

## **Issue Management, Treatment of “Bad News”**

### **On The Incorporation of Risk Analysis Results and Messages from the “Floor” in a Project**

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#### **Abstract**

"Bad news" resulting from a risk analysis should professionally be taken into account and should lead to changes in a project to reduce the risk to an acceptable level. Likewise are messages from the “floor” raising concern, in particular when these report on uncertainties that should cause actions to be taken. An example is the recommendation to “Wait one day to launch Challenger until the air temperature is high enough such that the fuel tank seals are closed.”<sup>1</sup>

Such actions require empowerment of the risk analysts and the engineers as well as those working on the “floor” and will require managers that allow questions and who listen, although being encouraged to ask questions about the necessity to carry out risk reducing measures. In an example we will refer to how risk reducing measures were incorporated during the construction of the Troll platform for North Sea operations.

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## 1. Introduction

Since the loss of the concrete gravity platform Sleipner A we have given high attention to risk analysis of the construction process and to risks related to marine operations. Considerable references during these studies have been made to works by Robert Bea. The senior author was responsible (as an employee of Statoil, Stavanger) for more than 10 major risk analysis projects, of which none of the projects experienced any failures. The recommended risk reducing measures were in general taken into account. In this respect, the company acted as a “High Reliability Company.” It should be noted that it is important that the “risk owner” manages the analysis and thus takes ownership to the analysis and the results.

We have in particular been concerned with implementing human and organizational factors in the risk analysis.<sup>2,3</sup> Over the years, however, we have witnessed changing attention to risk analysis as management comes and go, and we are concerned that the probabilities of failures might be grossly underestimated in the oil and gas industry if relevant questions are not allowed to be raised. This would be the case if the risk analysis is only a formality and not linked to a thorough HAZID (HAZard IDentification) analysis with failure identification. As an example of a faulty risk analysis, the analysis could conclude that the risk encountered in meeting polar bears in the Gulf of Mexico area is negligible. Even if we recommend risk analysis, we should realize that a “numbers game” might not represent any more than a ranking of different technical alternatives. In addition, a qualitative risk analysis is never better than the assumptions and the identified events and that a quantitative risk analysis must build on a reliable database and good engineering judgments. In this respect, setting the risk acceptance criteria before the risk analysis is carried out is an important part of the risk analysis.<sup>4</sup> The relevant problems to take into account in cold climate have been recently highlighted.<sup>5</sup>

A risk analysis includes the Risk Acceptance Criteria (RAC), the HAZID, and the qualitative and quantitative analysis carried out as well as the discussion related to recommendations for implementing risk reducing measures, e.g., Aven and Vinnem. In some industries, there seem, however, to be a concern that too much attention is given to risk identification. Examples are:

- An ongoing discussion in Norway related to the quality of the risk analysis for LNG (Liquid Natural Gas) facilities located very near to flourishing port facilities and a residential area.<sup>6</sup>
- A case where the risk analyst was investigated by his employer for potential “bad behavior” as he was asking the contractor thorough questions in HAZOP (Hazard and Operability), to the embarrassment of the contractor set to carry out an operational task in the Arctic.<sup>7</sup>
- A case where the project manager declared that “a formal risk analysis will not contribute to the project.” Unfortunately, during the project execution, the tension machines were not capable of holding the pipeline they were laying and the pipe fell to the seafloor.

The importance of human and organizational factors in project execution has furthermore been emphasized<sup>8,9</sup> referring to Bea.<sup>10,11</sup>

We should note that a continuous success makes it difficult raising serious risk issues. When you are very successful a kind of complacency will ride the organization and important issues may easily

be overlooked. It is only a professional management team and very competent personnel who will continuously manage to deal with unexpected issues.

