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MISTRUST IN ACCIDENT ANALYSIS: THE CASE OF A BRAZILIAN DRILLING DRILLSHIP

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Abstract

Trust is considered one of the main defining elements of safety culture. Low levels of trust are associated with several negative effects, such as reduced cooperation and failure to report problems, which can lead to accidents. In accident analysis, trust is a crucial element to avoid fear of punishment and obtain a reliable report of what happened, promoting a learning environment and, thus, improving safety in organizations. Among the various aspects involved in the study of trust, this article aims specifically to identify how relationships of trust impact and are impacted by accident analysis processes. To this end, a case study is conducted with the workforce of a drilling vessel for offshore well construction in Brazil. Reports collected in focus groups were the main source of data, in addition to interviews and direct observations. Analysis of the material reveals the existence of distrust and withholding of information, which configure psychological and communication barriers between the workforce and the contracted and contracting companies. These issues relate to factors such as investigations that tend to place blame and the attempt to curb defensive silence by linking safety indicators to the drillship's performance assessment. It is found that organizational learning capacity is impacted by distrust in leadership and the accident investigation process, and that this distrust is linked to a culture of blame. Finally, we propose for future research the contrast between the results of incident investigation methodologies that tend to place blame and methodologies that foster trust as the basis of the collective learning process.

Keywords: Trust; Safety Culture; Accident Analysis; Offshore Operations; Oil and Gas Sector.

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1. INTRODUCTION

Building trust plays a key role in accident analysis and promoting Safety Culture (CS) in organizations. According to the definition proposed by the Institute for a Culture of Industrial Safety (2023), CS is a set of ways of doing and thinking shared by the actors of an organization in relation to the control of the most serious risks related to their activities. Several approaches aim to promote the evolution of this culture, either through interventions that transform ways of thinking or by directing actions towards safety practices. Reason (1997, 1998) highlights the importance of practices in the transformation of SS, emphasizing the direct relationship between a low level of SS and the occurrence of organizational accidents. And trust is identified as one of the bases for effective CS (REASON, 1997). Studies have shown that trust plays a crucial role in the influence of CS in organizations. In organizations with high HC, characterized by strong trust between teams and in Safety, Environment and Health (HSE) tools, in addition to a high flow of pertinent information, trust between the various actors is an important predictor of this culture (GONÇALVES FILHO et al., 2011).

The definition of trust is complex and multifaceted, involving positive expectations about the interactions and actions of the other, in addition to assuming vulnerability, risk and interdependence between different types of actors (LEWICKI et al., 1998, 2006; LUHMANN, 1979; ROUSSEAU et al., 1998, apud THARALDSEN et al., 2010). Trust is essential in situations where there is uncertainty about the future and implies assuming a certain level of risk (ROUSSEAU et al., 1998). It can manifest itself in two distinct states: assured trust and decided trust. Assured confidence occurs when there is no reason to believe that future outcomes will be different from what was expected. On the other hand, decided trust involves identified risks, where there are options and choices, and the decision to trust is made based on the reduction of these risks through relationships of dependence (KARSENTY, 2013).

Trust is fragile and can be easily broken (SKARHOLT et al., 2016). In the context of security in organizations, trust plays an essential role in the development of cooperative, collaborative and interdependent relationships between actors (CONCHIE et al., 2006). Trust positively influences CS, improving organizational performance, cooperation among team members, open communication, and knowledge sharing (REASON, 1997; and CONCHIE et al., 2006). However, trust can also be undermined by actions that violate established expectations and commitments, resulting in mistrust and difficulties in rebuilding affected trust relationships (KARSENTY, 2013; LEWICKI et al., 1998).

Thus, this work seeks to identify how trust relationships impact and are impacted by accident analysis processes. To this end, studies were carried out with the workforce of a

drillship in Brazil. These actions were developed in the context of a larger project called: Human and Organizational Factors in Industrial Safety (FHOSI) which aims to develop a methodology for the evaluation and development of CS in the oil and gas industry.

1.1. Confidence in the accident analysis process

Trust in the accident analysis process is a crucial element in fostering a learning environment and improving safety in organizations. Petroski (2018) points out that punitive approaches, focused on identifying culprits, result in an environment where workers accuse each other, negatively affecting relationships of trust and generating fear. This attitude compromises the learning process, as individuals avoid sharing information about accidents, fearing liability. In addition, investigations tend to be conducted by specialists with little practical knowledge of the job, providing an analysis focused on the errors of individuals close to the accident.

