Process safety practice

Buncefield – the human factors

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When did you last visit the control room of a major hazard installation? What questions would you ask if you noticed a new alarm clock* on the desk of a supervisor?

The cynic might suspect staff of taking naps on the job, using the alarm clock to wake themselves in time to avoid detection. You could rant and rave and confiscate the alarm clock...or ask further questions.

What if you discovered that:

- workers were coping with a fourfold increase in workload
- with overtime – it was common practice to work 84 hours in a seven-day period
- no fixed breaks were scheduled
- breaks could only be taken when operating conditions allowed.

And that in addition to filling road tankers, staff were monitoring three incoming pipelines which filled multiple tanks at variable filling rates and, over two of which, staff had no control and the only way to stop the flow from those two pipelines was:

- by a telephone call to another terminal
- operation of an independent high-level switch (IHLS) or
- activation of a manual call point on an adjacent site.

And that the design of the automatic tank gauging (ATG) system meant that the status of only one tank could be fully viewed at a time, on the single screen provided. The operating staff didn't trust the level readings.

- there had been 14 call-outs in three months to address a single sticking level device
- resolution was only ever temporary
- staff had given up logging the regular faults.

Would you be reassured by the fact that the contract maintenance personnel had scored well in a recent site performance evaluation? An evaluation that focussed on whether they wore the right PPE.

What if you also discovered that staff had no confidence in the independent high-level switch meant to automatically close the tank feed and that:

- tanks had been allowed to operate for months without working independent high-level switches (IHLS)
- a new type of IHLS had recently been fitted, without any management of change assessment
- maintenance tests said it worked, but operating staff said otherwise
- nobody really understood how the new IHLS worked
- nobody really understood the purpose of the missing padlock.

** an alarm clock was a mechanical device used before mobile phones.*

And what if you discovered that senior management decisions were taken by

- a board with no employees
- a group that met twice a year
- a group that had never scrutinised the 'aspirational' safety case it had hired a contractor to write
- a group that allowed audits to check the paper version of procedures rather than their application in practice.

The alarm clock was a cry for help. It was being used to manage the single filling line over which staff had some control. Based on the ullage and filling rate, they set a timer to ring when the tanks should be approaching full capacity, because they couldn't trust the level gauges and suspected that the independent high-level switches would not stop the flow.

According to the HSE, the explosion and fire at the Buncefield oil storage depot in 2005 resulted from 'slackness, inefficiency and a more-or-less complacent approach to matters of safety'. Had the same event occurred during weekday hours (instead of a Saturday to Sunday nightshift), hundreds of people could have been injured or killed. The lessons we can learn from revisiting the Buncefield accident go deep into the heart of human factors in high hazard management.

The final HSE Buncefield Report (2010) is a model of clarity — I recommend you take the time to read it.
https://www.icheme.org/media/10706/buncefield-report.pdf

Then pop down to the nearest control room and ask people at the sharp end what's not working.

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