Shammas and Gudmestad studied issue management which means the handling of issues (problems) arising in a project, in particular when an engineer or an operator raises an issue that may escalate into a severe incident.<sup>12</sup> Their conclusion was that managing issues at an early stage of a project are particularly important because this can prevent escalation into first, second, and third-order events (Figure 1.1). Issues are normally more neutral and therefore easier to resolve if tackled at an early stage. They assumed that the management system in place normally is not perfect and not all managers know what is happening at all times. The system they proposed was one where project team members have a Technical Issue Procedure (TIP) for reporting technical issues when other communication tools prove ineffective. They further proposed a ranking system where *issues are ranked* according to importance. Psychological boundaries between levels in the organization’s hierarchy should not be underestimated in issue reporting. It is important that leaders interact equally well with all members in the project team. Recognition of efforts, verbally or otherwise, is furthermore important in encouraging continual issue reporting.

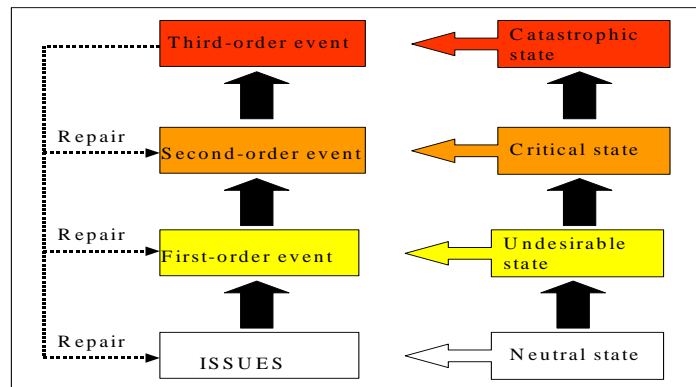


Figure 1.1 – Progressing from a neutral to a catastrophic state.<sup>iii</sup>

## 2. Erosion of Barriers in a Project

Although barriers are in place, one should be aware of warning signs. One potential consequence of continually ignoring warning signs is illustrated in Figure 2.1 and provides a hypothetical scenario of a risk picture. As an example, at each stage of a construction project, from the concept phase in the beginning to the testing phase at the end, warning signs such as “problems with past structure” and “questionable construction practices” appear but are subsequently ignored. As a result, both systemic, engineered, and human barriers are eroded till none remain and “cracks” begin to appear in the system. Regarding the final outcome, one can only harbor a guess that a catastrophic failure could happen. It should be required that all wells have at least two physical barriers against a blowout.

<sup>iii</sup> M. Shammas and O. T. Gudmestad, “Managing Human and Organizational Factors in the Construction and Marine Industries”, Advances in Safety and Reliability, Proceedings “Esrel”, ISBN 0 415 38343 9, Gdansk 2005, 1811- 1816.

