

# Safety Management and "Paperwork" – Offshore Managers, Reporting Practice, and HSE

Gunnar M. Lamvik<sup>a1</sup>, Rolf J. Bye<sup>b</sup> and Hans Y. Torvatn<sup>c</sup>

<sup>a & c</sup> SINTEF Technology and Society, Trondheim, Norway

<sup>b</sup> Norwegian University of Science and Technology (NTNU), Trondheim, Norway

---

**Abstract:** This paper discusses the relationship between the extensive reporting and documentation requirements attached to managerial positions in the offshore industry, and how this may affect managers' abilities to obtain hands-on experience from the operations on board. The paper sees today's incident reporting practice in the offshore industry as problematic, because it is based on the idea that major and minor accidents have the same common origin, because essential facts are drowning in a sea of information, and because it is very time consuming. The main findings in this paper stem from a survey exploring paperwork duties among 187 offshore managers in an oil company in Norway.

**Keywords:** Offshore industry, incident reporting, HSE

---

## 1. INTRODUCTION

Inspired by Adams [1], it can be argued that to commit errors and to take chances or to gamble is an inevitable part of being human. To be alive involves (inter)actions, decisions, ideas, and manifestations with an intention, but these acts may – despite the implicit and continuous element of risk assessment in our projects - have unintended effects and lead to accidents. Phrased differently, human beings are not solely “Homo prudens – zero-risk man [characterized by] prudence, rationality and responsibility [...] Just as typical is our propensity to engage in risky behaviours. Homo aleatorius – dice man, gambling man, risk taking man – also lurks within every one of us” [1, p. 16].

With a clear intention of preventing mishaps from occurring, safety programs in the oil and gas industry can be viewed as attempts to transform the human being from “homo aleatorius” (a gambler) to “homo prudens” (zero-risk man), and to compensate for the unintended results of our actions. Through a broad range of physical and mental barriers – a variety of cultural programs, behaviour-based safety projects, awareness campaigns, formal training, and actual fences – the idea is to reduce the potential for mishaps among interacting human beings in a variety of work situations.

Crucial in these risk preventive processes is the idea that we are able to and that we should *learn* from our actions. i.e. actions that seem to have a negative impact upon the safety situation at our place of work. This implies in short that all unwanted episodes or actions (minor or major) should be reported; they should be detected, filed, analysed or understood, and communicated. Based on this, various measures to reduce the risk of similar unwanted episodes should be identified, and corrective actions should be taken. Accidents and incidents with great risk potential undergo general investigations, often involving several parties in the oil and gas cluster, whereas more innocent episodes, involving less risk, usually are registered and handled on a more aggregated level.

Nevertheless, the intention is still to learn from the origin of deviations and errors, and thus avoid that certain undesirable actions become part of the common work practice in an organisation. The objective is to record and learn from all episodes of this type, so that the practice in question is not repeated in the future; all incidents are recorded, and the information constitutes a (data) basis for future learning.

---

<sup>1</sup> gunnar.lamvik@sintef.no

## 2. METHOD

This paper is based on findings from several research projects focusing on offshore safety in the period between 2003 and 2008. Data was collected through different methods and from diverse sources, such as observations, formal and informal interviews both offshore and onshore, and company specific HSE statistics and public statistics covering the whole industry. Contractors, oil companies, and petroleum authorities, both in Norway and (partly) in some countries in South East Asia (Singapore, Malaysia and Brunei) have all been included in these projects. The main findings employed in this paper, however, is from a web-based survey covering 187 offshore managers, all from the same oil company, on board nine installations in the North Sea. The managerial positions covered in the survey were Platform manager, HSE manager and maintenance- technical- and drilling supervisor. The survey focused on the extensive administrative tasks managers encounter, and to what degree this influenced their ability to be present or directly involved in the daily operations on board. The response rate of this survey was 78 percent.