Distrust and fear play a key role in manifesting a culture of guilt within an organization (COX, 2006). Fear reflects the fragility of relationships of trust between employees and contributes to the aggravation of everyday problems and disagreements. Employees adopt a defensive posture, avoiding exposing themselves and hiding accident and incident data for fear of the consequences. The silence of the workforce is also a manifestation of this punitive culture, in which workers choose not to speak, fearing being blamed for future problems (PETROSKI, 2018).

Van der Schaaf and Kanse (2004) point out that the main barrier to the preparation of accident and incident reports is not of a technical nature, but of a psychological nature. The fear of being blamed or punished compromises the quality of the reports, and when there is no trust in organizational processes, such as investigations and leadership, the potential of these reports to improve safety conditions is compromised. Therefore, overcoming mistrust and fear is essential to allow true learning after accidents and incidents occur.

To evolve in this scenario, it is necessary to look ahead and look for organizations that have overcome the culture of blame. These organizations value learning rather than responding to behavioral failures with guilt (BITAR, 2018). Leaders are encouraged to find learning opportunities from events, rather than assigning blame. This approach promotes higher CS, where trust is strengthened and the focus is on continuous improvement.

1.2. The Case of Drilling Rigs in the Offshore Oil Industry

Reliance on accident analysis processes plays a key role in the petroleum industry, especially in relation to drilling rigs and offshore operations, as part of the process of permanently improving personal and operational safety. The complexity and risks involved in these operations require a high level of interdependence and trust between stakeholders. The evolution of the oil industry, with exploration in increasingly challenging areas, has resulted in an increase in costs and complexity of operations (MORAES, 2013). Rovina and Borin (2005) observe that the construction of wells presents the greatest deviations in cost and schedule, often due to geological risks and the complexity of operations.

Trust is a key factor in improving safety and performance in high-risk organizations in the petroleum industry. Conchie et al. (2006) and Reason (1997) highlight the positive effects of trust, such as the reduction of accidents, safe behavior, improved cooperation, and increased organizational citizenship behavior. Trust is also associated with open communication and knowledge-sharing environments, which facilitates organizational learning and reduces transaction costs (BIJLSMA and KOOPMAN, 2003; DIRKS and FERRIN, 2001).

Accident and incident investigation processes are critical to organizational learning in the oil and gas industry. The Macondo accident exemplifies the importance of these processes, as it resulted in profound transformations in organizations and boosted the increase in scientific production on safety (REPORT TO THE PRESIDENT, 2011). Levenson (2020) emphasizes the need to invest resources and efforts in generating knowledge through these processes, as they generate learning that contributes to industrial safety.

1.3. The research method

This work follows the stages of the Case Study proposed by Yin (2015), which seeks to investigate a contemporary phenomenon in its real context. This single, exploratory and descriptive case study aims to fill the gap of previous studies on offshore well construction units in Brazil and to present the interpersonal events and their key phenomena. To this end, it takes the following steps: planning, design, preparation, evidence collection, evidence analysis and reporting. In this case, the study is qualitative and focuses on a specific social community, the offshore well construction unit.

In the project stage, a survey of the literature was carried out to deepen the theme and the study questions. The marine well construction drillship was selected as the research object due to the complexity of the scenario, the level of outsourcing of processes and the scarcity of

related studies. The contractor's teams and the drillship's fixed team were considered for the study, excluding outsourced teams due to their seasonality and high turnover.

In the preparation stage, related to the research protocol, it was defined that qualitative information would be collected through interviews, direct observations of activities on the drillship and focus groups. These create environments where the sharing and memory of the participants are stimulated, favoring access to the group's experiences (KRUEGER and CASEY, 2014).

Thus, the collection of evidence was carried out through four shipments that took place on the following dates: October 30 and November 5, 2021; April 16 to 21, 2022; June 7 to 11, 2022; and June 24 to 28, 2022. For the focus groups, which took place on the fourth boarding, the participants were separated, considering hierarchy and company. In the meetings, they were invited to narrate and discuss their experiences related to incidents, accidents, investigation processes, among other safety issues on board the drillship. The basis for the discussions were the results of the questionnaires applied in the FHOSI project. The participants were divided into five main homogeneous groups, as shown in **Table 1**. This considers the total number of drillships and presents the number of meetings and participants, without considering the other outsourced teams, as they vary greatly depending on the phase or intervention to be carried out in the well.