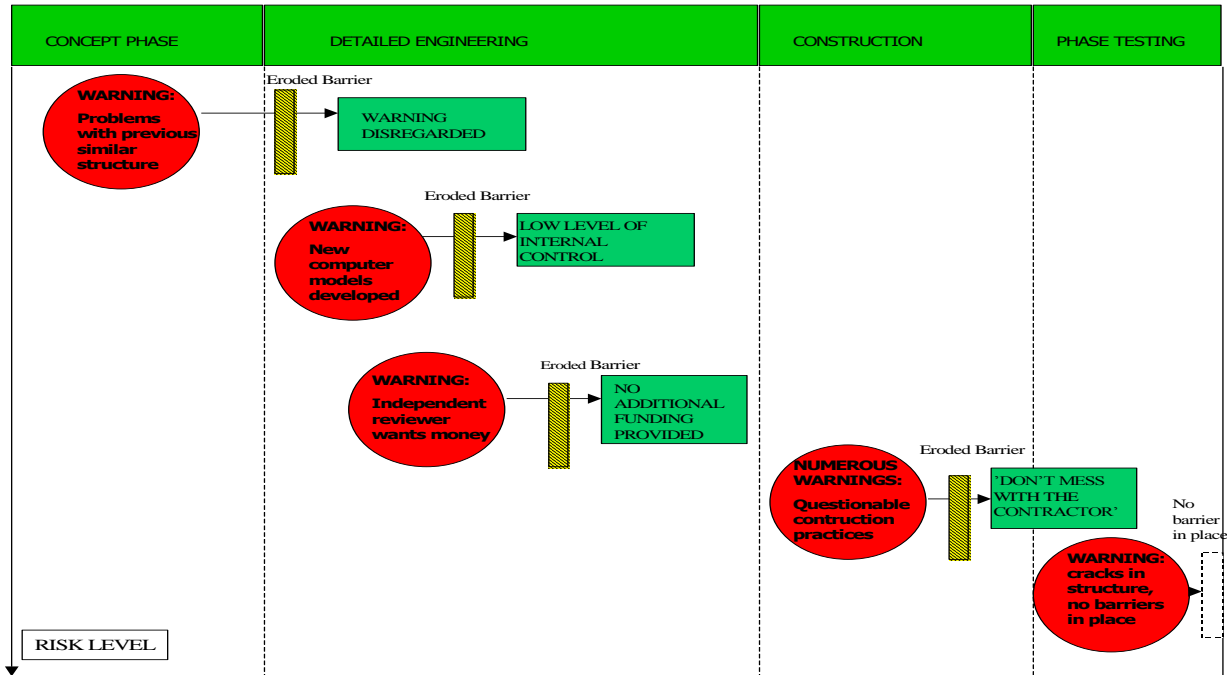


Figure 2.1 – Example of the degradation of barriers.<sup>iv</sup>

In order to deal with issues more efficiently, practical considerations of communicating issues should be considered. We assume that the organization has a management system in place but which is not perfect. That is, not *everyone* knows what *everybody* else is doing *at all times*. Because we are assuming that no organization has a perfect management system in place, we will here suggest that employees, for example, can communicate issues by filling out forms designed specifically for people working on projects. In case of urgency, emergency procedures must be in place and the procedure must be even more simplified. This will give the organization time to react against escalation of issues, provide better documentation of what went wrong, and help the organization to avoid similar situations in the future. If the organization deals with issues successfully, this can help reduce stress. Some amount of stress is needed to create a good work rate, however too much stress causes the work rate to decrease and has negative side effects. Stress is potentially disease provoking when occupational demands are high and the worker’s influence over his or her conditions of work is low, when there is insufficient social support, and when the reward offered to the worker does not match the effort he or she has invested.<sup>13</sup> Successful issue management can help alleviate some stress and make the workplace a safer place to be.

A word of warning is necessary: in any organization that will take seriously any issue reporting, there is a danger that some may “cry wolf” inappropriately.<sup>14</sup> Therefore, all must use the possibility to report issues (when knowing that their report will be seriously considered) with care and responsibility.

An inability to handle first-order crises can in the worst-case lead to secondary critical states or disasters.<sup>15</sup> First-order events are often the result of previous unresolved issues, and it is rare for first-order events to suddenly appear “out of nowhere.” If the organization can become better at

<sup>iv</sup> M. Shamma, op. cit.

handling issues at an earlier stage, first-order events can be avoided. The wording “issue” is more neutral than “bad news” and therefore easier to discuss and resolve. Figure 2.2 illustrates some ways in which issues can be dealt with, some more successfully than others.

At least two possible Human and Organizational Factors (HOF) that can lead to issues escalating and becoming bad news can be mentioned:

- One possibility is failure on behalf of the workers in avoiding reporting issues that arise. This could be because they fear blame, negative reprisals, being seen as whistleblowers or because management has a reputation for not listening. People’s inhibitions can also be a barrier to reporting issues. One should not underestimate the power of psychological boundaries. Employees in the United Kingdom working on the shop floor, for example, would not dream of walking into the manager’s office for “a chat about production issues.”<sup>16</sup> The hierarchy that exists in large organizations can create powerful psychological boundaries. Issues may then escalate to something more negative making them even more difficult to report.
- The second possibility of failure is because of management. If they choose to actively ignore issues because they don’t know how to repair them or because resources are scarce, issues may also escalate to a more serious degree.