## 3. THE REPORTING PRACTICE

A wish to learn from the errors, combined with a notion that minor accidents may accumulate, leading to a major lost time accidents, gives rise to a practice in the offshore industry in which documentation, registration, and reporting is highly emphasised and rewarded. If we add to this picture all the informal, often ICT based, reporting and communication that take place between the offshore and the onshore organisation - such as e-mails and telephone conversations – the administrative tasks are overwhelming on the managerial positions on board. As seen later on, handling all this “paperwork” is by many offshore managers seen as a burden in their everyday lives on board, and it is commonly stated that this office work is stealing time and attention away from other managerial tasks, such as safety management. We begin our discussion by drawing attention towards the *content* of the accident reports coming from the sea. What is reported? What is seen as an error or as a deviation in the oil and gas industry?

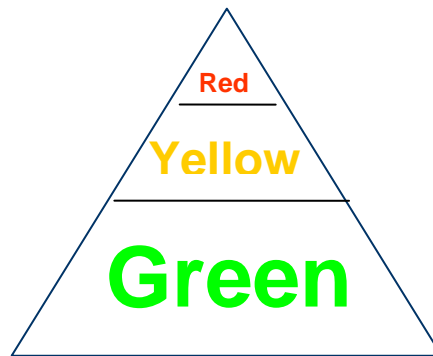
### 3.1 The three levels of incident reporting

The most common accident reporting practise in the Norwegian offshore industry is based on the Synergi system. Synergi is founded on the International Safety Rating System (ISRS). The basis for ISRS is the work of the International Loss Control Institute (ILCI), established in the 1960s. The ISRS was originally inspired, and still reflects, the dominant accident models of the 1960s, i.e. the "domino" models, where accidents are explained as a chain of events. Heinrich was formative for this conception of accidents, and his launching of the triangle image had a long-lasting impact on our understanding of accidents [2] His theory of a ratio between categories such as no injury, minor injury, and disabling injury is, at least in terms of categories in use, recognisable in the pattern of categories used in the rating system (near misses, loss time injuries, fatal accidents).

The system operates with three categories of unwanted events, based on their degree of seriousness. At the tip of the “iceberg” we have the “red alert area” where we find the unwanted events or conditions with a high risk potential or events that has actually led to severe injury and/or extensive damage (see Figure 1). At the second level we find unwanted events or conditions with an estimated lower risk potential compared to the red incidents, or events that has led to injuries and/or extensive damage. Accidents and injuries categorised as red or yellow will involve an inquiry and a formal investigation, whether it be solely an in-house investigative unit or whether it also involves petroleum and police authorities and possibly a court of justice.

The green reports at the bottom of this pyramid are reports covering small and less serious incidents and accidents, including, among others, small cuts, splinters in fingers, and coffee spills. These incidents are not reported due to the seriousness of the damage or the potential for severe damage in the incident itself. They are reported due to an assumption that the small incidents may tell us something about the risk level of the organisation, and they may thus serve as input for organisational learning and improved safety.

**Figure 1: Categories of seriousness in the incident reporting system**



### **3.2 Stakeholders of the reporting activity**

There are several different stakeholders that require reports and that may, in different ways, influence and maintain a certain reporting practice. We can further categorise these as internal and external stakeholders. Internal stakeholders consist of e.g. HSE-staff members, line managers, and employees that use the reports as an integrated part of their work tasks. External stakeholders consist of e.g. other companies, governmental petroleum authorities, scientists, software developers, international standardisation agencies, police authorities, and possibly courts of justice. The reports serve multiple and different tasks among the stakeholders. Some internal stakeholders use the reports to monitor the organisational risk level, and to learn and develop safety improvement measures, but they are also used to express and safeguard the organisational reputation towards external stakeholders.<sup>2</sup> Some aggregated figures from the reporting system are made relevant for e.g. the company's application for operating licences. Further, HSE results are often an integrated part of the HSE prequalification of contractor firms in an invitation to tender.

When it comes to the reporting system serving as input for organisational learning, different legitimating arguments exist for reporting green incidents. Firstly, it may be seen as an *incitement of learning*. External stakeholders, such as e.g. governmental petroleum authorities and other supervising agencies, may consider the requirements of the reporting system partly as an incitement to ensure a safety focus in the organisations. Secondly, green incidents may be seen as possible *symptoms of risk influencing conditions within the organisation*. According to this view, one could argue that possible common patterns in the reports may reflect systematic practises that in a certain context may represent a risk-influencing factor. A third argument is that *major and minor incidents have the same root*, and that one may prevent more serious accidents by implementing measures in the aftermath of a green incident. The second and third argument look apparently similar, but there is one important difference between the two. In the case of the third argument it makes sense to implement measures to prevent green incidents from happening. According to the second argument, however, this strategy makes little sense, because this only represents measures against unrelated symptoms, and not possible risk influencing factors located “deep” within the organisation.

