To report or not to report: What happens when middle managers receive bad news about safety issues?

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Abstract

Fascinated and often frustrated, it has often been that the flow of critical safety information is not as fluid and transparent as one would consider reasonable (Westhuizen & Stanz, 2017). This notional concept of 'reporting' has been researched and studied from many different industries and perspectives but has yet to answer, why individuals and groups lack the culture necessary to report what is wrong or not working related to safety. This case study aims to investigate part of this problem. Through gamification, focus groups and semi-structured interviews, middle managers supplied their perception and perspective of receiving bad news about safety. Collated and analyzed, the results point in the direction of a shortcoming of trust, psychological safety, and the liabilities \ when safety is only measured by departmental or individual performance indicators of injuries and accidents.

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Introduction

Hypothesis – Questions that need to be answered?

This case study investigated bad news about safety (news which entails information about critical incidents, violation of safety rules or accidents), being reported to middle management and the perception of those managers (Harding, Lee, & Ford) on the impact or rationale behind the phenomenon of negative safety reporting. The impetus for this case study, was the need to provide concrete evidence on how middle management perceived and participated within the reporting of bad news about safety within an organisation akin to a High Reliability Organisation (HRO) (La Porte, 1996; La Porte & Consolini, 1991). This led to an interest in how individuals in these positions made decisions, based on their perception and sense of local rationality (Dekker, 2014). Driving the following hypothesis questions:

1) Is there a problem at the middle manager level around the reporting of bad news (news which entails information about critical incidents, violation of safety rules or accidents) about safety?
2) Are middle managers aware of problems around reporting of bad news about safety?
3) If such problem(s) exist (re. question 1); why is there a problem about reporting of bad news about safety?
4) Is there a concern at the middle manager level, around receiving reports of bad news about safety?

There is a known expectation (responsibility) that when failures are experienced within any management system, those at all levels must have some form of response to correct or report potential or real failures (Fruhen, Mearns, Flin, & Kirwan, 2014) (Callari, Bieder, & Kirwan, 2019). This response is recognized through a form of immediate actions to prevent further damage to individuals, property, the organisation, or the environment. Or is it? The question that needs to be asked is why organisations around the world are still having

safety incidents and, in some cases, catastrophic events. This case study only focuses on a small piece of a very large puzzle, albeit a very important piece. The goal was to start a discussion, specifically focusing on the aspects of safety science and organisational management through prevention without fear of retribution, collaboration without judgement and transparency that may lead to the identification of competing priorities at the middle management level. So, initiating a discussion prompting industry, academics and those that perform high risk work, to collaborate and say, what is currently being done is not working! Then leading to questions around how we as a collective collaborative global community can and will start addressing these problems from a 21st century perspective. Reporting is a global issue, not specific to a specific industry group or demographic region. By focusing the attention on the middle managers, this research provides a starting point in understanding on how we can encourage preventative reporting. Separating the 'signal' from the 'noise' is an obligation and responsibility we all hold. This case study starts to scratch the surface of what must be addressed from that perspective. It is intended to drive discussion around what is possible in a time that needs to have positive results for a better world. As mentioned, focusing on middle management and bad news is only the start, more studies need to be done specifically around 'The organisational management weakness and strengths?', and the high potential and consequence 'bad news' that are not being addressed through reporting.

How can middle managers communicate/manage accountability that supports proactive reporting in both directions – up and down the chain of command?

At all levels an organisation must have some form of governance protocols about the reporting of potential or otherwise direct failures within a management system. Yet, there is no clear evidence that shows such proactive reporting is always occurring. The safety and risk evaluation report (Stewart R. B., 2022) of Ørsted Bioenergy shows more than 2 million exposure hours in one year with 1015 reports filed, only 6 were high consequence incidents.

In short, this organisational environment and practices are either extremely safe, or something is not being reported. This is where this story here begins.

To address these issues, there is a need to better understand the social constructs of reporting safety. In the instance of this case study, researchers were fortunate to have Ørsted Bioenergy in Denmark (see information) as a sponsor which allowed for the empirical research to be conducted directly at the middle management level. Timing of the research was a perfect match too, as Bioenergy were undertaking a programme (Safety as a Capacity) to help ensure that all safety initiatives were practically standardized and useable in everyday work. As a result of this initiative, attention was given to the motivation behind decision making at the middle manager level and how such decisions may have influenced the drive towards proactive or reactive reporting, thus addressing one of the questions asked here, 'Is there a concern at the middle manager level, around receiving reports with bad news about safety?'

Experience Drives Interest

Within safety science, it has been often observed that the flow of critical information is not often as fluid and transparent as one would like to think (Westhuizen & Stanz, 2017). This aspect of 'reporting' has been studied, yet it has not yet answered the question "Why individuals/groups lack the reporting culture necessary to do the right thing?" (Van Dyck, Dimitriova, de Korne, & Hiddema, 2013). There are several factors as to 'why', and this has been the driving factor to look further into the phenomenon of reporting specifically bad news and how it flows within an organisation. Reporting communication flowing upwards and downwards in an organisation is a very large subject, and with that the need to isolate a particular facet of reporting is necessary to properly scope this query. As noted earlier, this research is a starting point, and there is much more work to be done, on the issue of reporting of bad news.

What is the Relevance of Middle Management?

Isolating informants that play a significant role in reporting was the first step in this research on middle management within Ørsted Bioenergy. The position of middle management is a mixed role, meaning that there are strategic responsibilities assigned; along with, tactical leadership obligations at an operational level (sharp end); lastly, this role has performance measures associated to both duties. This is supported by Currie & Procter where they have identified the role of middle management as translating corporate strategy into action plans and individual objectives (Currie & Procter, 2005). When addressing the phenomenon of reporting and informants, there were several factors that needed to be considered; power relations, knowledge, social standing,…., perceived vs. actual flow of information and finally the expectations associated with the decision-making middle management played in reporting bad news.

How Organizational Learning is Successful?

In safety science, organisational learning has been identified as a necessity when looking at the prevention of harm, such as the results from a study by Edmondson reported in 2004: “each instance of a nurse willingly reporting a drug error is an illustration of proactive, learning-oriented behavior, which contributes to the prevention of future errors” (Edmondson, 2004). In 2017 Westhuizen compared several studies on the social influence on underreporting, which all showed a clear picture that reporting critical incidents is an essential part of the learning process to prevent harm (Westhuizen & Stanz, 2017). Another topic around prevention of harm that has emerged, not just from this case study but through literature reviews has been the need to create or develop a psychologically safe environment (Edmondson & Lei, Psychological Safety: The History, Renaissance, and Future of an Interpersonal Construct, 2014). This is clearly necessary to report what could be considered bad news. Edmondson & Lei (2014) believe that accurate reporting is based on whether

psychological safety was present or not... To meet that objective there was a need to be able to answer; 'Is there a problem at the middle manager level around the reporting of bad news (news which entails information about critical incidents, violation of safety rules or accidents), about safety? If there was a 'yes' in any form, then this should start discussions around several topics, like decision making ability, the cognitive translation of the reports being received and what influences create dilemmas for decision makers, to only name a few. This research aligns with potentially discussions that could be a driving force of transparency in those areas found to require improvement.

