

# **Minutes of 8<sup>th</sup> Meeting of the HSE Gas Cylinder Research Steering Committee**

**13th May 2004  
HSL Buxton**

## **1.0 Attendance**

Chairman	Roy Irani	(RI)
Secretary	Graeme Hughes	(GH)
	Steve Elliott	(SE)
	Roy Mellick	(RM)
	Eddie Ojak	(EO)
	Glyn Evans	(GE)
	Jim Bentley	(JB)
	Peter Bates	(PB)
	Jan Joel	(JJ)
	George Georgiou	(GG)
	Simon Davies	(SD)
	David Holt	(DH)
	Andy Webb	(AW)
	Oliver Crichton	(OC)
	Richard Wilson	(RW)
	Michael Dean	(MD)
Apologies received from		
	Simon Davies	(SD)
	David Holt	(DH)
	Micheline Howarth	(MH)

## **2.0 Minutes of 7th meeting**

5.2 should read ISO6406 not ISO6046

7.4 should read BS341 not BS4341.

## **3.0 Actions from minutes not covered elsewhere**

Actions 7-10 and 7-11 will be dealt with under AOB.

## **4.0 Updates since last meeting**

### **4.1 RPVs.**

Report was sent out by JJ to BCGA. JJ to send copies to JB and AW **Action 8-1 JJ**

RM gave an overview of the incidents for the benefit of RW and MR. The group then looked at section 4 of the report – Conclusions. GH reported that HSE are considering the issue of two Improvement Notices on Ceodeux, one looking at the supply of valves into GB and the second looking at information that Ceodeux must issue to their GB customers relating to these failures. GH further reported that at the August meeting with Ceodeux, GH and JJ were aware that Ceodeux had agreed that ‘operator abuse’ was no longer a possible cause of these failures. Ceodeux have been issued with a copy of the report.

RM asked for clarification on 4.9 of the report. The committee agreed that this should be interpreted as meaning backfeed of liquids.

RI thanked JJ for her superb work on this project and congratulated the group on the final outcome.

## **5.0 NDT**

### **5.1 Acoustic emission.**

RI expressed concern at the widespread accelerated use of AE in cylinder testing with little technical background or in depth knowledge of the technique.

GH said that he was looking to do some work with IMES in Aberdeen using EN12245 cylinders. JB will look at the results of this work to see how they fit into to his predictive algorithms. JB is continuing his work in this area and will be attempting to transfer the technology to steel cylinders. JB has a draft standard for the use of real time monitoring using AE, which he will give to JJ for circulation within the group. **Action 8-2 JJ/JB**

### **5.2 NDT Research.**

GG has just completed the final draft of his NDT report. He gave a presentation of the report, which is attached to the minutes.

RI reported that ISO6406.2 has not been agreed for FDIS – vote only. The group should ensure that the FDIS does not include an allowance to carry out UT at full gas pressure. **Action 8-3 All**

RI said that eddy current testing can be used to inspect the top area of the cylinder. This was not reported by GG. RI said that we need better detection methods for neck folds at manufacture – currently left to the competence of the inspector. ISO10460 requires folds in neck to be checked for manually in aluminium cylinders as it does not agree that UT will find these potential defects.

ISO6406.2 does not limit probe angle to 45 degrees. GG explain the problems with probe sensitivity at 60 degrees and RI suggested that GH should bring this to the notice of the UN and only agree the standard for inclusion with the limitation of a 45 degree probe only. **Action 8-4 GH**

GH said that AE at time of fill may be the way ahead – AW supported this view and pointed to JB’s work. AW said that the ring test is still used by Air Products – he has a video to support this – to show at next meeting. **Action 8-5 AW/MR**

SE asked for clarification in the final report of the type and timing of inspections for SCC. **Action 8-6 GG**

GG highlighted some ideas for a JIP for NDT to enable the companies to share research. He gave a presentation, which is attached to these minutes. RI said that the UT scrap rate is around 0.5% compared to 0.03% at HT. AW said that without Competent Authority backing it will be hard to get many users to change. Need evolutionary progress and not revolutionary changes.

RI and JB questioned the low costs of the project proposal. GG explained that the costs were for development work only and not for a bestoke system. JB said he had already done this work so more development is not required. PB said that the development of UT in his company was purely cost based. GE agreed, he has a fragmented system and is currently looking at other systems. AW stated that there is a lot of UT equipment out there around the world. We should be looking at time of fill inspection rather than the periodic. JB stated that this needs to be coupled with the on-going integrity issue – not just a snap shot of how the cylinder is today. RI stated that we need to be aware of the move to composites – this should be the subject of research.