There is reason to believe that the number of reports categorized at the top and middle of this model (Figure 1), are more reliable and mirror the actual work practice in the offshore industry. Fatal accidents or injuries that involve disability will always be reported. It seems that “the degree of under-reporting increases as severity decreases” [1, p. 75]. This should not solely be considered as an intentional or planned under-reporting from personnel in high-risk industries. Equally important to

---

<sup>2</sup> In a context of organisational reputation it becomes very important if the incident is classified as a green or a yellow incident, and the classification may become a matter of negotiation. Findings of Bye & Fenstad [8] shows that such negotiations may be central in certain operator – contractor relations.

make use of empirical findings from the maritime industry is the fact that people in certain positions do not *see* how their cut in the finger or caught wrist can have anything to do with anyone but themselves and perhaps a few of their colleagues on board. Seafarers take into consideration that these injuries will happen from time to time, and that they are “nothing to write home about.” To be a seafarer – or an offshore worker for that matter – is dangerous: “it is included in the contract,” as a Filipino seafarer would have said. [3]

Still, as we see, the so-called green reports far outnumber the yellow and red, with a respective ratio of 600-15-1. Managers in the offshore industry have for many years underlined the importance of a comprehensive registration of innocent episodes.<sup>3</sup> Some companies have even insisted that a fixed minimum number of reports should be produced within a certain time span, such as a certain number per week, per shift, or per month. Over the years, we have seen many examples of how this practice has led to a *fabrication* of hazards to report, from the people on board, just to be able to fill the quota of expected reports.

#### 4. FINDINGS

One of the findings in a quantitative pilot study from 2005, focusing on time-use among toolpushers in the North Sea, was that these drilling rig managers spent less time than they wanted outside of their office. Several toolpushers stated that they were engaging in “hands on” work just 10-15 percent of their workday. The reasons they gave for this situation was the following: “increased bureaucratisation; learning and implementing new procedures; HSE requirements, following rules and regulations, and Synergi [the incident reporting system].” In general, it was claimed, their work had changed over a period of some years from “hands-on” or “outdoor” work to “office work.”

As a result of this pilot study, a web based survey was conducted in 2006-2007. The survey centered on the reporting and documentation duties among 187 offshore managers in an oil company in Norway. The focus was on paperwork tasks in general, including formal reporting duties such as Synergi and SAP, and informal reporting such as telephone and e-mail. The survey revealed many factors that were seen as major obstacles for a hands-on management practice among the managers (see Table 1):

**Table 1: Regular and unplanned tasks that are very obstructive to operational work, N =187**

	All installations
Regular meetings on board	49%
Follow-up HSE reporting/Synergi	34%
Handling e-mail	58%
Phone calls from onshore	33%
Personnel administration	31%
Follow-up of other reporting systems than Synergi	42%
Use of ERP-systems (planning execution , following-up, economy monitoring)	29%
Appraisal interviews and the use of the accompanying reporting system	16%
Regular phone meetings with the onshore organisation	23%
Planning of handovers	23%
Planning of daily and weekly production	16%
Emergency preparedness (planning, training and exercises)	8%

<sup>3</sup> In order to get a safety certificate required for North Sea work, the candidate is asked how many “green” incidents there are behind every red incident and has to know the official figure of 600.

The survey also shows that 72 percent spend less than three hours out of their office, and 60 percent of the managers wish they could spend more time outside during an ordinary day at work, as 68 percent see operational work as a way to learn more about the operations and 72 percent insist that hands-on management will prevent accidents from occurring.