The challenge was how to study the reporting of bad news 'What does that look like?' and then interpreting that concept into what it meant to middle management within Ørsted Bioenergy (Benn, et al., 2009). Focusing on reporting in the flow of risk at a middle management level, the research was able to narrow down this research project by identifying key behaviours and themes to the reporting of bad news (Benn, et al., 2009). As an organisation Ørsted Bioenergy was in the process of altering their perspective and way of working with safety. The initiative named "Safety as a Capacity", launched in 2021, was designed to explore very specific subjects like documentation, culture, technology, and communication related to safety performance. Sponsored by the executive board, it was the hope that this research would enrich and support safety as a corporate capacity. In short, "Safety as a Capacity" provided an opportunity to align this research to an ongoing initiative within an organisation, thus providing value, not just for the case study, but for Ørsted Bioenergy.

What Foundational Concepts Support the Reporting of Bad News?

At the time of the initial literature review for this case study, there were several themes explored with intention of narrowing them down eventually to a more concrete research question: Psychological safety, Proactive reporting, Accountability, Communication, High consequence, Risk management, Trust, Production, Learning, Power, Decision making & Blame/Just culture.

From the literature review (Van Dyck, Dimitriova, de Korne, & Hiddema, 2013) as well as operational experience of the researchers, it was found that decisions within safety often balances around priorities, e.g. cost of adequate Personal Protective Equipment (PPE) or cost of stopping production to mitigate a possible unsafe outcome. The situation of stopping production to avoid a safety incident also involves a relatively high level of trust as well as the question about accountability for the consequences of stopping production with a potential high cost. Intrigued by essential human factors, such as psychological safety, leads to relaying bad or good news about safety, which is formed on the basis of trust (Simpson, 2012). This guided the researchers to choose trust as a theme for this case study.

Table 1 Themes in focus

Theme	Supporting Quotation	Reference
Trust	*Besides technical competences, middle managers agree that a great part of their actions involve non-technical skills, such as gaining credibility, becoming trustworthy.*	(Callari, Bieder, & Kirwan, 2019)
	Poor safety climate organizations with high levels of accident under reporting do not have fewer accidents; they just have fewer reports of accidents.	(Probst & Estrada, 2010)
Accountability	*We can create personal accountability not by blaming people, but by getting people actively involved in the creation of a better system to work in.*	(Dekker, 2009)
	We found a positive relationship between reporting of incidents and error management, i.e. constructive error handling	(Van Dyck, Dimitriova, de Korne, & Hiddema, 2013)

	Communication that implies that performance is more important than safety, for instance, may encourage risky behaviours among employees.	(Stackhouse & Stewart, 2017)
Production	*The loss of the space shuttles Challenger and Columbia have been largely associated with a performance culture, gradually infused with cost efficiency and focus on meeting production goals and deadlines.*	(Vaughan, 1996) (Le Coze, 2019)

These three themes were connected to the case study as demonstrated in the model below.

Model 1 Foundational Base for a case study on the reporting of bad news

A strategic road map was then developed which provided a path to answering, 'Is there a problem at the middle manager level around reporting *bad news* about safety? The research was based on an epistemological approach spelt out below.

Where does the middle manager fit in this case study?

Having a well thought out theoretical perspective, aided in the formulation of this case study's set of research questions *'What is to be reported, who it is reported too and what is done with that information?'*. These questions were built into the case study allowing for an interpretivism strategy relating to a socio-technical approach. This allows for understanding how beliefs, motivations, and perceptions of how informants are impacted by the reporting phenomenon thus allowing for a better understanding of the social realities around reporting

(Crotty, 1998, p. 7). This takes into consideration the idea that reporting is as social reality which has impacts; specifically, consequences based on the information found and then shared within an organisation.

Within interpretivism there are a sub-set of perspectives like symbolic interactionism that can provide a framework to study the sociological principles embedded in the topic question (Crotty, 1998, p. 8). The socio-technical approach stressed the idea that people may construct and/or may have relied upon material resources in ongoing social interactions within an organisation. From the lens of interacting with informants, reporting of bad news related directly to how individuals perceived themselves when reporting took place within Bioenergy. Further as to exploring the social impacts of reporting, it aided in defining 'how' reporting, may have been understood based on the individuals of their social standing perception (see individual comments in Table 8) within their peer group or organisation. Interpretivism also allowed for flexibility in understanding of such positional perspectives, specifically to help better understand the middle manager's interpretation of reporting bad news.

> Interpretivist approaches to social research see interpretations of the social world as culturally derived and historically situated. Interpretivism is often linked to the work of Weber, who suggested that the social sciences are concerned with *verstehen* (understanding). This is compared to *erklaren* (explaining), which often forms the basis of seeking causal explanations and is the hallmark of the natural sciences. (Blaxter, Hughes, & Tight, 2010, p. 61).

Interpretivism, thus provided an appropriate approach by allowing various even alternative ideas to be inserted to the research as it progresses, permitting emerging trends to arise and be tracked, thus, asserting the validity of the social phenomena of 'reporting'.

Research Methodology

As for data analysis, there needed to be a structured way to focus the data being collected. A content approach provided a matrix that organized and itemized all data gathered into themes allowing interpretation and analysis to proceed. By following this process, an opportunity to identify any outliers was also created. Potential outliers were key to validate or invalidate the data thus providing a check on both analysis and data interpretation. The following sections summarize the data collected from gamification, focus groups and interviews. Results were organised separately and then compared across methods, with the overarching aim of analysing correlations given these three themes: Trust, Production and Accountability.

Gamification (Survey)

Gamification was designed to replace the traditional survey with a scenario (story) based environment depicting a bad news situation (Appendix D - Gamification Synopsis). Those participating were expected to engage in this micro-learning, with the hopes of gathering data associated to behaviour associated with the reporting of bad news. Scenarios within the game delivered practical situations that informants could relate to, at the same time allowing for them time to respond as to how they would have dealt with that situation (Refer to Appendix D for example). Gamification provides a deductive approach to thematical based scenarios and responses. These scenarios had outcomes embedded within the storyline, that were seen to be the most appropriate responses. However, flexibility within the game allowed for other responses, providing additional insights to behaviours related to the reporting of bad news.

The game's key objective was to prime informants for the focus group sessions that was conducted immediately after the gamification exercise. Analysis of the game has indirect gains as well. Orsted Bioenergy had been conducting many surveys over the last couple of

years, which created survey fatigue. By gamifying the data collection, it provided the alternative "priming of the pump" for informants; in turn, providing a new way of engaging staff with issues like bad news without them feeling like it was just another survey.

The intent behind combining the game with focus groups was to gather as much information on personal and organisational variables to support the case study's analytic outcomes. The following outcomes (Gammell, OnTheJob, 2022) were assessed as part of the scenario, providing insights as to how managers perceive the reporting and managing of bad news (Table 2).

Table 2 Behavioural Outcomes defined

Behavioural Outcomes	**Definitions**
Being Curious: Fill Knowledge Gaps	Exhibiting an interest in understanding anomalies and unexpected outcomes, rather than dismissing them by relying on assumptions.
Being Accepting: Recognize Mistakes Happen	Being accepting allows one to build strength from mistakes based on an appreciation that errors are the building blocks of experience.
Being Open-Minded: Consider Alternatives	Being open-minded is to be aware that there are multiple legitimate perspectives that need to be considered to arrive at the best solutions.
Being Brave: Communicate a Concern	Being brave is being willing to be unpopular with peers or authority to doing the right thing for the common good.
Being Accountable: Transparency Equals Trust	Having courage, trust, and social competence to achieve a common good.

