

MAJOR HAZARDS SUB-COMMITTEE
Working Group on Pipelines

**Land Use Planning - Laying of new Pipelines and
Developments in the Vicinity of Existing Pipelines**

Proposal that a Risk-Based Approach is Adopted and Endorsed

Summary

The debate concerning use of quantified risk assessment for populated areas adjacent to pipelines has continued for the past 10-15 years. Risk is defined as the frequency of a specific event causing a specified level of harm, requiring quantification of both frequency and probability of events as well as quantifying the potential harmful effects.

The debate was given considerable encouragement by David Eves, Deputy Director General of the Health & Safety Executive in August 1995, when he assured British Gas plc that the HSE remains committed to the development of a risk-based approach to the provision of land-use planning advice. A copy of his letter, and the earlier letter from British Gas, are attached.

It is argued that there are significant advantages of a Risk-Based Approach:-

- Transparency – objective risk assessments provide common measurement and language to enable rational decisions to be made, understood by all parties involved.
- Ability to measure, understand and therefore manage and control risk
- Allowing targeted expenditure on risk reduction measures to allow developments and / or pipeline routes to proceed
- Measurement of risk reduction by the effects of expenditure

A hazard-based approach is unsatisfactory because:-

- Annex 1 Of R2P2¹ describes the precautionary approach which is adopted when considerable uncertainty in likelihood exists; this situation is not the case for transmission pipelines, so conventional risk assessment is applicable to pipelines
- There are concerns that there is over-emphasis on potential worst-case scenarios and their possible outcomes, simply because the risks from buried steel pipelines are so low. This results in unjustified large hazard-based zones adjacent to pipeline routes, and restrictions on land use. It also risks influencing operators towards adopting less environmentally and socially acceptable for of transporting hazardous substances.
- It represents an inequitable situation when compared with other high hazard situations such chemical plants, nuclear power or airport runways where a full range of risk-based decision making is in place.

It is therefore proposed that the Working Group on Pipelines should support and endorse the adoption and development of a risk-based approach to Land-Use Planning as applied to laying of new pipelines and proposed developments in the vicinity of existing pipelines.

¹ Reducing Risks, Protecting People, HSE Discussion Document 1999

Risk-Based Approach

This is defined as an approach which utilises all the factors associated with frequency, probability and consequences of an event.

Assessment of frequency takes into account:-

- Historical events which have occurred elsewhere and locally
- Special circumstances which affect the specific pipeline under consideration
- Predictive aspects, allowing engineering improvements and changes which can be highlighted, which affect the frequency or probability of the incident occurring
- Event development, allowing the probabilities of various outcomes to be considered, taking into account historical and engineering features
- Has the major advantage that improvements which reduce frequency and therefore risk, can be factored into the analysis. This applies during the lifetime of a pipeline as continuous improvement is applied to operating, maintenance and pipeline monitoring techniques.

Consequence-Based Approach

Takes only the potential consequences into account, usually only the worst-case consequences.

Allows little scope for improvement apart from very expensive options such as replacing the pipeline in thicker steel or removing the pipeline altogether.

This approach manifests itself particularly by taking fireball radius from a worst-case rupture of a pipeline as the defining inner zone for land use planning for pipelines.

Inequitable Situation

Assessment by HSE of land use planning zones for fixed sites, containing for instance chlorine storage, utilises a risk-based approach. In most cases, a list of incident scenarios and similar failure rate data is drawn up in co-ordination with the site operator, a risk analysis is then carried out by HSE and results are usually shared with the operator.

As an example of these analyses, a 300 tonne storage tank containing chlorine has fatal consequence distances in excess of 3000 metres for full rupture of the tank under most wind/weather conditions. A release dispersing in any wind directions is likely to have fatal consequences on the surrounding population. Yet the inner zone 10^{-5} contour is set on risk only, and is usually approximately 500-700 metres.



Health & Safety Executive
From the Office of the Deputy Director General
David Eves CB

DG/244/95

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P - please fix meeting as suggested. We need David Lyhan, David Abbs, Jane Haswell & Phil Jones present if possible.
Please copy this reply to all above + John M.

File 5363B
UKOPA/00/0046

24 August 1995

Dear Mr Smith,

Thank you for your letter of 10 August about high pressure gas transmission pipelines risk criteria.

Let me assure you that HSE remains committed to the development of a risk-based approach to the provision of land-use planning advice. Although we have made progress in relation to pipelines, we recognise that more work needs to be done.

I understand the concerns of British Gas and the added urgency of the work, in the light of the several developments affecting the industry. I suggest that the best way forward is for a meeting to be arranged with Mark Addison, Head of our Safety Policy Division, to enable a full discussion of your concerns and to give us an opportunity to explain where we have got to and to discuss how best we can carry the work forward.

Mark will be accompanied by Keith Cassidy, Head of our Major Hazards Assessment Unit and Brian Fullam, Head of our Hazardous Installations Policy Unit. We will be in touch with you to make the necessary arrangements.

I have asked to be kept in touch with developments.

Yours sincerely,
David Eves

DAVID EVES

RECEIVED 31 AUG 1995

BRITISH GAS PLC
OPERATIONS
HINCKLEY

23 AUG 1995

cc David Ingham
David Abbs
John Murphy

British Gas
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10th August 1995

Mr D C T Eves CB
Deputy Director General
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cc W P Jones
FILE
JW
14.8.95

Dear Mr Eves

HIGH PRESSURE GAS TRANSMISSION PIPELINES RISK CRITERIA

Following many years of close liaison with representatives of the Health and Safety Executive (HSE) regarding the subject of high pressure gas pipeline routing and the policy for development in the vicinity of pipelines, I regret that I find it necessary to write regarding the HSE's apparent reluctance to establish risk criteria for gas transmission pipelines.