## **5. DISCUSSION**

The intention behind this high level of reporting in the green area is good. The potential for learning and the anticipation of more serious injuries have already been mentioned. But part of this picture is also the notion that a registration of seemingly innocent incidents may keep the personnel on board more alert and more focused on discovering potential hazardous conditions in general.<sup>4</sup> Nevertheless, despite good intentions, we will maintain that this reporting philosophy or safety regime is in some respects problematic. This due to the fact that:

1. It is based on, and still legitimated to a certain extent by, the argument that major and minor accidents have the same root or cause.
2. Essential facts are drowning in a sea of information
3. The reporting practice is very time consuming for certain managerial positions on board and directs attention away from a more hands-on approach to supervision and safety critical leadership

### **5.1 Do different accidents have the same root?**

The emphasis of broad incident reporting as an important tool for risk prevention and safety improvement is based on an idea that all types of accidents have the same common origin; “that the causes of major and minor injuries are indeed the same” [4, p. 2]. To insist on a connection between these two types of injuries can, according to Hale, work as an example of an urban myth. They could be seen as “beliefs which seem so plausible that they command immediate acceptance” [4 p. 2]. This description fits very well with how the offshore industry operates. There is hardly any discussion about the importance of having small injuries and episodes reported. “This is our theology” as one Norwegian offshore manager phrased it. This industry is convinced that it is fundamental to get hold of the innocent incidents; this to be able to predict and avoid the more severe accidents.

We maintain, supported by Hale and by findings from our own research projects on this issue, that this assumption is incorrect. Looking for one common pyramid or chain of causal connection for all injuries and accidents in an organisation is therefore a derailment when the aim is to reveal and prevent accidents from happening, as “major injuries, minor injuries and property damage accidents are actually each the top of a different set of pyramids, each of which has as its lower steps deviations, losses of control and a range damage resulting from its own damage process” [4, p. 5]. Let us illustrate this discussion with two examples.

If a nut suddenly falls from the derrick on board an oil rig, and after some time it is followed by a bolt, then one can expect that quite a big object eventually will fall down and hit the rig floor [5]. As we see, in these types of incidents it makes sense to register and report even seemingly minor or innocent episodes based on an assumption that major and minor incidents have the same root. I.e., one sequence (the nut) is so obviously interconnected to another (the bolt), that a conclusion can be drawn that if precaution is not prepared and executed, something more severe will take place. The assumption that similar results always have common roots represents a simplification when it comes to very complex and multiple processes, in particular processes involving the work practice of people. People’s work practices cannot be understood as being consequences of relatively simple mechanical

---

<sup>4</sup> One of the more paradoxical aspects of this reporting philosophy, however, is attached to the fact that the number of green incidents and reports is not necessarily reduced over a period of time. Given the fact that these reports constitute part of the basis for a continuous improvement process in the industry, one should expect the number of reported incidents to decline after some time.

relations of cause and effects of physical energy. Unlike various technical systems, people are reflexive actors, i.e. they have the ability to make self-initiated interpretations and adaptations to changes in the work conditions [6]. To apply the Newtonian universe as a metaphor of human work practise is unsuitable.

With an adhesive bandage, due to a cut in the finger, the sense in reporting is not so obvious. The severity and potential for escalation are highly limited. The application of an adhesive bandage can be viewed as a recovery mechanism, rather than something that might turn into a terrible accident. Such an episode is more likely to be an end of something, rather than a starting point for a chain of causal connection. It is not difficult to imagine people who need a bandage from time to time during their whole career, without necessarily being involved in more severe injuries or incidents. In many professions a cut in the finger is “included in the contract” to once again make use of the statement typical for Filipino overseas seafarers [7].

The core of the fallacy in this reporting regime stems from the conviction of viewing and willingness to see almost any kind of deviation as a near miss. In the search for so-called green reports one seems to report normality as deviation, and forgets the recovery mechanisms that are an essential part of any work practice. There are a variety of ways in which things can go terribly wrong, unless people are there to correct them, or, in short, are there to do their job. This reporting regime invades common work practices with an aim of revealing deviations and potential hazards. In a study of a construction project on an oil refinery, Bye & Fenstad [8] shows that the main attention in operative safety work was directed towards a huge number of personal injuries, where the bulk was categorized as green. During the same period there were 6 red incidents (4 gas leakages, a fire, and one leakage in the production system), but these incidents were not the main focus in the safety meeting on the plant, and did not generate any immediate safety measures. Among the measures taken in the same period was a prohibition of using knives among scaffolding workers to prevent cut injuries.