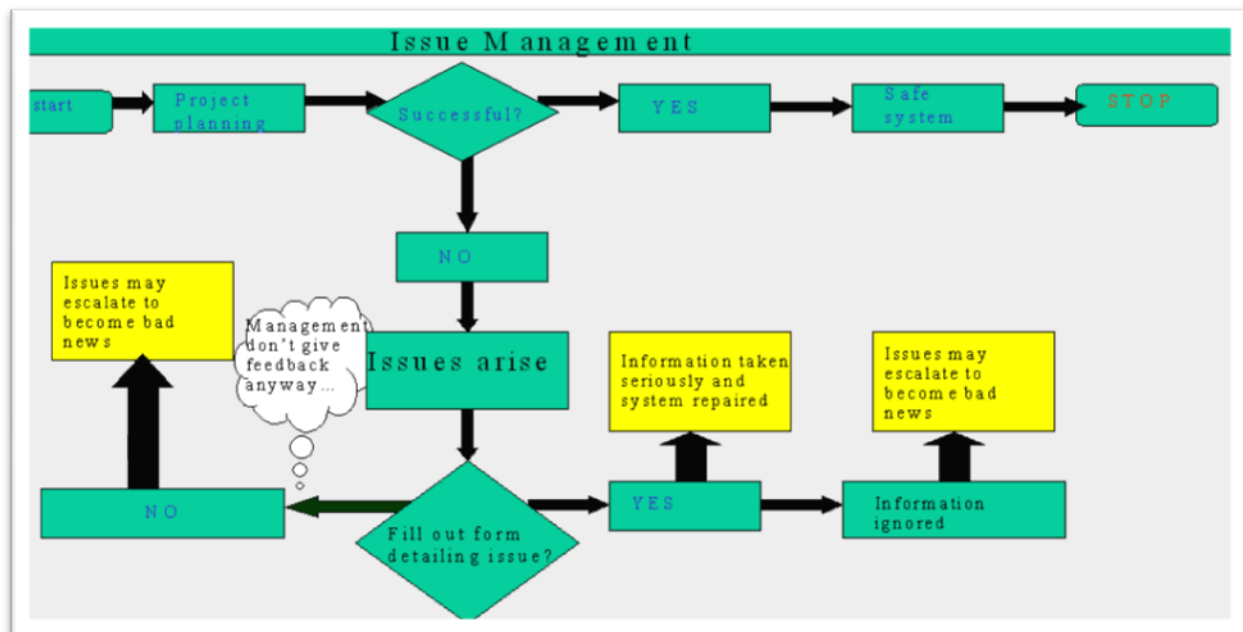


Figure 2.2 – 2 Pathways of issue management.<sup>v</sup>

Only one route yields a positive end result after an issue has been discovered. In this route, there is communication between workers and management. Issues are communicated by the employees and dealt with successfully by management, returning the system to a safe state. If issues are dealt with in this manner, the likelihood of a catastrophe (i.e., damages, huge loss of profit, or loss of human life) is less likely. In the worst case, ignoring issues, can lead to a catastrophe as illustrated. It can also lead to a number of secondary effects such as media receiving information from frustrated

<sup>v</sup> M. Shammās, op. cit.

individuals in the organization who feel they are not being heard. The organization may receive negative media attention and may end up being pressured by the public to return the system to a safe state. In the end, such a pressure can eventually lead to the media and organization seeing each other as adversaries.<sup>17</sup> The pressure, or even worse, the fate of a disaster can also damage the organization’s reputation to a high degree.

### **3. “Bad News” in an Organization Must Get to the Attention of Management**

“Bad news” in a project can come from a risk analysis or from concerned “floor workers,” which could either be project engineers or “rednecks.” In a proper Safety Management System (SMS) one will prepare a “plan” for Safety Management, the actions will be carried out (“do”), there will be “checks” and “feedbacks” in order to improve or update the plan. In this respect the System will be a self-healing system.<sup>18</sup> Projects might set up a “risk register” to monitor closely the risks perceived to be of highest concern. In the case the feedback loop does not function in the organization, the Safety Management System does not function. An example of such an organization is an organization without communication between management and the lower levels and where “bad news” is not communicated to the top level.

A poor working climate in an organization may be the result of unclear messages from the management and even by the partial lack of the management function. The worst imaginable organization would be a case where middle management will filter out the “bad news” while all the evidence the top management will like to hear will be presented. Such an organization is extremely vulnerable to risks, as the managing level will not get the full picture of the risk situation in the projects and the operations the organization is involved in.<sup>19</sup>

Such an organization will in addition often ensure that the views of the employees are suppressed and that the employees are criticized routinely in a manner that ensure that all difficulties in the organization will not reach the ears of management. This could also create a situation of embarrassment and depression amongst the employees in the organization, causing less attention to problems and poorer work performance. A “laisse faire” attitude could develop, or worse could antiparty develop towards management.

