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Safety Performance Indicators

The workforce perspective

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The programme for this event sets out the primary objective in the introduction; *“The goal of the proceedings is to create momentum among experts and decision makers regarding the development and use of truly effective indicators for major accident prevention.”*

For RMT members employed in the offshore oil and gas sector it is vital that **‘truly effective indicators’** exist which assist in the prevention of major accidents. Having an effective system in place is vital because, failing to assess performance against some form of ‘standard’ will inevitably leave the risk takers, the workforce, exposed to the potential of serious injury and death. RMT therefore fully supports the use of meaningful and effective indicators. However, we must emphasise the word ‘effective’, as all too often we find the actual ‘effectiveness’ of well intentioned schemes can very rapidly be diminished as managers seek to influence outcomes and meet targets.

In this statement I hope to provide an insight into the effectiveness of some ‘indicator’ initiatives used in our sector and provide our opinion on the underlying reasons for their success. I will also reflect on the ineffective use of indicators and highlight why these schemes are not only ineffective, but are in fact dangerous.

Effective indicators

It is our firm belief that the most influential and effective schemes using indicators to measure improvements in major accident prevention are those initiatives generated by our regulator, the UK’s Health and Safety Executive Offshore Division (HSE). Since 2000 our regulator has launched four “Key Programmes” each of which was been generated as a consequence of poor performance in specific areas. I will look briefly at these in order to illustrate the positive effect of using what might be termed ‘lagging indicators’.

Key programme 1; Reducing offshore hydrocarbon releases:

This doesn’t require any in-depth explanation, there were simply too many hydrocarbon leaks occurring at the time and the HSE wanted industry to address

this and reduce the number of events. KP1 was launched in 2001 and placed the onus firmly on industry to get its' house in order. To assist the industry in this, an inspection programme was put in place which required a greater number of actual inspections after a hydrocarbon leak. This meant HSE Inspectors visiting the installation and conducting a comprehensive investigations into the causes, in order that lessons could be learned and shared with the wider offshore industry.

The leak reduction initiative had a positive effect and the number of leaks occurring reduced significantly during the following few years and still is. This is verified in the HSE annual "Offshore Statistics" reports which provide details of injury rates, fatalities and hydrocarbon leaks and are available on the HSE web site. In those early days however, industry was extremely sensitive about this kind of data being in the public domain and the HSE were compelled to ensure the anonymity of the operators who were having leaks. As the industry has embraced this initiative the 'sensitivity' has reduced and slowly but surely the industry has become more open and transparent. Indeed since KP1 was launched the industry has been pro-active in setting its own targets for leak reduction, the current one being a 50% reduction in leaks between 2010 and 2013. It appears at the time of reporting that industry should make their target. Not only this, industry is now publishing details of the leaks, including volumes, locations, and operators as part of their own initiative to reduce leaks still further through sharing and learnings.

KP1 was without question the catalyst for the significant improvements achieved in reducing the number of leaks, yet reporting and counting the number of hydrocarbon leaks occurring across the industry means we were/are using a "lagging indicator" to drive improvement. So why is the use of this particular indicator having such a positive effect?

In our opinion there are several factors which have underpinned the success of KP1 not least of which is – the regulator initiated the call for improvement which was seen as a significant and substantive criticism of the industry's performance. KP1 was launched publicly, meaning workers and moreover the press had the ability to report and monitor performance. In short, it is transparent and subject to public and governmental scrutiny. Hydrocarbon leaks are a major accident hazard having the potential for multiple fatalities, 167 deaths on Piper Alpha after a 'significant' gas leak was testimony to that. Inspections and investigations could, and in fact did, lead to enforcement action by HSE and even the prosecution of some installation operators who were found to be failing to comply with regulatory requirements. It is our opinion that all of these elements came together to create a significant deterrent to bad practice and drive improvement.

Key Programme 2; Deck and drilling operations:

This programme was initiated in response to unacceptable accident statistics from deck and drilling operations in our sector, statistics which saw six fatalities that were deck/drilling orientated over a 2-year period. The programme was launched in 2003 and once again, as it was being driven by the HSE's offshore division, it was out there in the public domain. Not only that, the fatalities that occurred at the time were mostly preventable and so the inevitable prosecutions occurred and the industry was once again in the spotlight. Court proceedings took place, significant fines were levied against 'offenders', fatal accident enquiries were held in public, all of which attracted widespread press reporting and public outcry. Again the industry was being publicly criticised by the regulator and was being told to get their house in order. There was a focus on drilling operations specifically, with increased inspections by HSE inspectors and an increase in enforcement action against those found to be failing.