## 5.2 Drowning in information

A strong focus on green incidents has as one of its effects that an overwhelming amount of information is gathered and filed in different computer-based systems. Hundreds of HSE reports per offshore installation per year are not uncommon. The size of these databases is in itself a challenge. “Well-organized and well used incident reporting systems [...] are already beginning to grow so large that it is not possible to see the wood for the trees” [4, p. 7]. Handling and learning from all these reports demands the ability to classify and arrange, since the content and character of these reports varies a lot. The important stories – those addressing “real” episodes with a certain potential for injury and damage – are juxtaposed with the less important ones. In these systems you will find reports concerning coffee spill in the mess room, rotten fruit in the coffee shop, and a lack of beef for dinner on Wednesdays, together with injuries involving medical treatment, blocked emergency exits, and a lack of security around dangerous areas on board.

The reason why nonsense<sup>5</sup> is included in these systems can be viewed from different angles. First, these seemingly unnecessary reports may express a *genuine* conviction among employees on board that these issues are important. In this respect they follow their consciousness and company policy by reporting these minor deviations. Second, these reports might express a wish to meet the demand for a certain number of reports in the organisation (cf. the discussion on *fabrication* above). Third, silly reports may be one way to test the management’s trustworthiness regarding HSE issues. By filing ridiculous episodes they challenge whether management really means what it says when it maintains that extensive reporting is central to the company’s safety management. This goes the other way as well: By handling the nonsense in the same manner as a genuine near miss report, managers are able to show or prove through action their reliability in this field – “walk the talk” as it is often expressed.

---

<sup>5</sup> This term is actually used by many representatives from the offshore industry to categorise a certain type of incidents and reports.

In the comprehensive amount of so-called green reports lays the danger of losing essential or safety-critical information. We have been given a characteristic example from an offshore company in Norway, in which more than 20 independent green reports were written on the deviation of one particular piece of equipment, but where there was no action or reaction taken by responsible personnel. The explanation for this lack of recovery actions was that no one had seen all these reports in connection with each other; no one had discovered the valuable information that was hidden in between all the other reports. As we see, the high number of reports in these systems is in itself a challenge. But the fact that these incidents and reports are categorized as green also influences the amount of attention and analytical efforts they will undergo in the HSE departments in the oil and gas sector. The innocent reports are highly unexploited as a source for analysis. Seen in relation to the amount of energy spent on entering this information into the system, the output in terms of analyses and new knowledge of safety-critical issues is very limited, if not absent.

Also, not all kinds of deviations in the organisations are reported in Synergi. Technical deviations in production processes are reported in a separate system. Only technical malfunctions of the safety systems, e.g. fire and gas detectors, emergency supplies, fire-fighting equipment, etc., are reported in Synergi. These two reporting systems are often handled by different officials in charge, and the information is seldom connected.

### **5.3 Time and attention consuming**

What is the alternative to an extensive near-miss reporting when the aim is to prevent less serious incidents from escalating into an incident with severe injuries or damage? A brief answer to this question is to act on the spot. To continuously solve and close examples of deviation and near accidents the moment they occur represents a different approach towards safety management. However, this practice presupposes a high degree of involvement from the management on board. As we have seen, however, due to the massive reporting and documentation requirements attached to offshore managerial positions, management's ability to obtain hands-on experience from the operation on board can be a huge challenge to achieve. The findings of the survey shows, for instance, that activities concerning HSE reporting are regarded as very obstructive to the ability to perform "hands-on" management. We see that about one third of the offshore managers claimed that handling the Synergi system – in addition to a long range of other administrative tasks – represented a major obstacle for hands-on involvement. Having the incident reporting system representing a major hindrance for safety-critical outdoor work was hardly the intention behind the introduction of this HSE tool.

## **6. CONCLUSION**

As argued elsewhere [9, 10, 11], the safety performance (in this case LTI) in offshore drilling in South East Asia is relatively positive compared to that of the North Sea. We have through several projects identified a long range of factors contributing to this positive situation. In brief, we will maintain that the success lays in the combination of factors enhancing continuity or stability, flexibility, and the cultural background of the personnel employed in the offshore industry.

