

**Brian Fullam**  
**ICL Inquiry Supplementary Statement**

**Development of the joint working with HSE, UKLPG and Calor on underground LPG pipework**

1. I am asked about my recent work with UKLPG on the development of a risk based matrix. I approached UKLPG in its previous guise of LPGA last year with the purpose of getting them to consider underground pipework in domestic premises. The reason for approaching UKLPG was that there was a concern that many householders did not realise that they owned the pipework and needed to maintain it.
  
2. I approached UKLPG as a result of the ICL incident and a more recent LPG incident at Glenspin in Scotland involving a leak of an underground pipe where two children were injured.
  
3. I suggested we should work together to develop a risk based approach to the identification and replacement of at risk pipework. UKLPG were amenable to this and Calor explained they had done some work in this area. Calor had examined installations at some 500 houses and dug up the pipework at these houses. As a result, they had a substantial body of evidence about the condition of the buried service pipes. They had also undertaken work into the effect of soil types on rates of corrosion.
  
4. At our meeting with LPGA there were representatives of their members who all agreed to take this work forward. Our meeting was only with LPGA not ALGED. We agreed they would start to develop a risk based matrix to identify the pipework that was most at risk of corrosion. The risk that we were most concerned about was that of gas entering the building resulting in a subsequent explosion. The factors that needed to be considered in developing the matrix were the soil type, the materials used in the pipework, metallic, PE or a combination of both, the location of the pipe in relation to the building and the entry point of the pipe into the building, above or below ground and with or without sleeving.
  
5. Calor had conducted some research which indicated that corrosion was likely to be greater in sandy soils than clay soils. It was recognised that the industry should take this matter forward.

6. We hope to make use of a model developed by Transco and Advantica. This modelled the likelihood of the ingress of gas into buildings from natural gas pipes. If we could use this model, with or without some adjustment, the work to develop an action plan to replace at risk service pipe could take place more quickly.

7. In December 2007 I met with UKLPG to discuss what additional research was needed. This is when the merger of LPGA and ALGED was taking place. I agreed to arrange for HSL to undertake the additional work as a way of reducing possible delays in getting the work started arising from the merger between UKLPG and ALGED, which could be expected to slow down consideration of this issue and make the identification of funding for the research more difficult in the short term. I approached HSE's Chief Scientist and got his agreement that the work would be funded I did not require any information from UKLPG.

8. UKLPG then approached their members and asked them to consult their records to determine the type of pipework in the ground at the domestic premises each of them supplied. This would provide a clearer picture of the different types of material that had been used and the numbers of establishments potentially at risk

9. I am asked if the intention is to consider the information retrieved in the domestic context and use it in respect of commercial/industrial premises. HSE needs to identify which commercial/industrial premises have buried metallic pipework at risk from corrosion so as to inform its regulatory approach. As the model being developed for domestic installations is independent of the type of premises it can be used for this purpose.

#### **HSL scientific research**

10. I am asked about the scientific research that HSL are undertaking. HSL are releasing gas at a fixed flow rate 250mm below the surface of the soil. They are measuring the change in concentration of gas at fixed distances from the point of release at different depths, enabling comparisons to be made between the diffusion of LPG and natural gas through the soil

11. The apparatus being used consists of a pipe inserted vertically into soil, which is held in a rectangular box, with a small hole inserted in the side wall of the pipe 250 mm below the surface. Natural gas or LPG is injected into the pipe and flows through the hole into the soil, diffusing both horizontally and vertically. As natural gas is less

dense than air the expectation is that it would readily diffuse upwards. With LPG, which is denser than air, the expectation is that more of the gas will diffuse horizontally or even downwards. HSL are measuring the gas concentration in the soil and immediately above the soil surface. They have already noted that the stenching agent in the propane is readily detected by smell above the soil. They have repeated the experiment with and without the surface of the soil covered, The soil is covered by wooden boards to demonstrate the effect of pipework running beneath a hard surfaces such as a driveway or patio. The intention is to see if gas can be detected above the ground through gaps in the surface. The experiments are ongoing and the results are not conclusive at this stage. The testing is taking place in two types of soil, sand and a commercial loam.

12. This research should demonstrate the differences in behaviour between propane and natural gas and whether the Advantica model can be used in relation to propane.

#### **Timescales for development of this project and possible implementation**

13. I was asked about the HSE, Calor, UKLPG interfaces and what, in particular, Mr Gary Tomlin's involvement has been? My understanding is that Mr Tomlin undertook much of Calor's research on LPG service pipes. I attended a meeting with Mr Tomlin last Thursday, the 2<sup>nd</sup> of October, and we are meeting again on the 16<sup>th</sup> of October to discuss the findings so far. Dr Ritter will attend this meeting as the Calor representative, with Jeff Watson attending on behalf of UK LPG. Graeme Lockwood attended the 2<sup>nd</sup> of October meeting as the Calor representative.

14. Our hope is that, when the experiments are complete, we will have the evidence we need to know that we can use the Advantica gas diffusion model enabling prioritised lists to be prepared of domestic and commercial/industrial sites where buried pipework is at risk of corrosion. I anticipate that action will then be taken to examine and replace as necessary the pipework identified to be at risk.

15. I am asked about the timescales involved in this project. I am meeting with Les Philpott and UKLPG on 3 November to discuss the findings of the research and to determine if using the Advantica model is a feasible concept. If it is then we will have to decide how to take the next phase of the work forward. It is for FOD and HID

to make these decisions, my role to provide a sound technical basis to those decisions.. I have been working closely with these directorates on this project.

16. I was asked if the testing supports the Advantica model and the HSE directorates support this programme when it may be possible for this initiative to be undertaken. I anticipate that this programme would be rolled out over a period of time as there are 60,000 – 70,000 industrial premises using LPG. I would reiterate that the scope and extent of the intervention has not been decided as yet.

**Polyethylene (PE) pipes**

17. I was asked if I could provide any information on PE pipes. To the best of my knowledge polyethylene pipe (PE) is impervious to most corrosion mechanisms, including those that are biologically based. Medium density PE is manufactured without a plasticizer and is therefore less likely to become brittle over time as a result of the loss of the plasticizer. PE pipes can last in excess of 25 years. The main reason for failure of this pipework is human interference, for example someone digging it up.

I confirm that the contents of this statement are true

Witness signature \_\_\_\_\_

Signed \_\_\_\_\_