Again we find the use of a lagging indicator, and one which is completely unpalatable, the counting of bodies! However, the effect the initiative had is there to be seen; there hasn't been a death in drilling and deck operations in the UK sector since 2004.

Key programme 3; Asset integrity:

In 2004 the HSE's Offshore Division launched KP3, which was an HSE resource-intensive initiative involving nearly 100 co-ordinated, targeted inspections over three years. Its objective was to ensure that offshore dutyholders adequately maintained safety-critical elements (SCEs) of their installations. SCEs are those parts of an installation and its plant that exist to prevent, control or mitigate major accident hazards; the failure of which could cause or contribute substantially to a major accident.

In November 2007 the HSE published their findings in a report which was seen as a comprehensive appraisal of asset integrity management on offshore installations in the UK sector. The report revealed significant issues regarding the maintenance of safety-critical systems used in major accident hazard control in the industry. Some of the key findings in the report included;

- The role of asset integrity and concept of barriers in major hazard risk control is not well understood.
- The industry is not effectively sharing good and best practice. This is particularly evident in that companies were not learning the well-publicised lessons gained during the life of KP3.
- Companies need better key indicators of performance available at the most senior management levels to inform decision making and to focus resources. Many management monitoring systems tend to be overly biased to occupational risk data at the expense of major hazard precursors.

Once again we had a publicly announced report by the regulatory authorities which was extremely critical of industry and demanded significant improvements. Indeed the report was so critical that in 2008 the UK government called on the HSE to conduct a review of progress made against the 2007 findings. The HSE commenced their review that year and delivered their findings in late 2009. The review found there was evidence of considerably raised awareness of the need for effective process safety management and major hazard controls. In summary, progress was being made against the best practice indicators provided by HSE, but there was still room for improvement.

Key programme 4; Ageing & Life Extension Inspection Programme:

Launched in mid 2010, this initiative is due to run through to 2013 when HSE will report their findings. Once again the regulator is driving the agenda and highlighting a concern they have which industry is expected to address. As the Head of the HSE's Offshore Division said at the time;

“Ageing offshore installations run the risk of deterioration, which can have serious consequences for installation and asset integrity. This is not acceptable. The safety of 28,000 workers is dependent on systems and structures being in good working order now and in the future.

“We will be seeking evidence and reassurance that operators are properly considering ageing and life extension as a key and distinct part of their asset integrity management plans.”

KP4 is then promoting good practice in the management of ageing infrastructure and the HSE will share information on this through liaison with industry bodies by sharing experience through workshops and seminars. Best practice is an 'indicator' which all dutyholders will be expected to match.

Supplementing the HSE's push for improvements in these areas the industry body 'Step Change in Safety' has in recent years identified three Key Performance Indicators against which the various operators benchmark. These KPI's deal with the potential for major hazard events as opposed to occupational risk and behavioural issues, which tended to be the focus of the group for sometime. This KPI initiative is having a positive effect, but we would suggest the greater willingness of the operators to accept that transparency and sharing of experience is not only good for safety performance but is good for business has had the greatest effect.

NOTE:

Before turning to our examples of ineffective indicators, I would like to briefly highlight what our union was doing during the period the HSE launched their four Key Programmes;

Prior to KP1, during 1999 & 2000, our union had staged some high profile press briefings about the number of gas leaks occurring and why. We demonstrated there were wide spread failures on the part of industry and that 'luck' rather than good management had prevented some leaks escalating into major events.

Prior to KP2, during 2000/01, our union had campaigned for greater mechanisation in the drilling sector and greater focus on competence and training of workers. We had supported the family of one worker, by providing legal representation at a Fatal Accident Inquiry. Their son had been killed after he was dragged into a 10-inch hole in the deck while attached to a harness and suspended on the end of a 5-ton lifting winch.