Gamification was an innovative attempt at using a new method in gathering data in a more creative way. It also helped to identify personal behavioural variables, that would provide a clearer direction for safety science to move forward with. It goes without saying that the better we understand an individual's perspective when analysing data, the more we can appreciate why things in a company are done a particular way. Gamification provided additional insight into how individuals perceive their work environment, their roles and their

decision making. In other words, gamification provided a step forward in asking questions in a meaningful way, yielding high participation and more useful evidence.

Focus Groups

Those who participated in the gamification were also part of focus group sessions, "Focus groups paint a picture of competing demands that range from the noble intent to report incidents for the benefit of the system to dealing with emotional impact, saving face or managing personal fears" (Westhuizen & Stanz, 2017, p. 203). In this case study, these focus groups were asked one question:

'What happens when middle managers receive bad news about safety issues?'

The focus groups were facilitated as face-to-face focus group sessions through the Nominal Group Technique (Delbecq, Van de Ven, Glenview, & Foresman, 1975) which proved to be beneficial in generating a large quantity of data, so allowing all participants the opportunity to express their opinions (below):

- Each participant was handed a piece of paper with the question on top and room for their answers to it.
- They were given 10 minutes to brainstorm and write down responses.
- Each person then shared his/her ideas in a round robin format and all of these were listed on flip charts.
- All ideas were then discussed with pros and cons with addition elaboration when required.
- Individuals then silently ranked top ten ideas following the discussion.
- Rankings were averaged for each idea and discussed in the group session for with further clarification.
- There was also a second individual ranking of top five followed with most important ideas collected: This concluded each focus group session.

Interviews (Semi-structured)

Interviews will be held with a cross section of the participants from the Focus Group sessions, for further exploration of their opinions about reporting of 'bad news' about safety. The interviewees will be asked two open-ended questions, to give the researcher time to ask some follow-up questions as necessary:

What positive behaviour related to safety do you experience today?

What negative behaviour related to safety do you experience today?

The case study objective is interested in middle manager's experience and perception of the environment regarding accountability and trust, with the interviews focusing on paradoxes or issues middle management may have around receiving and reporting 'bad news' (Edmondson, 2019). With only two open questions asked by design throughout the interviews, there is an opportunity to adjust interview questions as the case study progresses. This semi-structured interview process allows for this adjustment to take place, thus giving more opportunity to investigate the subject being discussed. The interview format does have predetermined questions; however, as noted (Longhurst, 2009), semi-structured interviews tend to unfold in a conversational manner, thus offering participants the opportunity to explore issues they find significant as the interviews go on (Longhurst, 2009, p. 580). To support the research question "What happens when middle managers receive *bad news* about safety issues? interview questions were designed to investigate further the reporting of safety concerns. Based on these questions' responses, there were several sub-questions that could be used as follow-up (See Table 8), giving the participants an opportunity to bring up their personal experiences and perceptions.

As stated, the intent of the interview process was to uncover additional meanings and perceptions related to the thesis question. Interviews hence followed the research criteria for the semi-structured interviews (Crotty, 1998, p. 13), with the ability to incorporate non-

directive forms of questioning as necessary. Furthermore, the qualitative inquiry can unpack informant meanings and categories, which provided input for this and possible future research (Forsythe, 1999). In brief, the methodological intention was like that of the focus group; and included a narrative/thematical analysis which was coded and logged for analysis and writeup. Focus groups and interviews provided additional insight to the gamification results. At the same time, the three data collection methods provided the opportunity for more questions to be asked about the phenomenon of reporting.

Document analysis

Documentation analysis employs a systematic procedure to analyse textual material. Here Ørsted Bioenergy's internal documents, provided some factual evidence to help answer hypothesis questions around the reporting of 'bad news'. Two artifacts were used within Bioenergy; data form their Synergi reporting system and a Safety Culture & Risk Evaluation Report (Stewart R. B., 2022), both provided primary documents on issues related to reporting. Reviewing the past 12 months of accidents, incidents, near misses and observations from Bioenergy's reporting system provided detailed insight and knowledge regarding the company's safety reporting.

Key Assumptions and Supporting Theories

The intention here was to learn more about participants' understanding and knowledge of risk of "bad news" as well as the impacts/consequences they associated with reporting such risks. There was a social context, this case study acknowledged, based on participants responses, which gave rationales as to 'why' people report or not, based on what their perception were around receiving a report of a negative nature. A narrative/thematic analysis supported the interpretation of the data gathered, by tracking how individuals' piece together datum and then communicate that information within the organisation. As Reed stated this often involves storytelling, "… because it involves an explicit construction of a cognitively

recognizable narrative, including structured elements such as specific character archetypes and a lesson or moral of the story (Reed, 2018, p. 41).

Ethical Considerations

The ethical governance of the research was overseen by the sponsor organisation Bioenergy of Ørsted A/S. Approval was first given by the sponsor organisation in verbal form to the researchers after presenting the MSc thesis question, the intentions behind the thesis and research time schedule. Ørsted A/S has had a history of allowing students access to research for PhDs and master's research, hence it was considered almost pro forma to achieve permission to carry out this research from the legal department., Consent and NDA (Non-disclosure Agreement) forms were submitted to the company and used as part of achieving legal permission before the research started.

The research did collect personal data, such as informants' names, E-mails, job-position, and departmental connection. It was important in this case study therefore, to ensure the gathering, managing, storing and disposal of such data were carried out in a trustworthy, professional manner (Blaxter, Hughes, & Tight, 2010, pp. 155-168). General guidance re: this were taken from Social Research Association, (Research Ethics Guidance, 2021) with specific rules of Lunds Universitet and Ørsted A/S taken into consideration. All ethical considerations concerning informants in this research were guided by Lund University Research Ethics (Research ethics and animal testing ethics, 2022). However, the research does not cover any of the conditions requiring an Ethical Review (Ethical Review, 2022). Still, privacy was still regulated by the "MSc thesis Privacy Notice" (Lund Universitet, 2022). Additionally, each informant that participated was asked to sign a consent form, which they all did.

Results & Analysis

Gamification – Priming the Pump

At first glance, responses presented no or little divergence from embedded outcomes, thus providing some confidence and reliability in those outcomes already identified. Gamification also provided high-level insight as to middle management's perceptions of the reporting process. This data helped answer the question 'Is there a concern at the middle manager level, around receiving reports with bad news about safety?'. In short, results supported 'Yes' as the answer further suggesting the degree of concerns present at the middle manager level when bad news events occurred. As will be noted in Table 3, the overall outcome response shows that there is a lack of workplace culture supporting the reporting of bad news, with additional confirmation that middle managers recognized that their choices do impact risk in a negative way.

Table 3 Overall Game scenario overview

Response	Outcome
100%	Appear to be aware how some choices could increase the risk of a negative outcome.
76%	Appear to be aware of what is expected.
44%	Appear to believe the workplace culture is aware of what is expected.
76%	Appear to be aware of the human or cultural influences that lead to questionable choices.

A review of scenario results provided some interesting insights. It showed inconsistencies within the workplace in the reporting of risk (bad news). Only 44% of middle managers felt that the organisation had established clear expectations around the reporting of bad news. So, what does this mean to report bad news, when the organisation seemed to have unclear expectations re: this.? On the other side the consequences of reporting choices without clear guidelines increases the risk of a negative outcome, whether it is reported/not reported: What is the negative outcome? Could it be a failure causing harm or could it be other internal

(role) consequences for reporting a failure? When compared to the focus group responses, one of the outcomes were fear of personal consequences when reporting. This led to concerns about how such reporting would affect those who reported, plus how these reports (and reporters) were measured against the internal safety key performance indicators (KPIs). These KPIs constituted a process monitoring system, which are used to collect information and data from certain processes, to evaluate their performance (Parmenter, 2019).