Table 1 – Meetings for discussion in focus groups.

Groups	Meetings	Participants	Residents
Contractor Representatives	1	3	17
Managers Contractor	1	3	7
Supervisors Contractor	1	8	36
Operational Contractor	7	39	143
Contracted SMS	1	3	8
Total	11	56	211

Source: The authors, 2023

The clustering technique (GIL, 2022) was used to perform the analysis of the evidence. This approach consists of categorizing elements, such as events, actors, situations, processes, and scenarios, in order to identify groups that share a set of similar attributes. This tactic was applied to understand how security is impacted by trust dynamics and the factors that influence these elements.

2. DEVELOPMENT AND RESULTS

2.1. The organization of operations for the construction of subsea wells

A drillship is a vessel designed to drill in deep and ultra-deep waters, with a depth of up to 12,000 meters, aiming at the construction of maritime wells. The vessel under study can be divided into two distinct areas: one under the hull, which includes the engine room and tanks, and another over the hull, with areas such as *helideck*, houses, mud module, platform/tower, cargo areas and generators. The work team consists of 196 people, including workers who cover vacations and days off. The distribution of personnel includes professionals from the drillship operator (50%), outsourced workers from the operator (18%), representatives of the contracting company (3%) and outsourced professionals requested by the contractor (29%). The composition of the outsourced workers varies according to the phases and interventions in the well, with the exception of the outsourced team responsible for the hotel industry. The construction of offshore wells comprises different stages, with drilling, completion and evaluation being the main ones. In drilling, the objective is to access the reservoir in a safe and controlled manner, ensuring the mechanical integrity of the well. In the completion, equipment and the production or injection column are installed to prepare the well for connection to the production system on an offshore platform. There may still be an evaluation stage to collect information about the structure of the reservoir and its contents. Occasionally, maintenance interventions, called workover, may be necessary for repairs or to stimulate production.

To carry out such operations, the drillship has several specialized teams. Navy, Drilling and Maintenance are the main teams, in addition to the team of Inspectors (Representatives of the contractor) and other outsourced contractors. The *Offshore Installation Manager* (OIM) is responsible for managing onboard operations. There are also teams of ground or base personnel, who provide support and guidance to the on-board personnel.

2.2. Investigation processes that tend to blame

Regarding the processes of investigation of anomalies (accidents or incidents) that occur on the drillship, the participants of the focus groups emphasize the strong tendency to search for culprits. They feel as if they were "in the dock": "the investigator keeps insisting on the same questions, as if the operator were hiding something" (Contracted operative). In addition, they highlight the lack of knowledge and lack of interest in the reality of work in operations: "they [investigators] do not know our work, as it happens on a daily basis". They point out that the elements that led to or resulted in the anomaly are not usually deepened: usually when a

person found guilty is found, the investigation stops (Contracted Operative). For the workforce, blaming can be noted either in the belief that it is human errors that generate accidents, or even in the methods and procedures that guide investigations. They assess that the investigations are guided by a culture of guilt. A member of the drillship's management tries to counter this statement that the priority is to find a culprit, but ends up reinforcing that this is really the objective of the investigation:

> "Blaming the worker is not the first thing we do. When an accident occurs, the first thing we do is see if there is anyone injured. If there is, we provide the necessary care. Only then will we investigate to find out who was to blame" (Manager of the contractor).

Based on their experiences, several groups point out that "accidents never come from a single failure". In addition to the worker's behavior, there are organizational, process, environmental issues and even involving the work collectives. They observe that there are pressures for performance or production, closely related to parameters of the system of hiring, evaluation and remuneration of outsourced companies, which affect the context of activities on board. However, the results of investigations often end up being limited to behavioral issues (the errors of the actors close to the occurrence), presenting, in effect, superficial resolutions, which compromises the ability of companies to generate relevant learning in the organizational sphere and undermines their credibility with workers. The following highlight brings verbalizations from representatives of the contractor, the highest managerial level on board, about blaming in the investigation processes:

> "We know that there is a tendency [in the investigation of accidents] to find someone to blame. They end up focusing on the person involved who made the last wrong decision. They find the last flaw and stop there. Often, it is a design failure, or a process failure, at the beginning" (Contractor representatives).

