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RAMP SAFETY CULTURE

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Abstract: *The demand for airports to accommodate more flights with existing limited capacity is greater than ever before. All the processes play a key role in meeting the business objectives of ensuring safe journey for passengers. An aviation incident or accident irrespective of its magnitude always invites media attention. The article presents the importance of Safety Culture and how its promotion enhances Safety Management System implementation. Airports taken the initiations in embedding the right attitudinal behavior among their employees and the common challenges that would be faced by any airports in establishing the safety culture is elucidated.*

Key words: *Safety Culture, Safety Management System, Airports Ramp Service*

INTRODUCTION

Poor safety is probably the greatest concern in today's workplace. Risk-taking behaviors result in injuries and cost to the individual and employer and cause demotivation in the workforce generally. An employee's personal life can be severely influenced by avoidable safety mistakes. Changing an ingrained culture need not be incredibly difficult, but it does require commitment, the right change program and consistent enforcement.
Previous attempts to solve this issue had provided some benefit; but a more significant and sustained change was necessary to achieve the results now needed. Global Safety Partners have extensive experience changing safety culture across hazardous and aviation businesses. Approaching the problem from an external perspective enabled them to implement a three-phase program to tackle this risk-taking behavior. Working with the airport, airlines and ground handling organizations, Global Safety Partners designed and implemented a change program that provided the program. To effectively face this problem, every workplace needs to develop a strong safety culture. Consider that new technology typically will result in a significant initial improvement in safety performance. But this will only take an organization so far.

Improved standards and a Safety Management System will provide the next level of improvement. But the final hurdle remains to be implementing a sustainable safety culture. This is also generally the hardest for management to achieve without the help of an external facilitator.

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1 ASPECTS IMPORTANT FOR SAFETY

An organization's safety culture/climate, its artifacts such as the health and safety management system and safety behavior is often viewed to have reciprocal relationships. Safety culture plays an important role in the overall development of effective health and safety management within a company and also in encouraging employees to behave safely. Research indicates that organizations and companies that have a proactive and functional safety management are likely to experience fewer work-related accidents and incidents, improved safety awareness within the company and improved risk and safety behavior among employees.

Even so, safety culture would fail without the support of management commitment, allocation of resources, time and knowledge, competent and motivated personnel. This is also true for efficient safety management. Here, leadership must be visible and serve as a good role model for safety. A culture in which safety is an over-riding priority should permeate all activities and, ideally, be self-sustaining (and therefore partly independent of the leadership). Employ recommitment and participation in safety at work is also a key factor. Knowledge and motivation mediate the impact of a proactive safety environment on individual safety behavior. It is claimed that an individual places emphasis on safety due to her or his own motivational construct.

Employees working in an environment where safety is a concern comply with established safety procedures and participate in safety activities if they believe that these behaviors will lead to a valued outcome. Ultimately, safety culture must be seen also as an individual attitude cultivated at work and hereafter workers can take this attitude from one context to another, from work to home and from one workplace to another.

The differences in safety culture level (average scores of aspects) could be a reflection of several components, which probably can affect safety culture aspects in different ways. One component could be the nature of the work (or the working situation), where the physically heavy ramp work (compared to air traffic controllers, for example) could lead to a more pessimistic view among personnel. Furthermore, differences in average scores for safety culture aspects between operative and administrative organizations within air traffic control can also be a reflection of type of work, since scores for *Risk perception* and *Reporting* can have a different meaning to the two groups and can be higher among operators than among the administrative staff. Other components concern the safety management system and leadership within an organization. The ramp work is not as standardized and regulated as within air traffic control and on board ships, which could influence the manifestation of safety culture in everyday practice. Similarly, the fact that air traffic controllers (as compared to administrators) should comply with safety management procedures and need to have another awareness of risks, could be an explanation for the differences in safety culture perceptions and judgments between these two groups. Furthermore, if the local management at the different study locations has made deliberate attempts to create or form a certain safety culture, or parts of it, this can also be reflected indifferences in average scores for safety culture aspects. The differences in average safety culture scores between the branches could also be a manifestation of the maturity level in safety culture.