Table 4 Outcome Overview: Linkage of outcome to responses

Avg. Response	Outcome
100%	Appear to be aware of why the absence of: Being Curious Accepting, Open Minded, Brave & Accountable may contribute to a negative outcome.
73.6%	Appear to be aware that: Being Curious, Accepting, Open Minded, Brave & Accountable is an expectation.
43.6%	Appear to perceive that the workplace culture is aware that: Being Curious, Accepting, Open Minded, Brave & Accountable is an expectation.
55.4%	Appear to be aware of the influences that would lead someone to not see the need for: Being Curious, Accepting, Open Minded, Brave & Accountable

While comparing games results and other data a pattern quickly emerged on the issue on how the situation re: bad news should have been handled and the impact workplace culture had on this. There was a consensus (100% n=16) that if there was an absence of these (above) identified factors around the reporting of bad news that there would be a likelihood of a negative outcome (consequence). What makes this result interesting is that only 43.6% perceived that the workplace culture had any expectations around reporting. This identified a disconnect in what managers know how the organisation works and what the workplace has established as support in the reporting of risk. This result further validated that only 19% felt that there was little awareness around ‘acceptance’ and use of reporting, that 81% felt that there was little they could point to that allowed staff to build strength from mistakes at least based on an appreciation that errors could be the building blocks for future improvement. Further, only 31% thought that being ‘brave’ was an expectation. The remaining 69% felt

peer and group-pressure made doing the right thing more difficult. In short, there is the lack of organizational support to drive the appropriate reporting of bad news, and this should spark an inquiry into the current reporting environment. Further all this supports an initial hypothesis that middle managers are aware of problems around reporting of bad news about safety?'.

Also, managers appeared to only have 50% understanding of the organizational expectation for accountability. This poses an interesting issue because for middle management as these expectations should be well known for those who are in leadership roles. At any level one needs to learn how to build strength from mistakes based on an appreciation that errors can be potential building blocks for improvement. The other aspect is that of accountability, and here only half the managers perceived that having courage, trust, and a team-centric approach was present enough in the current organization necessary to achieve this goal.

Table 5 Gamification Results

Response	Perception
100%	Appear to be aware of why the absence of Being Curious may contribute to a negative outcome.
94%	Appear to be aware that Being Curious is an expectation.
56%	Appear to perceive that the workplace culture is aware that Being Curious is an expectation.
62%	Appear to be aware of the influences that would lead someone to not see the need for Being Curious.
100%	Appear to be aware of why the absence of Being Accepting may contribute to a negative outcome.
50%	Appear to be aware that Being Accepting is an expectation.
19%	Appear to perceive that the workplace culture is aware that Being Accepting is an expectation.
81%	Appear to be aware of the influences that would lead someone to not see the need for Being Accepting.
100%	Appear to be aware why the absence of Being Open-Minded may contribute to a negative outcome.
75%	Appear to be aware that Being Open-Minded is an expectation.
62%	Appear to perceive that the workplace culture is aware that Being Open-Minded is an expectation
56%	Appear to be aware of the influences that would lead someone to not see the need for Being Open-Minded.
100%	Appear to be aware why the absence of Being Brave may contribute to a negative outcome.
62%	Appear to be aware that Being Brave is an expectation.
31%	Appear to perceive that the workplace culture is aware that Being Brave is an expectation.
100%	Appear to be aware of the influences that would lead someone to not see the need for Being Brave.
100%	Appear to be aware why the absence of Being Accountable may contribute to a negative outcome.
87%	Appear to be aware that Being Accountable is an expectation.
50%	Appear to perceive that the workplace culture is aware that Being Accountable is an expectation.
68%	Appear to be aware of the influences that would lead someone to not see the need for Being Accountable.

Focus Groups – Running the Pump

Focus groups were a peer-to-peer learning environment, allowing their participants to explore and comment on key aspects of the research question. Bringing 15 (43%, n=32) middle managers together in two group sessions led to some interesting results. Each participant was asked the question: *'What happens when middle managers receive bad news about safety issues?'* Through free association, followed by group discussion and debate, 69 narratives were collected and ranked by frequency. The results of connecting individual narratives and factors are given below (Table 7) led to data regarding the role(s) Trust, Production and Accountability play in the reporting of bad news.

Table 6 Themes defined.

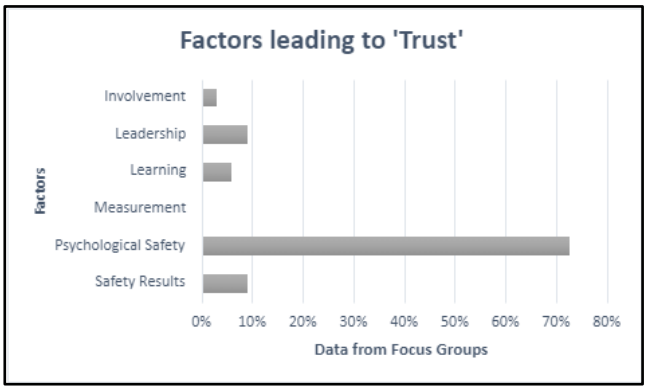
Theme	Definition
Trust	One in which confidence or reliance is placed
Production	Core business to deliver expected results
Accountability	An obligation or willingness to accept responsibility and to be accountable for one's actions. (Danish does not have a direct translation of accountability, so there is a risk of perceiving accountability to be the same as responsibility. However, the difference was explained to participants.)

Table 7 Factors related to themes.

Factor	Definition
Psychological Safety	Experience with the degree of psychological safety and impact on employee's willingness to report and the organisation's capability to learn. Ability to openly speak with confidence, stating an opinion without prejudice.
Leadership	Experience with leaderships' recognition of risk and opportunities to manage operational safely.
Involvement	Experience employee/contractor involvement in matters that can result in serious harm to them.
Learning	Experience with the organisation's capability to learn from investigations.
Measurement	Experience with the effectiveness of the safety management system measurement metrics and impact on driving appropriate behaviour.
Safety Result	Perception and experience because of the socio-technical interactions that produce safety results.

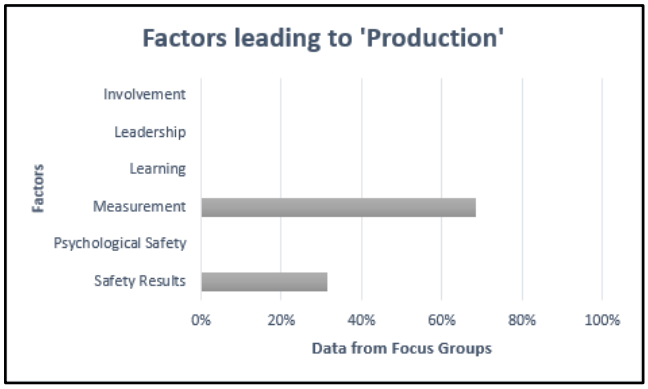
More regarding this data and the in-depth analysis of these narratives can be found within Analytic correlation of results p. 23. A clear majority (73%) of the participants agreed that psychological safety was a factor in whether one reports bad news or not and, to be

effective as a middle manager, it was necessary to have knowledge of all aspects of safety issues, especially pertaining to bad news. As Edmondson explains psychological safety must be created by leaders if it is to be present in any organisation (Edmondson, 2019). In this case the middle managers were aware about the lack of and the need for psychological safety. For example, participants indicated that the middle managers needed to have trust in their manager's decisions and ways of measuring performance (Graph 1). A related research issue is: Do the middle managers know how to create psychological safety and can they do it without having psychological safety themselves?