GG to issue the report to all committee members. GG said he was at final draft stage and should be completed by the end of May. **Action 8-7 GG**

RI asked for written comments to JJ prior to next meeting. JB will try to send JJ a copy of the MoD report if it is available to public. **Action 8-8 JB**

## 6.0 Project updates

### 6.1 Corrosion project.

JJ gave an update on the main corrosion project. For the 12 month cylinders - mixed gas cylinders had gained weight whereas non-pressurised and CO2 had lost about 8% of weight.

Cleaning fluid cylinders look the worst by visual inspection. Cylinder 13 in particular, after 12 months, had huge amounts of corrosion. This corrosion was general over all surfaces. Cola cylinders had grown some very interesting corrosion products. A snap shot was given of the corrosion products on the 6 month cylinders.

Further work will continue on the 6 month and 12 month cylinders. RI was surprised by the slow corrosion rates found and questioned whether this was linked to steel manufacture. GE also questioned the way the cylinders were made compared to previous corrosion test. JJ to obtain the certificates for all the cylinders used to enable the steel composition to be evaluated.

**Action 8-9 JJ**

JB has started to carry out corrosion mapping of 10 of the 12 month cylinders. Initial results show a loss of up to 0.4 mm. JB also said that he has had to make a special shaped probe shoe to test these cylinders as the standard shoes do not give consistent results. Following mapping JB will put all cylinders through hydraulic testing monitored by AE and will issue a report on the work.

**Action 8- 10 JB**

JJ questioned the project as it was static and the effect of road transport on corrosion was discussed. GH reminded the group that the main failures were after long periods of static storage.

RI asked if all had read the 300 bar testing report from Worthington. He stated that he did not agree with the findings as in his experience as steel strength rises so do corrosion rates. Others in the group agreed that the data did not reflect their belief. There was no enthusiasm to progress this project.

AW/MR discussed the cylinders produced by Sambre/Loire that show very low corrosion rates. MR to cut one cylinder in half and give to JJ for further investigation.

**Action 8-11 MR/JJ**

## **7.0 Other updates**

### **7.1 Test house competent person training.**

GH presented the draft EITAC document on competence to the group and explained that it relied on recognition of inspection tasks and then attributing competency levels to each and every task. RI pointed out the need for consistency of the UKAS assessor. The final draft will be presented for public comment but the date for this is not yet known.

### **7.2 TPED Guidelines/Standards/NB issues**

GH gave an update on the last TPED Experts committee meeting. He gave the EC Solicitors view on PED valve marking – valves must be CE marked against the TPED and not against the PED – therefore PED SEP valves can be CE marked.

GH expressed his disappointment that the 3 draft UK papers discussed at the last meeting had not been forwarded to the EC by DfT. The next experts meeting is not scheduled until November but there will be Notified Body and Notifying Body forums prior to that date.

### **7.3 Incidents**

GG reported that he had heard of a beverage gas cylinder failure by a Lloyds surveyor. He will try to find out more and pass the information on to JJ.

#### **Action 8 –12 GG**

GH reported on an LPG related incident where a valve was removed at a filling plant. The standards for checking for valve blockage were not followed and the operator was hit in the face by the valve under pressure as he removed it. It was also evident that the cylinder had not contained LPG but was another industrial gas.

## **8 Any other business**

**8.1** RM asked for an update on the corrosion of the base of LPG cylinders. GH said that EN1439 was being revised and that the standard will still require some form of base inspection. RI said that this was not just an LPG issue as other welded cylinders have the same problem. GH sited lack of corrosion allowance at build as the over riding criteria so any corrosion should lead to rejection.

**8.2** RI reported that DoT 3AA hydrogen cylinders at 6000psi are potentially coming into GB without an ultrasonic test. HSE need to ensure that those

competent persons to PSSR are aware of the potential hazard of this.

**Action 8 – 13 RW**

- 8.3** RW reported that the new legislation came in on 10 May 2004 and that over the next year HSE will be withdrawing technical support to DfT. DfT will become the Competent Authority at the next change in Regulation. RI asked that BCGA and MoD lobby to ensure that Government maintains a high level of specialist technical support.

**Action 8 – 14 SE/JB**

## **9 Date of next meeting**

23<sup>rd</sup> September 2004 at 10.30 at Buxton.