Airport/Ramp Safety Culture: A Practical Approach For Diagnosis and Development

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Abstract

Ramp safety and occupational health for employees at airports have received increased attention in recent years. Avinor is operating 46 airports in Norway, and is targeting safety culture in their strategic safety work. This project has focused on five large airports, and has used a methodology based on local participation and involvement, including both a diagnosis and a culture-change phase.

The diagnosis is designed to pinpoint areas in need of improvement, and is conducted through qualitative interviews and observation using a semi-structured interview guide. Both behavioristic and more traditional culture approaches (i.e., value-, norm- and attitude-related) have been used. The methodology is robust to local varieties in scope, problem areas and change possibilities. The project has led to both sharp-end and blunt-end changes in the organizations. The project has also contributed to identifying important differences between attitudes and corresponding behavior related to flight safety on one hand and issues related to occupational health on the other. Finally, the methodology and approach used in this study may be valuable tools in preparing for and managing the risks related to current and future change processes within European aviation.

Introduction

Ramp safety and occupational health for employees at airports have received increased attention in recent years. It has become clear to the industry that although the safety level for airline passengers is extremely high, the same cannot be said for the average employee working at the airport ramp. On the contrary, numbers shows that injury rates for ramp workers are higher than in many other industries. In addition, the costs resulting from ground damage are substantial; it has been estimated that the dollar equivalent of 15 Boeing 747-400s is lost each year to equipment damage during ramp operations (NASA, 1996). The act of operating an aircraft in the air is primarily conducted in close cooperation between two very competent and strictly regulated groups of professionals — the crew aboard the aircraft and the ATCOs. In contrast, the activities on the ramp are conducted in tight interaction between different actors with a huge span in tasks, educational background and regulatory requirements. The activities are carried out on a limited physical area and within an often very limited time frame.

In which way can the concept of "safety culture" be useful as a tool for improving ground safety, including occupational safety for employees? Can assessment of safety culture give rise to insights and knowledge not covered by other tools in the safety management system? If so, how can this knowledge be converted in to useful measures in order to improve safety? This paper seeks to give some possible answers to these questions.

Safety Culture

The concept of safety culture has received increased attention the last 10 to 15 years, and a range of research projects has been carried out in order to investigate it further (see for example Guldenmund, 2000). There exists a wide range of definitions of safety culture (for example Turner & Pidgeon, 1997; Reason, 1997; ACSNI, 1993), but it will be outside the scope of this paper to discuss these further. Here, it is sufficient to state that safety culture should be seen as *the specific part of the organizational culture that influences safety.*

Despite the increased attention to the concept of safety culture, this area of research is still in an early phase. Thus, in addition to the many definitions, there are disagreements about which dimensions should be regarded as most important. This project focused on a set of dimensions that often is cited in the literature when describing elements in a good safety culture (based on Hale, 2000; see also Flin et al., 2000):

- Safety as a goal is given importance by the whole organization, and especially by top managers. There is a shared acknowledgment of the fact that "safety" exists alongside and in unavoidable conflict with other organizational goals.
- There exists a shared understanding of the fact that all organizational activities can impact safety.
- All parties are involved in the process of defining, prioritizing and controlling risk.
- Safety is never taken for granted, and members of the organization show "creative mistrust."
- Safety is considered as everyone's responsibility, and there is a shared acknowledgement of the fact that everyone needs a watchful eye.
- The organization learns through open communication regarding failures and learning experiences.
- The organization and its members know that causes for incidents are not only to be found in individual behavior, but in the interaction of many causal factors.

The project

Avinor provides the backbone of the infrastructure of the Norwegian air transportation system. By providing the country's ATM services as well as through owning and operating 45 airports, Avinor is the key to making air transport a practical, safe and efficient way of traveling in Norway. As a part of their strategic safety work, Avinor is targeting safety culture at their airports. The project described in this paper is conducted by Avinor, supported by Det Norske

Veritas (DNV), a worldwide provider of risk management solutions. The project assessed and made suggestions for the improvement of the safety culture at five Norwegian airports — Stavanger airport Sola, Bergen airport Flesland, Trondheim airport Værnes, Bodø airport and Tromsø airport, Langnes. All of these airports are comparable in size, having between 1.5 and 5 million passengers in 2008, with Bergen and Stavanger having the largest passenger volumes.

Methodology

The approach in this study followed the following main steps for all five airports. The overarching principle for the project is based on local involvement and participation, and the understanding that development of safety culture should be managed as an organizational change process.