The following episode (**Chart 1**), retrieved by the participants, illustrates how investigation processes focused on blaming workers can end up leaving important lessons learned about errors in processes and projects in the background.

Chart 1 – Episode of blaming a worker for incorrect installation of equipment.

In one operation, it was necessary to open a bottom valve to perform a pressure cycle in the well. This valve was installed in equipment at the wellhead on the seabed, more than 2 km deep. During the activity, they realized that the remote activation of the valve did not generate its opening. During a meeting to identify the cause of the problem, based on a photo taken by a remote underwater vehicle, a worker decided to consult the serial number of the device that opened the valve. Through the consultation, they identified that the device installed did not in fact have the function of opening the valve, but of disarming it. That is, a wrong device had been installed. The error caused a delay in the schedule and great financial loss, especially to the contractor. As a result of the investigation, the worker who installed the wrong device was held accountable and fired.

Source: The authors, 2023

In the focus groups, representatives of the contractor commented on the design flaw involved in the episode. By developing two very similar devices to serve different purposes, the deception was propitiated: "How do you make the same devices for different purposes? Why don't you make one red and one green, or with a different shape?" (Representing the Contracting Party). They also commented on the failures in the logistics chain, involving the processes of separation, checking and sending of materials: "From the warehouse to the arrival on board, there were many chances to avoid the problem". By making the wrong device available, it contributed to the worker's error, which was not able to stop a series of errors upstream of the installation. According to the participants, the investigation was conducted in such a way that it was impossible to convert the episode into improvements in the areas of design and logistics. It is worth mentioning here a methodological limitation of this study: we did not check with the contractor and contracting companies whether or not there were improvements in design and logistics from the episode. It is common for the analysis to stop at blaming those involved and, at the same time, several suggestions for material improvements are formulated, but without having deepened them in the analysis. A phrase used by the flight crew in team meetings reinforces the role of the front line: "we are the last barrier". However, when it comes to the investigation processes, they comment: "We are not the last barrier, we are the only one. The only one who is punished, at least" (Contracted Operative). Another worker reports that, during his shift, a piece of equipment failed and as a consequence a section of pipe fell on the drilling floor, setting up a high-potential incident. Although the equipment was defective, the first questions asked by the person responsible for the investigation report already assumed that he was at fault for what happened.

Among the participants, there is a general perception that the contractor also works in a logic of blame and this is the main reason that leads contractors to carry out investigations focused on the accountability of workers: "The contractor asks for this. She wants there to be a culprit to punish and use as an example for everyone to fit in" (Hired Supervisors). On the other hand, it is perceived that the contractor has learned to "take advantage" of this culture, so that blaming the frontline worker is an easy, fast and well-accepted answer, being a way for the company to protect itself, avoiding exposing its process and organizational failures.

When a serious occurrence occurs, it is perceived that those responsible for the investigation process already start with questions and actions based on a logic of blame. They check *the checklists*, Work Permits and other documentation associated with the occurrence. A filling error can serve as a basis for blaming the responsible professional, making the documentation a way for the company to protect itself, claim that it fulfilled its obligations and blame the workers closest to the occurrence. Also according to the participants, the contracted company, aware that the blame is well accepted by the contractor, can hold a worker responsible, even when it knows that the root cause of a certain anomaly was the failure of an equipment. Pointing it out as the root cause can generate the request for replacement or repair of the same, which may require the purchase of parts, shipment on board or even the need to embark a specialized team. This could result in a considerable period of non-productive time, resulting in a penalty due to the parameters of the contracting system. Thus, one strategy used by the contractor is to attribute the anomaly to human error, determining light punishments to the workers closest to the occurrence. Thus, blame is associated with the concealment of information that, if reported, could pave the way for exhausting process restructuring and monetary losses, also resulting in damage to the evaluation and reputation of the vessel or the respective contracted company. It should be noted that, in the final accident investigation reports, the contractual parameters that induce the continuity of the operation to the detriment of maintenance are not usually pointed out as a risk factor upstream of the occurrences, even if actors on board and on land are aware of this risk factor. It is not only the company's management that uses blame, since some frontline workers report that in lighter cases a strategy is to anticipate and take the blame, even believing that they are not responsible for the occurrence, thus avoiding an exhausting investigation process. They also point out that in these cases, by taking the blame instead of highlighting an equipment failure, they feel that they are helping the company.