Graph 1 Factors leading to the theme Trust Focus groups

High numbers related to Production gave a clear signal that this factor had a large impact on the organisation studied. From their responses it was equally clear, that the middle managers perceived these factors as having a negative influence on reporting bad news about safety. This is especially true for the organisation's KPI's (Key Performance Indicator). Focus groups had the strongest agreement around the statement that bad news about safety had a negative impact on the department's KPI; hence, bad new will be less likely to be reported, leading to little or no dissemination of bad news which could potentially lead to serious accidents (Stackhouse & Stewart, 2017, p. 6)



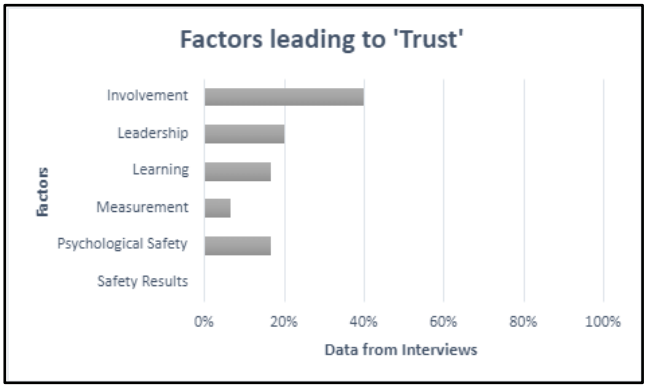
Graph 2 Factors leading to the theme Production Focus groups

Participants overwhelmingly saw the factors Leadership (33%) and Learning (27%), not focusing on accountability (especially re: bad news) by the individual. Lacking accountability was seen as a problem especially concerning the ability for the organization to learn (from its mistakes). As participants put it: "You do not feel responsible for what happened" and "Bad reception at the leader or manager" (hence the reporting of 'bad news' about safety is unlikely to take place. The participating middle managers almost all agreed that not seeing the need for learning from incidents, could lead to bad news about safety not being reported. This aligns with a point Sidney Dekker made when he writes about Just Culture: "If operators and others perceive that their reports are treated unfairly or lead to negative consequences, the willingness to report will decline" (Dekker, Just culture: who gets to draw the line?, 2009, p. 2).

Graph 3 Factors leading to the theme Accountability in Focus groups

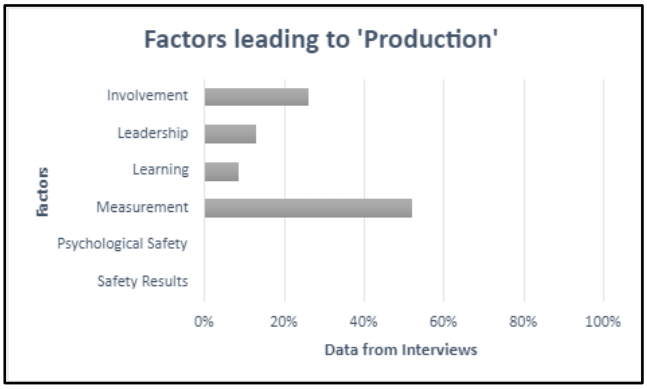
Interviews – Verifying that the Pump is Running

Our analysis suggests that the middle managers believed involvement and inclusion were the leading factors in achieving trust. The interview statements made it clear that this included both internal as well as external parties, such as contractors. Leadership that promoted psychological safety was also seen as a key factor leading to trust, as was transparency of all aspects of reporting, including bad news.



Graph 4 Factors leading to the theme Trust in interviews.

When discussing which factors, were influencing Production, it was no surprise to find measurement was one of the most important factors. In both focus groups and interviews for example, it was frequently mentioned that negative behaviour often arose from being measured. Some interviewees believed that cases in the reporting system (Synergi) were being closed for the sake of a deadline (often given by someone else), and less to implement a strong and sustainable action(s) to prevent the next accident. This would indicate that measurements, such as department KPIs, which seemingly provides evidence of competent performance, can also drive a culture of *not* reporting bad news to ensure that a department's measures remain strong and thus the department is seen positively by upper management.



Graph 5 Factors leading to the theme Production in interviews

Interviews showed middle managers have an acute awareness of how accountability was an important part of their working day. There was also an understanding, that by creating an environment focusing on the themes Learning and Involvement, this would lead to people being accountable, a positive outcome when it comes to improving safety (Edmondson, 2004), (Westhuizen & Stanz, 2017) & (Stackhouse & Stewart, 2017). This tells us that the managers know that accountability drives proactive reporting, which raises the question of what are the challenges in driving accountability in this organisation?

Graph 6 Factors leading to the theme Accountability in interviews

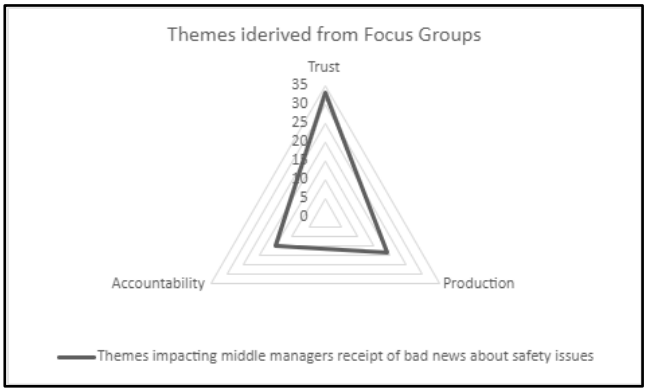
Analytic correlation of results

From our combined analysis of the outcome of the gamification, focus groups and interviews, it seems that middle managers are acutely aware of the safety aspects in the organisation and what is hindering its more effective implementation. These middle managers believe that they were lacking capabilities to raise their concerns to senior management, thus limiting full disclosure of safety issues.

Data from all three sources showed that trust was fundamental in improving safety performance within Ørsted Bioenergy, i.e., knowing what is happening in the safety sensitive areas of operations, both in terms of the positive and negative aspects of safety. (**Model 2** v **Model 3**).

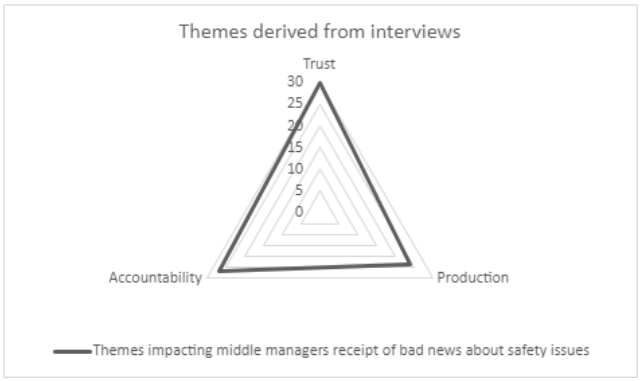
The gamification data also shows that for 81% of middle managers workplace culture did not rank acceptance high, which means that management is unaware of the influences that would lead someone to not see the need for *Being accepting*. This drives deeper into recognizing mistakes happen, thus allowing one to build strength for mistakes base on an appreciation that errors are the building blocks to improvement (Gammell, 2022). This is for example what one informant had to say about this: “Culture – It must look better than reality, sweeping under the carpet” (Table 8) This is also supported by data reported under Management by fear: “Management do not leave room for openness/transparency” (Table 8).