Activities Related to Information and Involvement

The first step was to establish a local project group on the airport. This group's task was to coordinate the local activities and to support the practicalities in the project, especially in the assessment phase. The project group was also crucial in the implementation and follow-up of the different measures for improvement that came out as deliverables from the project.

Second, information meetings were held. All employees at the airport were invited to the meetings, whose purpose was to inform them about the project and to ensure participation and involvement in order to secure the ground for successful interviews in the assessment phase.

Assessment of Existing Safety Culture

The assessment of the existing safety culture was a core activity in the project and a necessity in order to develop successful measures for improvement. In this project, the assessment was based on a series of interviews with a broad selection of employees from the different companies at the airport. A semi-structured interview guide, developed through a previous R&D project (RISIT,

2004) was used. The guide builds upon the previously mentioned elements in a good safety culture, and contained the following main topics:

- Knowledge and competence
- Communication and cooperation — managers/employees/between organization
- Prioritization of safety and safety-related activities, management of goal conflicts
- Attitudes towards procedures
- Organizational learning
- Creative suspicion

Typically, 20 interviews were conducted at each airport, with representatives from Avinor as well as from handling, cleaning, catering, fueling and security companies. The interviews lasted about 90 minutes, and were carried out by two persons from DNV — one had the main responsibility for the interview, and the other made notes on a laptop. Details about confidentiality were emphazised.

On basis of the interviews, and after a systematic analytical process, a report with a summary of observations and conclusions was prepared by DNV.

Validation of Observations and Conclusions — Development of Measures for Improvement

After the interviews, the report containing DNV's observations and conclusions was presented at a workshop with participation from all stakeholders. The purpose of the workshop was to secure further participation and involvement through validation of the conclusions from the assessment phase, and by heavily involving the participants in identifying and developing relevant measures. After the workshop, the local project groups took on the task of further developing and implementing the measures.

Results and discussion

The following is a short summary and discussion on some of the typical main conclusions and corresponding measures. We will highlight findings from single airports, if beneficial to the discussion.

Competence and Knowledge

The interviewees generally expressed an impression of having sufficient competence to carry out their work in a safe way. The also felt this was the case for their colleagues. There was, however, one exception connected to formal requirements and training for driving airside at the airport. Representatives from many organizations expressed doubts about the actual formal requirements as stated by Avinor, and felt that what they considered to be the minimum requirements was not sufficient to secure safe airside driving at the airport.

This topic gave rise to a range of different measures for improvement, including a review of formal requirements, improved training courses and improvements of airport maps and other aids inside the different vehicles.

Cooperation and Communication

In the interviews, especially with employees from other organizations than Avinor, it became clear that there were uncertainties with regard to lines of responsibility between Avinor and other companies at the airport. A statement from one of the interviewees exemplifies the topic:

Are we sub-suppliers to Avinor, or is it Avinor that is sub-supplier to us?

Implicit in this statement lies uncertainties about who has the responsibility for following up the different organizations, and what, if any, this responsibility should cover.

Employees in Avinor, on the other hand, expressed that it could be challenging to find the right channels for communicating safety-related information. An example:

Information disappears when the communication between us only happens at the management level. We need better meeting arenas at the operational level.

- Several topics were mentioned when we asked about suggestions for improvement:
- The interviewees would like to see that Avinor to a larger extent did involve other companies when developing the practical solutions necessary to comply with security-related regulations.
- Employees in other companies than Avinor identified a need for better coordination in relation to emergency response plans, and more coordinated training exercises.
- A general need for more hands-on follow-up activities from Avinor on the apron was identified. Employees from, for example, handling and catering companies expressed a need for clear and concise enforcement of rules and regulations at the apron, including negative sanctions in case of violations.

This topic clearly demonstrated that safety-related challenges develop in the interface between stakeholders, and that solutions have to cover these interfaces. It also shows that measures for improvement can be found at both the organizational and the individual level.

The Prioritization of Safety and Safety-Related Activities

As previously mentioned, the airport is characterized by having multiple goals existing side by side, and there are plenty of opportunities for dilemmas and conflicts. How these situations are understood and handled gives important information about the local safety culture.

During the interviews, it was primarily employees with a management role that spoke about dilemmas between goals such as safety and on-time performance. In the sharp end of operations, these dilemmas were more or less non-existent. It was considered as very natural part of professionalism to do the job safely and according to the book. The different actors in the sharp

end also stated clearly that they felt they had strong support from their managers, even if their safety-conscious performance resulted in a delayed flight. As one interviewee stated:

You don't mess around with an airplane with 140 passengers aboard.