From the reports, it is possible to observe evidence of a culture of blaming, which is directly linked to low levels of trust in relationships. Workers do not trust the impartiality of

research processes or the ability of companies to promote a fair culture. When they get involved in any undesirable event, they feel like a likely target, even before the investigation begins.

2.3. Work environment marked by mistrust and fear

Another issue evidenced during discussions with workers was the existence of an atmosphere of fear in relation to accidents and incidents. This fear is not limited to the possibility of fatalities happening, as the offshore work environment involves multiple and serious risks. It is also the fear of being punished or having one's reputation affected for a long time. This feeling is captured even by the contractor's representatives, when they declare that there is a "fear of punishment, of being badly seen, of impacting the probe's indexes. The indexes are very important" (Contracted Operatives). The following report is from a participant in the focus groups and refers to the experience of being involved in an occurrence:

> "You get an X on your back. People no longer trust your professionalism as before. They want to check out simple things you do. They ask in a tone of distrust: 'are you sure?'. Sometimes it becomes so unsustainable that it is better to change the rig, to start over." (Contracted operative).

The fear in question refers to the shame of losing one's reputation and identity as a competent and reliable professional, which has been built up over the years, but can be put in check if the worker is directly involved in a serious or potentially serious occurrence. When this occurs, workers identify a distrust that comes from management levels, which direct constant recommendations to supervisors to pay attention to the worker involved in the occurrence. In more critical cases, the worker may be sent to another unit, which they interpret as a form of punishment. Distrust also occurs within teams, in the form of assignments to simpler jobs or a need to check and recheck common activities. In a study conducted on oil platforms in the North Sea, Collinson (1999) also found the occurrence of these phenomena, designated as vertical blame (from management to workers) and lateral blame (among members of a group).

A hired operator comments that "when an accident happens, there has to be an offering for everything to return to normal". An analogy is made with a human being (the contractor) who seeks to placate the fury of a superior being (the contractor) through a sacrifice. The offering, in this case, would be the worker directly involved in a serious occurrence, which drew the contractor's attention to the need for an energetic measure. In this analogy, the contractor only understands that the problem has been solved when a worker is held responsible

and punished by the contractor. The latter, in order to improve her relationship with the contractor, is afraid to contradict her and offers what satisfies her, punishing a worker.

According to the workers, the punishments can have different levels: warnings, exchange of the worker involved for a new professional, as if it were the replacement of a defective part, or the dismissal of the worker. There is also another fear, which is the biggest fear of workers: having their individual registration canceled in the contractor's system. In the national context, this in practice means no longer being able to work in the oil and gas industry. It is to be "exiled", as the workers say. The fear is accentuated by the perception of disproportionality in the punishments applied. A Contract Supervisor points out: "Here it is like this: if the dog has fleas, it kills the dog". Often the solution given is disproportionate, unpredictable and even meaningless, especially if the contractor is involved in the processes of investigation and treatment of conduct, which is the case of the most serious accidents, but this can also occur in occurrences of less severity or potential for severity. Among the effects of this fear of exposure and association with accidents and incidents is the resistance of workers to use medical services on board. According to the workers, accessing the ward is taking a great risk, which can result in friction with their teams, a feeling of exposure and even disembarkation without real need. Chart **2** shows an experience reported in the discussions.

Chart 2 – Fear of calling the infirmary.

A worker, after suffering a scratch, sought the infirmary to sterilize the small wound. When requesting the application of antiseptic on the wound, the nurse was informed that the procedures determine that his incident be passed on to the medical department on the ground. Imagining that no serious complications could result from this, the worker did not object. However, because of the scratch, the worker was disembarked, being unnecessarily subjected twice to X-ray procedures. According to him, the next day his case was the subject of discussion at the company's management levels, resulting in his exposure to the entire fleet through an SMS alert.

Source: The authors, 2023.

Just as relevant as the fear that an injury will worsen is the fear of exposure and wear and tear that can be generated if they resort to medical care on board. "It was the biggest embarrassment. A wear and tear with supervision and the shame of being the topic of the day. Do you think that I or anyone in the sector will look for the ward after that?" (Contracted Operator). Other Contract Operators confirmed: "you can't use the infirmary". In case of need, they medicate or get medicine with their colleagues. Thus, in case of injury, they try to endure

the pain until disembarkation. The infirmary on board is, in practice, a kind of last resort, used only in unavoidable cases such as serious injuries.

