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Proud of our training record!

At Global Reliability Training we are extremely proud of the feedback we have received from delegates that have attended our courses over the last few years.

By putting our feedback on our website it challenges Global Reliability Training to maintain our high standards.

Feel free to peruse our website to see testimonials of past delegates; click [here](#) .

We would also love to see you on our next course. Contact sarah@globalreliabilitytraining.co.uk for a booking form or call 07773 670163.

Is your CPD portfolio up to date?

Continuous Professional Development is an investment in your career. It can accelerate your career development, make your working life much more interesting and can also strengthen your credibility within your profession, maintaining and increasing your skills and knowledge base.

As employees increase their productivity and value through their continued CPD, the company can also improve its efficiency and profitability. The benefits of CPD are just as important for the employer as they are for the individual.

Since employees have different career paths and specialisms, there are various ways to complete a CPD portfolio. Evidence of your achievements needs to be recorded and a great way of updating your CPD would be to attend one of our RCM2 courses.

We can offer the following courses:

- **Executive 1 day seminar on RCM2**
- **Introduction to RCM2**
- **RCM2 Facilitatory Development Training Programme**
- **RCM2 Practitioner Certification Programme**
- **MTA Facilitator Training**
- **Asset Prioritisation Programme**

The dates of our public courses are available on our website; please [click here](#) for more information.

Global Reliability Training can also provide bespoke training tailored to meet the specific needs of individual businesses. If you would like further information regarding this or have any other queries, please feel free to contact Sarah on 07773 670163 or by email; sarah@globalreliabilitytraining.co.uk .

Explosion at Buncefield—was there a link to RCM2?

Yes, there was most certainly a clear link - to Hidden Functions!

So let's look at what happened that day:

11th December 2005: Buncefield fuel storage depot, Hemel Hempstead in England.

Often said to be the largest explosion in peacetime Europe, it measured nearly 2.5 on the Richter scale. Fires raged for five days and fire fighters used virtually all available foam in the UK to extinguish it.

Damages have been estimated at some £700 million—but the final bills are still being counted and this figure looks likely to go even higher!

Oil major Total was partnered with Chevron, operating via an independent company known as Hertfordshire Oil Storage Ltd. The courts had to define that all who worked at Buncefield were employed by Total and managed through the terminal manager. Total failed to provide an adequate system for preventing tanks from overflowing, even after a “near miss” in August 2003. Filling operations were not monitored carefully and there was improper reliance on alarms.

Total's fine was £3.6m with £2.6m costs for safety offences; HOSL an additional £1.45m with £1m costs. The company that maintained the ultimate high level alarm switch escaped heavier penalty by going into administration before trial but was still fined £1,000 with £500 costs for failure to lock the switch into its operating position, the same size of penalty as the supplier who provided a poorly designed switch.

Separate fines were imposed on the companies that failed to contain all of the spent firewater and foam.

The incident originated from an overflowing tank of petrol (gasoline). Fuel emerged through eight vents on the conical top of the tank, which had been designed to disperse water for cooling in the event of a fire. Unfortunately, this characteristic caused fuel to flow over the tank edge at an angle and hit a girder on the way down, so creating a mix of fuel and air like a waterfall and encouraging the vapour cloud to form.

A 2-metre deep vapour cloud enveloped the whole site before a source of ignition created catastrophic consequences and destroyed many storage tanks across the site.

Fortunately, the event occurred at 6am on a Sunday morning, so injuries were low and nobody lost their life, despite massive damage to homes and industries in the vicinity. Supplies of vehicle and aviation fuel were severely disrupted for several weeks throughout the South East of England, including Heathrow and Gatwick airports.

The tank's level control system was a typical still well design with temperature probes, a servo level gauge, and a high level alarm. Firstly, the gauge stuck at 85% full and secondly, an independent ultimate high-level alarm failed to sound or cut off the incoming flow of fuel, so about 250 tonnes of liquid escaped.

The storage tank's ultimate high-level switch was intended to initiate an alarm. It was only ever required to operate AFTER a separate level control loop had failed during normal operation. An insurance system, if you like.

Providing the routine system continued to do what it was supposed to do every hour, every day, so the ultimate switch was not needed and the entire tank level control system would

Explosion at Buncefield—was there a link to RCM2? (cont'd)

operate as normal. HOWEVER, when the routine system failed to do what it was supposed to do (as on 11 December 2005), so it became imperative for the insurance system to be operating.

Thus a Hidden Function was at the heart of the Buncefield accident.

As it happened, the insurance system could not operate that day because the maintenance contractor had failed to ensure it was in the correct position to do so (it was not locked in the correct position). This classic RCM2 condition receives so much attention when we are analysing a system because it directs us to the correct prioritisation of routine maintenance effort into what really matters.

The accident at Buncefield occurred at a high-risk petroleum products storage site. That meant compliance with an additional raft of legislation, standards and safety studies which should have ensured safe operation of this process; all of which failed to prevent what happened that day.

Had the system failed in a less hazardous application, the consequences of its failure might have been much less BUT the likelihood of recognising its failed state and ensuring prompt action to reinstate its insurance value might also have received less attention.

John Moubray (author of the definitive textbook on RCM2 and founder of The Aladon Network) used to say “of all the protective....devices installed on a site, about one third are recognised and maintained for the function they provide, a further one third are known about but not maintained and the final one third are likely to be entirely unknown”!

In RCM2, before questions are asked about potential harm to people or the environment and long before asking if a failure has operational consequences, the very first consideration is:

“Will the loss of function.....become evident to the operating crew under normal circumstances?”

Analysis of the switch on this Buncefield storage tank should have answered “no” (if the question was asked), so identifying the function as a protective device that could fail without anyone knowing unless/until its functional status had been checked.

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