These findings are interesting. Based on the statements from the interviews, it seems that safety is prioritized, even when in conflict with other important goals. Other industries, with a less impressive safety record, can learn a lot from commercial aviation with regard to this part of safety culture. At the same time, it is important to maintain and develop the ability of handling goal conflicts. This responsibility primarily rests on the managers, who must constantly be aware of their role when communicating their expectations to their employees.

At some airports participating in the project, the picture regarding handling of goal conflicts was a little blurred, and the interviews revealed important differences between attitudes and corresponding behavior related to flight safety on one hand and issues related to occupational health on the other. This was especially expressed by employees in handling companies, who stated that cutting corners in order to save time was okay as long as it did not put flight safety at risk. This is a very interesting finding, and should be explored further. It has possible implications both for flight and occupational safety. Here, in the norms and attitudes stating that it is, in order to save time, okay to risk your own health as long as you do not risk the safety of the flight, we might find some of the reasons for the poor record of occupational health at the airport ramp.

Attitudes towards procedures

In order to secure a high level of safety at the ramp, it is necessary that rules and regulations are respected and complied with. Accordingly, an important topic in the interviews was the employees' perception and use of the procedures.

The main conclusion from the interviews was that the procedures were considered as good guidelines for best practice and that they were followed. A clear exception was related to driving — complying with speed limits and following the correct routes at the airport. This conclusion

resulted from a combination of results from the interviews and DNV's observations of actual performance on the apron.

In light of the questions raised in this paper, it is interesting to dwell on challenges related to finding measures for improving driving behavior. One of the dimensions characterizing a healthy safety culture is the ability to tolerate, accept and learn from mistakes and violations on one hand, and at the same time being able to react by sanctioning conscious and grave breaches of rules and regulations. The possibility of seizing the ID card of employees driving at risk could be an example of such a measure. This is, however, a strong "punishment," and must only be used after establishing a clear understanding among the employees. Other European airports have good experiences with seizing ID card as one of the tools in establishing and maintaining a "just culture," where slips, lapses, mistakes and violations are tolerated to a certain extent, but where willful violations lead to clearly defined and predictable reactions. This topic illustrates a general development in the relationship between cultural and behavioristic approaches to safety management, and shows that two traditions that historically have been perceived as contradictory should be seen as supplementary (DeJoy, 2005).

Organizational Learning

Through the interviews, we got a clear impression that Avinor's incident reporting system — MESYS primarily was being used to handle practical problems related to technical equipment, and not so much as a tool for continuous organizational learning and improvement.

The employees at the airport told about several existing informal arenas for learning. Lunch and short breaks were frequently used to discuss challenges, experiences and best practice. These important and useful conversations were, however, internal to departments and companies, and did not reach out across departmental or organizational borders. Arenas for learning across departments and organizations were in demand by employees in the sharp end.

The general conclusion was that the airports had improvement potentials related to organizational learning, and the assessment gave rise to several measures for improvement. Among these were the perception and use of MESYS, as well as establishing arenas for learning across units. Several airports also initiated schemes for allowing employees to spend time in other units in order to develop their general knowledge and insights in other employees' working situations.

Creative Suspicion

A characteristic of a good safety culture is, as previously mentioned, "creative suspicion" — the ability to constantly identify and manage risk. Creative suspicion is frequently referred to as "risk awareness." A safety-minded organization knows that the next accident could be just around the corner, and that leaning back and enjoying a good safety statistic could be seen as a warning sign.

In order to tap into creative suspicion, we asked the interviewees what they thought would be the next serious incident or accident at the airport.

At one of the airports, the interviewees did not have any clear answers to this question. It seemed like thinking about what could go wrong was new to them, and somewhat frightening. When pushed a little, most of them came up with a possible incident, but this was typically not related to their own working situation.

In other words — the thought of their own behavior, mistake or misjudgment actually leading to an incident was not very prominent. This lack of creative suspicion could be a limiting factor for the process of continuous improvement that characterizes good safety organizations.

As was the case with other topics, the findings on creative suspicion (or lack of it) clearly leads to valuable inputs for improvements. One of these was to include larger groups of employees in formal risk assessments, in order to give them formal training in the process of risk management,

including hazard identification. Further, the lack of creative suspicion is more or less impossible to uncover by other methods, such as questionnaires or audits.

Conclusions

The current project shows that the concept of safety culture gives valuable inputs in order to improve ramp safety. It is also clear that the topics and challenges that were identified during the interviews would be difficult, if not impossible, to uncover through revisions, questionnaires or risk analysis. On of the main reasons is that safety-related challenges typically exist in the interfaces between different stakeholders and organizations at the airport, and that they are related to topics that normally are intangible through other methods of assessment.

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