Prior to KP3, during 2003/04, our union made several complaints to the HSE about maintenance backlogs, the use of temporary repairs on gas lines and our concerns about SCE's on certain installations. One such complaint about a specific operator was investigated over a 3-month period culminating in the HSE writing to tell us that, in their opinion; 'there was no imminent risk to personnel on that operators installations'. Just 21 days later, two workers died on one of that operator's installations. They were asphyxiated after a series of SCE's failed and several tons of gas escaped into a confined space through a temporary repair. It was subsequently found there were thousands of hours of backlog maintenance.

Prior to KP4, our union had been highlighting the appalling condition of some installations by using "Freedom of information" provisions to access reports produced by the HSE, then publicising these in our union magazines.

Ineffective indicators

I've used the word 'ineffective' but I could just as easily have used the word dangerous! However, before turning to the process safety aspects, or the 'dangerous' part, I am compelled to comment briefly on the collation of statistical data by industry and the regulator. Specifically I have to say a few words about the recording of 'Lost Time Injuries' or LTI's;

This figure is ridiculed and dismissed by most of the offshore workforce because of the way it is easily manipulated and distorted. Light duties offshore or onshore avoid a report; if the worker is a service hand or agency hand they often aren't included in the figures; workers regularly don't report for fear of disciplinary action against them or their colleagues; bonus schemes and incentives deter the reporting of incidents and injuries; and there is a fear that being involved in or reporting an incident could affect your career development. In short we would argue that LTI's are not an indicator which should be used as evidence of improvement or otherwise.

Turning now to the 'dangerous' aspects of setting Key Performance Indicators, I've opted to use the testimony of an existing Production Supervisor on a oil and gas production installation in the North Sea today. I posed the question; 'what is

your understanding of the use and application of Key Performance Indicators?' I set out below his response.

The System and KPI's:

The System of setting, measuring and stipulating what the KPI's are, was agreed between the client and the service company's senior management. The financial enhancement to the company if all KPI's were achieved was in the region of £6Million per annum. How the service company then shared this was up to them. In our case the maximum bonus achievable for the 70 staff at technician level was £3,000 although this has been increased to £15,000 this year.

The KPI's were split into five categories.

- *Maintenance backlog 15%*
- *Gas injection 15%*
- *Water injection 15%*
- *Oil production 20%*
- *Safety 20%*

These were in turn reduced to specific KPI's;

Safety *is divided into; the number of Lost Time Injuries, the number of Stop Cards submitted (which was communicated to the troops as STOP participation with the reassurance that it was not a numbers game, when in fact it was!). Finally any reportable safety or environmental incidents or HSE enforcement also counted against achieving the full amount.*

Oil Production *is a very subjective target where the reservoir engineer speculated on the potential production in ideal conditions and this figure had to be agreed by the service company production engineer onshore. Any production figures below target then becomes a process of apportioning blame, so as to ensure the losses do not go against the service company. This also serves as a stick with which to beat the entire operations department and more so the control room operator.*

Water injection *for some reason has a high proportion of the overall bonus despite the fragmented nature of the reservoir. Uptime on a single machine is so critical that even a few failed starts would not stop efforts to get it running again. The consequences can be alarming with the exhaust bellows going on fire due to too many failed starts on diesel, leading to un-burnt fuel getting through to the exhaust which has subsequently caught fire. The safety KPI then leads to the non-reporting of the fires, until I intervened and insisted the one I witnessed was reported.*

Gas injection *is again a sensitive subject on the basis that the client has specified a capability requirement of the facilities on the vessel which really*

cannot be achieved. Yet we had secured the contract by insisting we could meet the targets, so any shortcomings have to be minimised and keeping the plant running is critical.

Maintenance backlog is another double edged sword in so far as it is only possible to do certain maintenance when machinery is down. Factor this in and it should be fine, but if there is further down time on those pieces of equipment, which you have already put down to maintenance, then you either try to condense the actual down time for maintenance, or do less maintenance. The KPI's generally looked at the number of hours of backlog on Priority 1-3 Planned Maintenance Routines (PMR's)

The high level intent is easy to sell; KPI's should be "SMART", that is Specific, Measurable, Achievable, Realistic and Timely. They are intended to encourage efficiency and focus on the 5 key aspects listed above. This then is the corporate stance, but as this descends down the ladder the field management then use this as a psychological tool to try to squeeze as much work out of their subordinates as they can. If however there is an occasion where things are not possible, then a 'different approach' to reporting performance is required, to ensure the records show things have been done as per the KPI.