A more transparent, objective view of the safety performance however can be achieved with stronger support from senior management, especially by enhancing psychological safety thereby leading to a higher level of trust. As one informant put it “Workplaces where employees know that their input is valued create new possibilities for authentic engagement and stellar performance” (Edmondson & Lei, 2014).



Model 2 Outcome of reporting bad news – Focus Group Foundation

It is interesting that focus groups concentrated on what was wrong in the organisation, whereas interviewees presented a more nuanced view of what was happening in the organisation, along with what could or needed to be changed within the organisation; (Model 3).



Model 3 Outcome of reporting bad news – Interviews Foundation

Even though managers individually understood the ability to build safety through trust and accountability, when they did report or receive ‘bad news’ about safety, they also recognized that it could have a negative impact for the units they were part of.

For example, highest-ranking quote from focus group was: “Bad news about safety - It will affect the dept.'s KPI negatively if reported” (Table 8).

Table 8 Themes and narratives

Theme	Definition	Quotation
Trust	*One in which confidence or reliance is placed*	**From Focus groups:** "A person will not report and be seen as incompetent" "Fear of consequences, both personally and departmental" "Management by fear – Management do not leave room for openness/transparency" "Fear of being seen as a snitch" **From Interviews:** "Not long ago, the attitude was that you were reprimanding someone for doing a reporting". "Well, I sense they are hiding something, and it's a sense that's been built up over time.". "At least our main suppliers are also beginning to trust that it's not just a matter of saying it. They must however also trust that they can count on it".
Production	*Core business to deliver expected results*	**From Focus Groups:** "KPI - It will affect the dept.'s KPI negatively if 'bad news' about safety is reported" "Following up on incidents, creates more work (Less resources for production)" "Culture – It must look better than reality. (Sweeping under the carpet)" **From Interviews:** "I have a fear of bad measurements/trends" "If you're responsible for a case in our reporting system, it's really hard when you're working and you just want to close the case with something other than an action, right? It is more or less ineffective".
Accountability	*An obligation or willingness to accept responsibility and to be accountable for one's actions*	**From Focus Groups:** "You do not feel responsible for what happened" "Do not see the need for learning from incidents" "Bad reception of 'bad news' about safety at the leader or manager" **From Interviews:** "When one supplier goes to another supplier, without any outside action, but on their own initiative, and start up that conversation. That is showing accountability and learning is taking place". "So that's the mindset is that we need to change so that our suppliers also believe that safety is most important". "It's demotivating and people do their job where they think it does the most good. This happens because we've got two parallel systems that are intended to report the same thing".

There was consensus that ‘bad news’ about safety impacted production (Table 2; “Core business to deliver expected results”) and this led to not reporting bad news. An important issue here is middle managers, when it comes to safety issues, are both controlled and controllers as well as resisters and resisted (Harding, Lee, & Ford, p. 29). Middle managers are experiencing control by senior management to adhere to KPI’s and other measurements of safety and production, and at the same time are responsible to fulfil production expectations. Further, middle managers understand that the workforce they supervise, are themselves not disclosing all aspects of safety issues (Table 8; “Fear of being seen as a snitch”), mainly again occurs due to a lack of trust and fair accountability,

The interviews show that the middle managers possibly are trying to achieve disclosure, at the same time trying to build the needed trust and accountability with the workforce. Conversely, managers perceive they are also lacking trust and accountability from their supervisors (Table 8), in effect, middle managers often become victims of the same forces they themselves are trying to control. This double bind middle managers find themselves in, allows in the end only a slow evolution towards a safer organization, carried forward only by a few individuals and some small pockets of progressive thinking within the organisation.

Discussion

Results seem to confirm that middle managers believe they face significant challenges around receiving and managing 'bad news' about safety in their organisation. e.g., "Management by fear" and "Sweeping it under the carpet". This finding provides a starting point for more socio-technical discussion and analysis that needs to be taken up in the future.

From the data gathered key themes were constructed allowing for a socio-technical discussion, which could benefit from taking advantage of Rasmussen's vision of safety as migration of boundaries of safe performance in a system (Rasmussen, 1997) which Hollnagel elaborates on "Safety management must be proactive and try to anticipate developments and events, rather than just respond" (Hollnagel, 2013).

Researcher Observation

Interpretation of the data gathered from this case study identified that middle managers, to a large extent, find themselves challenged in reporting bad news. It is very apparent that the difficulty around reporting is evident primarily upwards in the organisation, and was due to the lack of psychological safety, having a clear understanding of role re: safety reporting (Accountability) and the concern around KPIs (Production). Based on this data about upwards reporting, it needs to be stated that the success in a psychologically safe environment starts with leadership.

Practicalities and Challenges of the case study

Setting and participants

With the choice of methods identified, there were some challenges that needed to be addressed to move forward. As Ørsted Bioenergy was spread across Denmark, it was decided to split the focus group sessions into east and west regional groups and do the interviews of the managers at their preferred local worksite. As the organisation has a primarily local workforce, English language barriers were identified as a considerable challenge, even though

the cohort did have a common working knowledge of English. Nevertheless, it was decided to perform much of the data gathering in Danish. The decision to move forward in the organisation's native tongue was done to provide a better understanding of what was being asked and answered. With the decision to work in the informant's language, translation became an additional step in the process, increasing the risk of error, which was mitigated through translation, cross-checking and transcription supported by video/sound recordings. There was one exception made on the language issue and that was at gamification. This was done in in English. The rationale for this rested on the complexity of translation issues that arose within the game itself which could have led to a high rate of error in the game results. It was also decided that the game should be incorporated into focus group sessions, where the original plan was to have the game delivered as a separate step. Having the game completed in the peer-to-peer sessions allowed the facilitator to aid only in the interpretation of the game's English text into Danish, if required.

The Researchers

Another challenge was that the researchers were Danish and Canadian, therefore not living in the same time zone (8-hour difference) when performing the original research. This forced focus groups and interviews to be conducted by the one researcher that was on the ground and who spoke Danish. Even working though in the same company, only two of the participants in the focus groups were known to the Danish researcher beforehand. The researcher (Canadian) who was not physically present did participate in the sessions, but more as an observer via a virtual connection to the focus groups. The second researcher (Canadian) was tasked with the coordination of the data analysis once translated. Identifying and mitigating research challenges led to creating the best research environment for the participants. To help ensure the clearest picture of the verbal and behavioural input linked to the behaviours of the participants, an additional observer was asked to review the interactions

of all actors, participants, and researchers alike. This additional observer was a seasoned pilot and experienced facilitator, with skills and capabilities to observe both verbal and body language. Taken together these video recordings and written narratives, and the third observer enriched the quality of this research's overall data.

Future discussion

For an organisation to evolve, it needs to create a stronger foundation with the factors like, Trust, Production and Accountability firmly in place. Further, enhancing psychological safety would promote trust within the organisation and thereby enabling more transparency when it comes to the reality of operational safety.

This research did not fully cover the skills and competencies of the middle managers. However, now knowing the participants' need for proper direction re: safety and bad news, the organisation could benefit from continuing the journey towards psychological safety. Results from the data (See Analytic Correlation of results) points towards three areas, which if addressed, could be that the next steps within the organisation to achieve this goal:

- Addressing the issue of fear and blame more adequately would lead inevitably to better psychological safety.
- Managing measurements and safety results differently than today could increase production, improve the core business of the organisation, and provide opportunities to build a more resilient organisation.
- Focusing on the pros and cons of how the organisation now defines accountability could lead to improved transparency, knowledge, and organisational learning about safety issues.

