate and restore their gas supplies. However a number of limitations with the trial, e.g. presence of the First Call Operative (FCO) and the timing of the leaflets may affect the interpretation of the trial findings.

The GDNs' conclusion that a prolonged gas outage would result in a higher number of consumers successfully isolating their gas supply is based on a number of assumptions. Further work to explore each of the underlying assumptions and to state them explicitly would enable a full consideration of the implications of the trial findings.

The SGN and WWU summary reports recommend that 'more guidance on the self-isolation and re-light process should be provided', however the reports do not specify what additional guidance requirements have been identified. Further work is therefore needed to clarify and address the specific guidance requirements identified by the GDNs.

The self-isolation and restoration leaflets should be recognised as risk controls (in situations where members of the public are asked to self-isolate and restore gas supplies). Consideration should be given to clarifying and emphasising safety critical aspects of the process, and explicitly stating the possible consequences of not following the restoration steps in the prescribed order.

The additional materials developed (i.e. videos and web pages) provide alternative opportunities for consumers to access self-isolation and restoration information. This is beneficial, and may help to address differences in preferences in accessing this type of information, however care should be taken to ensure consistency of information across sources, and consideration should be given to how these sources could be effectively linked together.

5. REFERENCES

Cruse, H. (2012) Review of self-isolation and restoration risk assessment models. HSL report, MSU/12/03.

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The GDNs have proposed procedures to allow members of the public to isolate and restore their own gas supply in the event of a loss of supply incident. The GDNs have carried out a field trial to test these procedures under controlled conditions, using a sample of emergency and non-emergency works.

This report describes a desk-based review of the GDN field trial. The review considers the process and validity of the self-isolation and restoration field trial, as well as the adequacy of the instructions provided to participants (in the form of the leaflets developed by the GDNs). Supporting materials, such as videos and web pages, have also been reviewed.

Review of the field trial data suggests that the trials included a representative sample of properties and meter locations. However, a number of limitations have been identified, including the presence of First Call Operatives (FCOs) during the trial, and these may affect the interpretation of the trial findings.

Areas for improvement have been identified, such as the need to ensure consistency of information and effective linking across all sources (leaflets, videos and web pages).

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