We will suggest that the top management of an organization must take immediate actions to avoid such a situation as soon as there is an understanding of middle management trying to suppress “bad news” from reaching the top decision level. It has been said about the most successful ship owner in Norwegian shipping, Sigvald Bergesen d.y. (1893-1980), that he never was ready to discuss the “good news” in the morning management meetings as he saw the objective of the meetings as an opportunity to solve “today’s problems.”

There is, however, sometimes (in some organizations) a need for an eye opener. This eye opener could surface in the form of a well-arranged Quantitative Risk Assessment (QRA), however, there may be a need for somebody to point to the need for a QRA.

An example from the world literature is H.C. Andersen’s tale about the “Emperor’s New Clothes.”<sup>20</sup> Everybody agreed that “the cloths which the weavers were preparing were extraordinarily magnificent” as they feared of being declared stupid if they did not see any clothing.

This was so until a *little boy* cried out the truth: “But the Emperor has nothing on at all!” and then out cried all the people: “But he has nothing at all on!” A child was needed to open the eyes of the crowd.

In Elizabethan times, the role of a *fool, or court jester* was to professionally entertain others, specifically the king. In essence, fools were paid to make mistakes. Many of the fool’s quips and riddles were made at the expense of the king. The “all-licensed” fool was able to get away with this due to his position. In this sense, the fool was the only person who could give the king the “bad news” that the king would not like. In the play *King Lear* of Shakespeare,<sup>21</sup> the fool is an important part of the gallery, as being the only character (together with Cordelia, one of the king’s daughters) that tells Lear what he thinks of him. Without the fool, there would not be anybody criticizing Lear’s character. The fool is possibly the most important character in the play, remove him and we will remove the personification of Lear’s mental guide. The key sentence in the play is that one should “Speak what we feel, not what we ought to say.”

A manager who accepts that the “bad news” have to be dealt with in a professional way, has laid the ground for a situation in the company where human and organizational factors are managed well, resulting in a reduced risk picture for projects and operations.

If NASA (with reference to the Challenger disaster) had then had an open communication, they could possibly have been saved from the disaster. If they had employed a “company jester” or allowed otherwise “bad news” to surface, management could possibly have taken actions to avoid the explosion of Challenger in front of all children who proudly watched their first “teacher in space” on DIRECTV.

In some cases a “whistle blower” will surface to counter the effects of a poor organizational environment. Most will agree that there should not be a need for the whistle blowers in a sound organization and that there should rather be an open channel to alert management of “bad news.”

In the case of the offshore platform project (the giant Troll A concrete platform),<sup>22</sup> top management became aware of the “bad news” (through a risk analysis) that there was a possible flaw in the design of the ballast piping, that potentially could lead to water ingress and water filling of the platform while floating. This news was then assessed with an action that the ballast piping should not be exposed to pressure loads that could cause pipe breakage. This decision resulted in a considerable reduction in the risk for loss of the platform in the temporary floating phases. According to the QRA, the risk was reduced by several orders of magnitude. The platform construction and installation project went very smoothly and the platform is presently in production at the Troll North Sea gas field. This platform is the largest gas producing center in the North Sea.

## **4. Conclusions**

We have discussed the results of risk analysis as well as concerns from the “floor” in a project. Safety cultures of companies are discussed and the management system of a company could block “bad news” to come to the attention of the top management or, even worse, be set up in a way that top management would protect themselves from information that could be considered to represent “bad news”.

We have in this paper suggested that *issue management procedures* should be incorporated to ensure that proper actions be taken in such conditions.

In the case of the *Deepwater Horizon* accident and the subsequent oil spill from the well, several issue reports were overlooked. It is suggested that the fate of the rig could have been much different had the management carried out proper risk analysis and listened to the concerns from the “floor”.

## 5. Acknowledgements

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