The implications of not having agreed risk criteria are considerable and affect all pipeline operators, shippers and ultimately gas users. We had been given the impression that work associated with the preparation and publication of the Pipelines Safety Regulations and associated documentation, together with the revision of the HSE's Land Use Policy document to include high pressure pipelines, would include risk criteria.

Recent discussions however, have raised concern regarding the HSE's commitment to a risk based approach and associated legislation which has been highly advertised over the past 12 to 18 months or so.

I set out below recent developments which have given rise to my concerns:-

1. Pipelines Safety Regulations

I refer to the draft Regulations themselves, the draft Consultative Document and the draft Approved Code of Practice.

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- 2 -

All the documents have been well advertised prior to publication, as being a risk based legislative approach. This is supported to an extent by the reference to the use of BS8010 or IGE/TD/1 as being acceptable standards for routing of pipelines. It is also made clear in the draft documents, and in the accepted standards, that any deviations from the latter must be supported by a risk assessment which in BS8010 has to be considered by the HSE. How can this be done if there is not a set of agreed criteria?

2. Condition 6 of the Public Gas Transporter's Licence

This condition of the Public Gas Transporter's Licence covers the extension of the pipeline system. Where the routing of the proposed pipeline is not in accordance with the routing guidelines (the prescribed standards), the licensee has to consult with the HSE. Particular reference is made to risk criteria but, as already stated, criteria have not yet been proposed by the HSE.

We are in discussion with your representatives regarding this Condition and continue to be concerned regarding the absence of agreement of the risk criteria, despite the fact that some drafting has been suggested in the interests of progress. To accept it without such agreement could be likened to agreeing to the purchase of a car without knowing the price. It has considerable operational and financial implications.

3. The HSE's Land Use Policy Document (Risk Criteria for Land Use Planning in the Vicinity of Major Industrial Hazards)

We have complained for many years that this document did not cover high pressure pipelines, and we believe that this omission has led to an inconsistent approach by the HSE, which in many ways has discriminated against gas transmission pipelines when viewed against other hazardous installations for which risk criteria are established.

During discussions with HSE representatives regarding the Pipeline Safety Regulations, we were informed that in parallel with the drafting of the Regulations, the Land Use Policy Document would be revised to include pipelines and, rightly or wrongly, we understood that the new section on pipelines would be consistent with the existing document and include risk criteria for pipelines which would be the subject of consultation prior to publication.

We have recently been advised that the new section on pipelines will be purely a confirmation of the current prescriptive guidance, with amendment(s) which makes it even more restrictive than it is currently. This amendment, if published, is likely to lead to the sterilisation of a wide strip of land centred on a pipeline, and will undoubtedly be unacceptable to landowners. Such a move will dramatically increase pipeline construction costs which would be reflected in transportation charges to shippers and ultimately gas users. The establishment of risk criteria would greatly reduce the impact on all concerned.

UKOPA / 0 0 / 0 0 4 6

- 3 -

The proposal to update the document in this way is unacceptable to us and, I am sure, to other pipeline operators.

4. HSE Advice to Local Planning Authorities Relating to Developments in the Vicinity of Pipelines

We have always been unhappy with the prescriptive guidance issued to Local Planning Authorities, and have been urging the HSE to establish criteria for many years. In response we were always informed that the HSE were working towards this end.

Progress has been very slow and, in an effort to speed up the situation, we submitted proposals to your representatives in November 1993 together with an offer of any assistance which would improve progress. Our proposals are based very much on risk levels inherent in the standards approved by the HSE, but we have still not received an official response to our proposals.

Work done by British Gas to establish quantitative risk criteria is extensive and well validated. This work has been carried out at high cost. Full details of the work have been offered to the HSE. HSE's use of this work would benefit all UK pipeline operators, not just TransCo/BG.

Due to the HSE's lack of response in establishing quantitative risk criteria and, as a result, their reliance on a prescriptive protection-based approach, TransCo's operating costs are being increased. As all costs associated with the Regulated business must be transparent and chargeable, we must widen the forum of debate to include the Shippers. You will be aware of the Asset Valuation Review including international costs and standards comparisons.

We believe that very little effort is being directed towards this area, despite the drive towards risk based legislation and that more is required if this very essential ingredient of the proposed legislation and Public Gas Transporter's Licence is to be delivered.

It is also worth noting that the current situation leads to ongoing conflict between advice given by the HSE to Local Planning Authorities regarding developments in the vicinity of existing pipelines where we can demonstrate that the risk is considerably lower than that which would be acceptable under published risk criteria for other installations. The nub of the problem is a reliance on consequence based assessments to the exclusion of risk based analysis. Needless to say, these situations lead to compensation claims against British Gas TransCo.

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- 4 -

I apologise for the length of the letter but I felt it is important to provide you with a fairly comprehensive background to the situation. The direction of effort within the HSE in connection with risk based legislation and the Gas Transporter's licence seems to lack an understanding of the impact on pipeline operators, shippers and consumers.

I would ask you to give your consideration to the allocation of resources to establish risk criteria for pipelines within the same timescale as is proposed for the publication legislation. We are happy to offer you any assistance we can on this matter.

Yours sincerely



Phil Smith
Area Director