Example: HP flare drum has wall thickness issues. Correct measure would be to replace the HP flare drum which has implications due to lead time for new drum, logistics of installing new drum and loss of production. To avoid this, an alternative is sought. "Walker Wrap" stipulate they can wrap the vessel to a standard which is acceptable to third party verification. Seen as a quick fix this is seized upon and they are mobilised immediately.

Once on board the local management have already told the client how long the repair will take despite not actually knowing this, they just guessed. Once on board the Walkers technician explains that the time is dependant on weather conditions, but allows himself to be bullied into giving a time estimate based on ideal weather conditions of 18 hours. It took the engineers 36 hours and even then this was with a member of the crew constantly standing over them. Ten months later the wrap is peeling off but no one dare mention it in case it compromises the KPI. Never mind the risk of the drum exploding!

In reality the bonus scheme and KPI system is sold to the troops as a potential to earn more money, but one which can quickly be reduced to zero quickly if operations aren't properly 'controlled'. There is a poster plastered on a wall with the total achievable bonus. When this figure is reduced because KPI's have not been achieved, (as was the case when I insisted we report the fire) it only serves to demoralise the crew as they literally watch their potential increased earnings dwindle away.

Due to poor confidentiality it is also widely known that the management team have very different KPI's and a higher bonus ceiling with their KPI's being more achievable. KPI's create a divisive environment where short cuts and non-reporting are common place, but not spoken about. In April 2012 we received £700 bonus before tax and our sister platform received just £120. I think that's probably because the management team on our sister platform are a bit more honest than the team I work with, sorry, did work with!

ENDS

What I hope the testimony of this member shows is that KPI's linked to incentives can very quickly lead to a situation where senior management believe that safety and productivity performance is good, when in fact the opposite is the case. This is not a unique case, there are others that operate in a similar way. However, neither is it indicative of how operations are conducted in the North Sea, in fact I would say this case is firmly in the minority. Nevertheless, the testimony demonstrates it can happen and is still happening with the outcome being; production and maintenance reports are distorted or even falsified; there can be widespread under reporting or even non-reporting and this quickly becomes institutionalised; workers quickly draw the conclusion that the entire safety agenda is little more than a sham; and workers who refuse to fall into line are intimidated or bullied and invariably end up quitting rather than be seen to be weak.

Summary

There is a place for indicators in this industry and they can have a very positive impact in the prevention of major accidents. However, to be truly effective we would argue there must be an 'independent' aspect to the introduction of a scheme and the auditing of it. Moreover we would advocate that the regulator should be proactive in the setting of goals and the monitoring of performance.

At a worksite level, if indicators are to be used, we would suggest that bonus schemes and incentives of any sort should be avoided. The independent verification system currently applying in the UK safety regime measures an installations performance against a set of pre-determined performance standards for SCE's and maintenance and their reports could be utilised to assess how an installation was performing.

The submitting of STOP cards or any other similar observation system must not be used as an indicator and neither should LTI rates. When workers see these systems being abused it detrimentally affects the attitudes of workers about the safety agenda generally. We don't have a solution to the 'fear of disciplinary action' and other elements as yet, but we are working with industry to try and find one. Indeed in closing I must mention a new initiative about to be launched by the Step Change in Safety group of which I am an active participant.

Later this year we intend to launch a 'tool' for measuring the levels of workforce involvement by way of a question set. This aspect is the most crucial element as without workforce buy in and the delivery of honest responses the survey tool will not provide a true assessment of what might be described as the 'safety culture'. For years we have toiled with the idea of measuring something which we can't see – hydrocarbon leaks can be measured, verification schemes can be assessed and so on, but measuring how a workforce 'feels' about their participation in the safety agenda has not been assessed in any meaningful way thus far.

This new initiative has the potential to be Step Change in Safety's fourth KPI, closing the circle as it were by linking the crucial inputs of workers into the mix of major accident prevention indicators. As a trade union representing workers in this high hazard industry we see this as vital because, and lets face it; we can have the most technologically advanced systems on the planet, coupled with indicators which suggest safety and productivity performance is meeting and beating expectations. But if the people operating these systems and delivering these results are unable for any reason to tell you what the true picture is, everything else is worthless!

National Union of Rail Maritime & Transport Workers.