Conclusion

Emerging concepts

To continue this discussion, one would have to extend research beyond the reporting of bad news. Focusing on the middle management should be seen as just the start of a much longer discussion and research cycle. Middle managers have a difficult place within an organization because as Currie & Proctor pointed out this role is rife with problems of role conflict and role ambiguity (Currie & Procter, 2005, p. 1351). What follows are some potential future research questions. What is considered a negative outcome from reporting at a middle management level? Is it for example a failure causing harm, or the internal, often career, consequences for reporting a failure?

With unclear expectations around the reporting of bad news, it would be prudent to look beyond the middle managers and research more about how others perceive such expectations. This could lead to better knowledge of what senior management knows and communicates about bad news of safety in the organisation. Expanding further to reporting in general, the following would be interesting to study:

- How should reporting be conducted to have better outcomes than today?
- How should responsibility for reporting be (re)defined or redistributed?
- What should be done with safety information once collected? and more importantly, how can an organization ensure what was being reported has not been altered to meet less objective the agendas?
- What resources are necessary to allocate so middle managers can learn how to create psychological safety?

It is expected that further studies will lead to a better understanding of the dynamics related to reporting. This would provide more insight to the socio-technical aspects of how safety

reporting works, identifying that the organizational culture can improve the way organisations do business as well as keeping their most valuable assets (people) safe.

Acknowledgements

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A huge thanks to our families for enduring the long hours for many months.

Appendices

Appendix A - Literature Review Methodology

Literature process

Based on the scope of the research topic, the narrative/critical literature review combined with a scoping review was the approach taken for our research. This approach was supported by Onwuegbuzie and Frels as the generalized/broad based topic review allows; "Synthesizing both quantitative and qualitative findings within the same literature review automatically rendering the literature review process as a mixed research study" (Onwuegbuzie & Frels, 2016). The intent was to build the literature review from this starting point; that the reporting of 'bad news' about safety, was founded in both personal experience from those reporting and those who received the reports, encompassing organisational learning as well as social relations within the organisation. This literature review hence covered safety science, organisational management, psychological and sociological studies to understand the human and organisational factors behind reporting. The findings from the literature review are integrated in the research paper, starting from a visual map which later turned into themes supporting the research question, see **Model 1**. Bench marks here were two citations: "The difference between success and failure, is about getting the right information to the right people at the right time" (Stewart R. , 2019) and (Probst & Estrada, 2010) "The results from our 5 industry samples consistently indicated that under-reporting does in fact occur".
(Fruhen, Mearns, Flin, & Kirwan, 2014)

A study from 2014 in air traffic management, investigated senior managers safety commitment, and results did not show a clear correlation between safety commitment and safety knowledge (Fruhen, Mearns, Flin, & Kirwan, 2014). This research could potentially show such relation in safety commitment and knowledge, as well as a linkage to the

behaviours at the middle manager level, thereby expanding on the research by Currie and Procter: “Role conflict and role ambiguity are the consequence of contradictory expectations of key stakeholders about middle managers’ roles” (Currie & Procter, 2005).

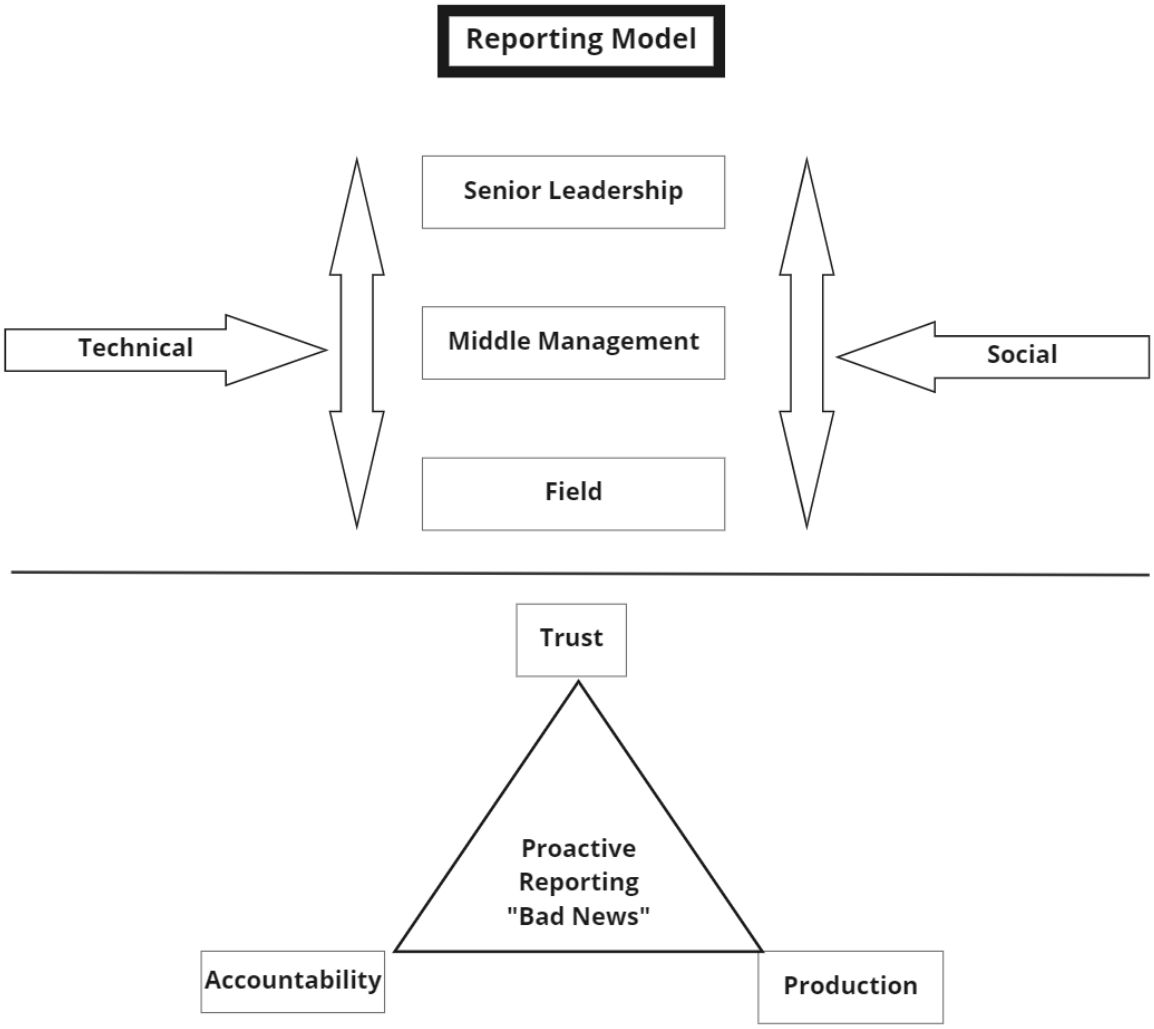
Appendix B - Definitions

- Bad news about safety: News which entails information about critical incidents, violation of safety rules or accidents.
- Senior Management - Upper (C-Suite) – Strategic direction
- Middle Manager: A people manager who has a mandated organisational role and/or task to make decisions on behalf of frontline workers and/or give directions that can affect their daily way of working (*The accountability and authority to manage risk (ISO 31000 reference).* "Thus, the middle managerial identity, in incorporating controller, controlled, resister and resisted, in looking upwards to senior managers and downwards to junior staff, constitutes organisational hierarchy" (Harding, Lee, & Ford, p. 28) .
- Frontline: Operational workers who through their work, inherently are closest to the potential incident or injury. Opposite the administrative personnel, who are farther away from operations, but who's decisions may impact the environment around frontline workers.
- Risk (Ørsted): The possibility that something unpleasant/undesired will happen, with harmful consequences to health, safety, environment, asset, or reputation.
- Hazard (Ørsted): Source with potential to cause injury or ill health by harm or hazardous situations.
- Critical incident (high consequence): "A critical incident in this case study is considered any and every occurrence that departs from normal routine and that originates from the process at large, the technique applied by the operator or the environment." (Westhuizen & Stanz, 2017)
- Criteria (Informant characteristics):
    - Occupation/role
    - Location & department of work

- Duration within organisation (need a representative sample)
  - < 1 year
  - 1 to 5 years
  - 5 to 15 years
  - 15 years

Appendix C - Fundamental model

The thought process involved in bringing together the relevant facts, understandings and interpretations around middle management and reporting of ‘bad news’ is sketched out here. The model identifies the foundational focus of the research provides to be a starting and its hypothesis.



