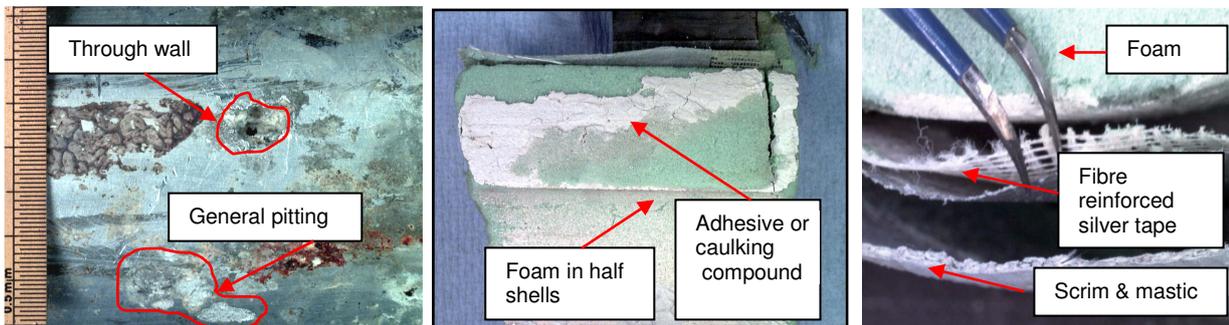


## ***DRAFT Incident Investigation Summary***

<b>Responsible Managers</b>	David Wright	<b>Incident Reference No:</b>	25353/08/NG
<b>Person Responsible for National Implementation:</b>	Andrew Fishburn		

### Partington LNG Storage site – Aluminium pipe corrosion

The failure of a 2" lagged aluminium pipe (2-HC-2079-AL-50) occurred on a section of pipework from the new cold box (X200) to the thawing box on Phase 2 of the LNG plant (ELD 3627/08/02/00/0087) at Partington. The failure was a result of aluminium pipe corrosion caused by wet insulation material.



**The Investigation found:**

The section of pipework containing the pipe wall breach and the pipe lagging were subjected to chemical analysis and metallurgical examination to determine type, extent and cause of corrosion damage. The findings were:

- The corrosion was a result of:
  - Ingress of water to the lagging as a consequence of breakdown of the outer weather-proofing and retention of this moisture within the thermal insulation.
  - Leaching of chlorides and sulphides (hydrolysis) from the insulation material leading to a corrosive environment.
- The level of chloride was measured at more than 10 times permitted level and the pH level of 3.65 allowable range 7.5 – 8 alkalinity for insulation material as per T/SP/PWC/2.
- Through wall pitting corrosion of this type can take place very quickly 12 – 18 months.

**Learning points:**

- Any new or replacement of cladding on aluminium pipe shall be design to T/SP/PWC/2 Specification for Thermal insulation of Above Ground Pipework and Equipment which limits the Chloride content to 25 ppm and PH level to 7.5- 8 **Action: LNG Operations Managers Immediate and FDS manager**
- Site staff should be made aware of this potential problem with aluminium pipe corrosion caused by wet insulation - **Action: LNG Operations Managers Immediate**

**Partington LNGS**

- Prepare Partington Aluminium pipe register and instruct on the inspection requirements to identify whether similar faults have occurred **Action by M Burrows 16/6/09**

**Glenmavis & Avonmouth LNGS**

- List of aluminium pipe to be obtained from TOCA including insulation and operating information. **Action M Daniels by 31/5/09**
- Review list provide by M Daniels to confirm all aluminium pipe has been identified including the sections which are lagged and issue list to M Burrows (GNI). **Action: LNG Operations Managers 30/6/09**
- Review list provide by sites and advise on the inspection requirements. **Action M Burrows 31/7/09**

**Circulation:** LNG Storage Operations Managers and Grain LNG  
**Issue Date:** 27/5/09

For further information please contact Tony Stonehewer or Martin Burrows or the Responsible Manager above.