Nevertheless, to emphasise one particular factor that may have a decisive and positive effect upon the safety performance in this region, focus should be directed towards the amount of paperwork. A recurring theme in the interviews with offshore managers in South East Asia – i.e. Western managers, often with experience from the North Sea – has been that in Asia operations involve "less paperwork." I.e. managers with experience from both regions always emphasised that there was much more bureaucracy and paperwork in the North Sea compared to South East Asia. This paves the way for a situation in which managers *can* and *do* spend more of their time outside of their offices and are more directly involved in the ongoing operations. During observations and interviews on board drilling rigs offshore Malaysia and Brunei, it was emphasised by the managers on board that the time

they spent outside far exceeded the situation of their colleagues in the North Sea, cf. the picture drawn above of the situation offshore Norway.<sup>6</sup>

This strong involvement by managers in this region mirrors the *expectation* from the local employees, but is made *possible* by fewer reporting, documentation, and administration tasks attached to the managerial positions. Phrased differently, South East Asian employees expect managers to supervise and coordinate daily operations to a larger degree than what is typical for the Northern European region, and this paves the way for a work practice in which minor deviations and near accidents are continuously being closed or undergo recovery. In this sense, a present manager can be viewed as a recovery mechanism, cf. the discussion above regarding incident reporting, deviations, and recovery mechanisms.

We maintain that in South East Asia incidents in the so-called green area in the accident prevention pyramid discussed in this paper are handled on the spot by visible managers coordinating the operations more directly. In close interaction with his or her employees, managers to a larger degree react and recover, instead of react and report. We maintain that the work practice and safety management in South East Asia represents an alternative to the extensive reporting regime discussed in this paper. They do have checklists, procedures, and incident reporting systems in this region as well, but it is less comprehensive, and managers are able to involve themselves more directly with the daily operations on board.

## References

- [1] J. Adams. *"Risk"*, Routledge, 1995, London & New York
- [2] H. W. Heinrich. *Industrial Accident Prevention*. McGraw Hill., 1931, New York:
- [3] G.M. Lamvik , *"The Filipino Seafarer – a life between sacrifice and shopping."* PhD thesis. Norwegian University of Science and Technology, 2002, Trondheim
- [4] A. Hale, *"Conditions of occurrence of major and minor accidents,"* 2<sup>me</sup> séance du séminaire "Le risque de défaillance et son contrôle par les individus et les organisations," 6-7 novembre, 2000.
- [5] K. Haukelid *"Safety culture – what works,"* presentation at Health & Safety Culture Management for Oil & Gas Industry, May 2006, Amsterdam
- [6] R.J. Bye, & G.M. Lamvik G. *"Small facts, large issues – towards a Hermeneutic safety Assessment"* in Proceedings of the European Safety and Reliability Conference (ESREL 2006), Estoril, Portugal, 18-22 September, Soares and Zio (Eds.), Taylor & Francis Group, 2006, London,
- [7] R.J. Bye, & G.M. Lamvik G. *"Professional culture and risk perception: Coping with danger on board small fishing boats and offshore service vessels."* Reliability Engineering & System Safety (RESS), Volume 92, Issue 12, Pages 1756-1763, (2007).
- [8] R.J. Bye & J. Fenstad. *"Hazards as a cultural phenomenon"*, in Proceedings of the European Safety and Reliability Conference (ESREL 2006), Estoril, Portugal, 18-22 September, Soares and Zio (Eds.), Taylor & Francis Group, 2006, pp. 1289-1297, London,
- [9] G.M. Lamvik & R.J. Bye, *"National culture and safe work practice – A comparison between Filipinos and Norwegian seafaring professionals"*. Probabilistic Safety Assessment and Management Volum 3. Spitzer, Schmocker & Dang (eds). 2004, Springer, London
- [10] G. M. Lamvik and Ravn J.E 2006. *"National culture and safety performance - offshore drilling"*, in Soares and Zio (eds) Proceedings of the European Safety and Reliability Conference 2006 (ESREL 2006), p.363-371, Taylor & Francis Group, London
- [11] G.M. Lamvik, & J.E. Ravn, *National Culture, work practice and safety. Offshore drilling in South East Asia vs. the North Sea*. 2006, SINTEF Report.

---

<sup>6</sup> Viewing a more visible management as typical for this region is an approach supported by empirical findings from other projects conducted in this area as well, such as two projects based on observation and interviews of site managers involved in the conversion of large FPSO vessels at Singaporean ship yards.