Model 4 Outcome reporting bad news, Segel & Wihnan, 2022

Appendix D - Gamification Synopsis

The Story

This is a story of a high consequence event that resulted working on a piece of equipment that was live. Fortunately, the injury wasn't serious, but it could have been fatal. The injured party is never the only one impacted by an incident like this.

Outcome Overview: Being Curious

What Happened in Scene 1?

"I received the usual preliminary Orsted incident report while Roy was still in the hospital. I kept thinking to myself, "What the hell was he thinking?" Dealing with the aftermath and the extra work is going to take me off production priorities, like the last time we had an incident. This is going to get noticed."

What Should Have Been Done?

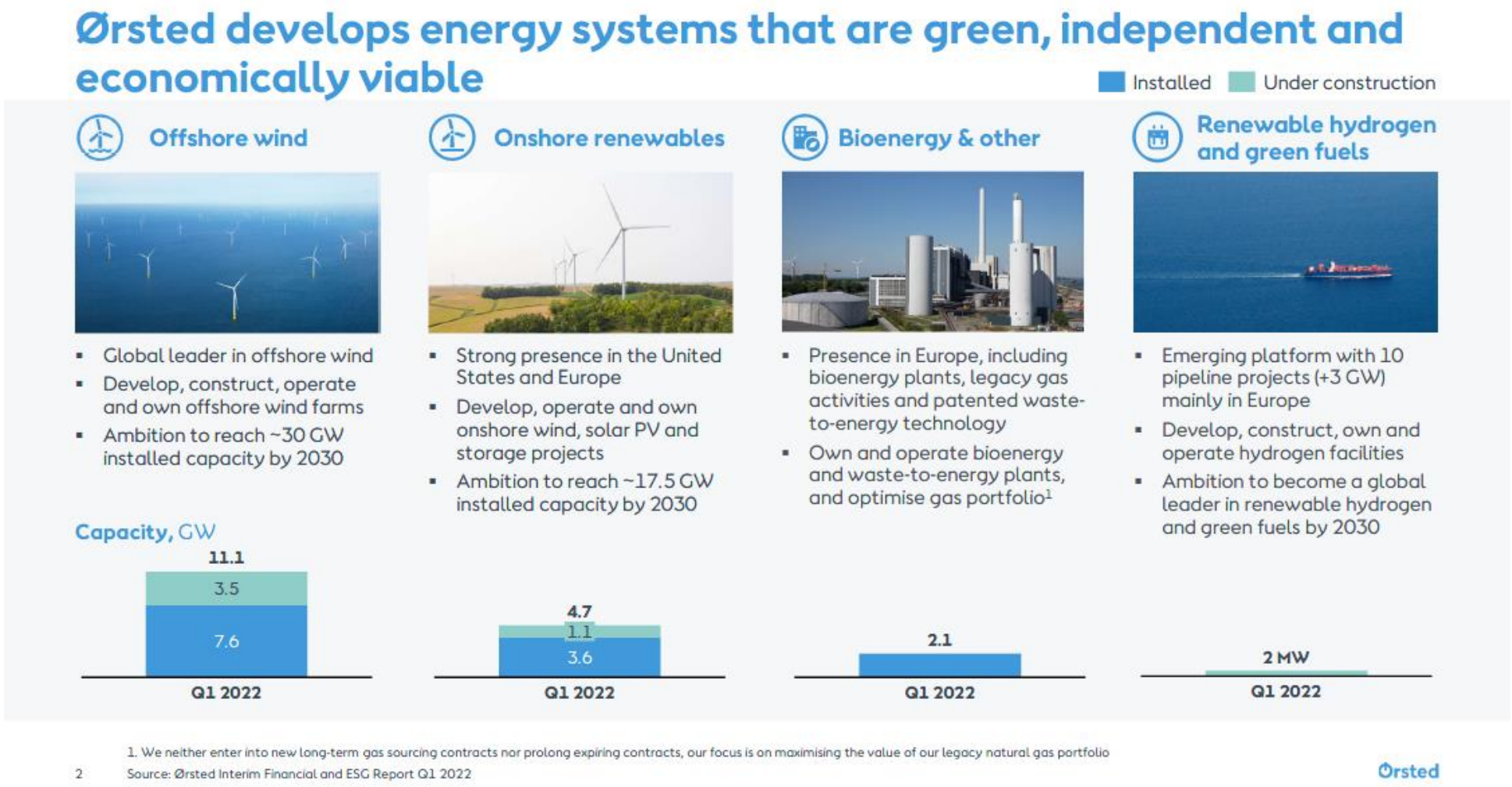
My default thought should have been, "What factors led Roy to do this uncharacteristic act?" I've known Roy a long time and I needed to be curious at that moment. Instead, I made my judgement and moved to the next stage.

What Outcome Should be Applied?

Being Curious: Fill Knowledge Gaps. Exhibiting an inherent interest in understanding anomalies and unexpected outcomes rather than dismissing them by relying on assumptions.

In This Moment (Scenario)	
78%	Overall Positive Behavior Score for Being Curious
0%	May be unaware why the absence of Being Curious could lead to an incident.
6%	May be unaware that Being Curious is an expectation.
44%	May perceive that the workplace culture is unaware that Being Curious is an expectation.
38%	May be unaware of the influences that would lead someone to not see the need for Being Curious.

Appendix E - Company information



Bioenergy

- Bioenergy CHP (Combined Heat & Power) operates some of the world's most ***flexible, green and efficient power stations.*** We provide ***stable electricity and heat as well as system services to our customers,*** and adapt production to their needs and the energy market.
- We have converted our electricity and heat production ***from coal to sustainable biomass,*** thereby delivering one of the greatest contributions to ***the reduction of Denmark's CO_2 emissions.*** In 2022 we finally said goodbye to coal, and CHP is a crucial piece in realising Ørsted's vision of ***creating a world that runs entirely on green energy.*** It criss-crosses visions and agency.
- ***Safety is the top priority at CHP,*** and we never compromise on safety in our work. The decisions of the CHP are based on ***a balanced approach to risk, performance and cost.***
- We are curious and constantly investigating how we can ***use and optimize our competencies and locations of our power stations in the best possible way*** — and always with a great focus and in cooperation with our customers. We believe that ***competitiveness*** and ***optimisation of operations*** is key to continued success.

Avedøre

Herning

H. C. Ørsted

Esbjerg

Svanemøllen

Asnæs

Studstrup

Skærbæk

Kyndby

Ørsted

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