3. DISCUSSION

The literature highlights the importance of trust in achieving safety in jobs that involve high levels of risk, interdependence, collaboration and information exchange (COLLINSON, 1999; STAPLES and WEBSTER, 2008). In the present study, we observed high levels of risk and interdependence; However, collaboration and information exchange — and consequently, security — are compromised due to low levels of trust contextualized in a culture of blame. In line with the study by Cox (2006), we noticed a culture of guilt (the belief of employees that they will be guilty) manifesting itself through fear. This signals degraded confidence and is reflected in the defensive posture of the workers, who avoid exposure as much as possible. Eventually, they hide information not because of a lack of professionalism, but to protect themselves against punishment, as discussed by Petroski (2018). We found that the concealment of evidence also occurs when the infirmary is avoided to treat pain and injuries, which become underreported. Van der Schaaf and Kanse (2004) observe that the main barrier to the quality of the data collected and occurrence reports is of a psychological nature. In the present study, we note that psychological barriers are being built in the interaction between the workforce and companies, as the latter signal with superficial investigations and tend to blame.

Combating blame is a hallmark of organizations with high levels of Safety Culture (CS). In these, leaders are encouraged to learn from each failure (BITAR, 2018). Only by overcoming mistrust and fear can the culture of organizational learning be developed (CONCHIE, 2006), because it is not possible to force someone to report what they know. Reports of sensitive issues only occur voluntarily when it is perceived that the actors involved are capable of fair interpretations and decisions and, therefore, are trustworthy.

As in the study by Cox, Jones and Collinson (2006), we observed that senior management has tried to overcome silence and promote safety by linking safety indices to the performance evaluation of drillships. This, however, has resulted in more distrust and retention of information that can have negative repercussions, distorting the indexes. According to Skarholt (2018), authoritarian management raises distrust and blockages in communication, ending up harming the security of the production system. To promote the circulation of information on a voluntary basis, it would be crucial to increase trust in managers and processes (BITAR, 2018; REASON, 1997). It is the confidence that the information provided will be

treated fairly, something that was not verified in the verbalizations of the participants in the present study. According to them, after the occurrence of serious events, investigators usually arrive with closed hypotheses, which they seek to endorse regardless of what the interviewees say. As is known in the ergonomics of the activity, misrepresentations about real work are common (GUÉRIN *et al*., 2001). Such representations, in turn, can affect the quality of the companies' diagnoses and actions in terms of safety. Thus, greater investment in understanding frontline activities could contribute to fairer and more constructive anomaly analyses, and to the maturation of SC in general.

Regarding the limitations of this study, it should be noted that the reports of the on-board staff were not confronted with the analysis of the documents of the aforementioned occurrences or with comments from the ground crews, which could present a different and eventually opposite view of the existence of blame and the low capacity to generate organizational improvements from the occurrences. In any case, we observed that the interaction between the ground and shipboard personnel is such that it generates a clear perception of blame, especially at the lower hierarchical levels. It is not a question, at this point, of knowing who is right, but of showing that there are strongly divergent perceptions. This is enough to compromise the relationships of trust and the safety of the drillship, and it represents an opportunity for improvement for companies.

4. CONCLUSIONS

This paper discussed the importance of trust for an effective accident analysis process from the perspective of organizational learning. From the experiences of the workers, it was possible to observe how a culture of blaming generates fear, negatively affecting horizontal, vertical and transversal relationships (between companies). This fear, whether it is of being labeled as a bad professional, fired or even "exiled" from the oil and gas sector, is expressed in distrust of leaders and the investigation process, and directly impacts organizational learning capacity. Focusing on learning and not blaming workers is a key point to developing relationships of trust. Due to the restricted access to the field, one of the limitations of the present study involves the number of shipments and teams that participated in the discussions, restricting it to a partial diagnosis of the unit. Work aimed at raising the awareness of the professionals involved (managers, leaders and members of the investigation committees), as well as the restructuring of processes, with methodologies centered on learning, are ways to advance trust. We also suggest conducting studies that present a contrast between the results of

methodologies for investigating accidents and blaming incidents and methodologies that sustain trust in the search for organizational learning.

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