Air traffic control could thus be said to be the most 'mature' among the three branches. The results also show that learning processes for safety are better developed in the air traffic control setting than in passenger shipping and airport ground handling ramp activities.

2 SAFETY CULTURE AT GROUND HANDLING

Safety is a permanently salient topic within executive ranks in the aviation services business. Recognizing a consistent culture needed to permeate through all levels of its organization.

Safety culture is a recurrent theme at aviation safety seminars and meetings and much discussed in literature on safety in general, e.g. industrial and occupational safety but there seem to have been few attempts to measure it probably because it is hard to define and quantify. ICAO and the industry have been spending much effort in setting up standards on hardware and procedures, e.g. in the forms of Standards and Recommended Practices (SARPs) and Procedures for Air Navigation (PANS), to ensure safety yet no one would deny that culture, an intangible thing, is equally, if not more, critical and indispensable for the long-term success of any organization aiming to mobilize its team members to achieve a common goal, for example, safety.

There are many ways to assess safety culture but here is an attempt by Association of Asia Pacific Airlines (AAPA), Arab Air Carriers Organization (AACO) and Airports Council International (ACI) by conducting a survey amongst airline and airport employees. The methodology and findings of the survey are explained and presented below. There are a lot of risks intrinsic to the ground handling business, which, along with travel services, is a significant part of safety culture. Employees frequently work with heavy equipment and large aircraft and the stakes are high.

Figure 1 Improving work safety

For airport ground staff, there is a significant amount of machinery – be it baggage trucks, catering trucks, refueling trucks and other aircraft servicing equipment – all working on site at the same time. Participants were asked to rate how well their organization, management or colleagues were doing in the implementation of safety policy, demonstrating safety commitment, safety communications, safety training and promotion, safety risk assessment, safety management and reporting, and providing a safe working environment. Finally participants were asked to give an overall rating on the safety culture in their organization.

Two types of analysis were conducted on the replies. Firstly, the average ratings for each of the some 30 questions in the eight areas mentioned above were calculated to find out which areas, e.g. safety commitment, were best or worst viewed by employees. Secondly statistical correlation analyses were done to identify which areas were more related to the overall assessment of safety culture. As expected there are areas that bear a stronger influence on the perception of safety culture. For instance if management respond in a prompt manner to reported safety concerns, the employee tends to give a higher overall rating on the company's safety culture.

Here are the key findings:

a. *Prompt response to reports of safety hazards and concerns improves the perception of safety culture by employees*. This seems to corroborate a finding coming from a research jointly conducted by Harvard Business Review and Energy Project on 12,000 workers that employees are more satisfied when they feel valued and appreciated for their contribution. Responding to safety concerns raised by employees in a prompt manner is perhaps a good way of reinforcing reporting and safety culture, not only enhancing employee morale.

b. *Young employees and contract workers give lower rating on the safety culture of their company than their seniors or full time counterparts*. Does that mean supervisors or managers sitting in their office are sometimes out-of-touch and should pay more effort in communicating with the workers on the frontline?

c. *Training has a surprisingly low impact on the overall safety culture rating*. Employees that spoke highly of the training they received did not necessarily give a better appraisal on the safety culture of their company. Does that mean the more they know, the more problems they see at their company and if these problems are not solved, they tend to give a lower rating? This paradox may also suggest a gap between training provided and its effectiveness in raising safety awareness.

Airport Ramp Safety was gave much attention recently in reports and papers by a number of safety organizations. In spite of their efforts, and those of air carrier safety departments, damage to aircraft and ground equipment and injury to personnel continue to occur during ramp operations.

It is interesting to note that there were more incidents in the gate stop area during arrival (48%) than during departure (31%). A possible explanation is that there are more obstacles to encounter when entering the more congested area next to gates and terminal buildings.

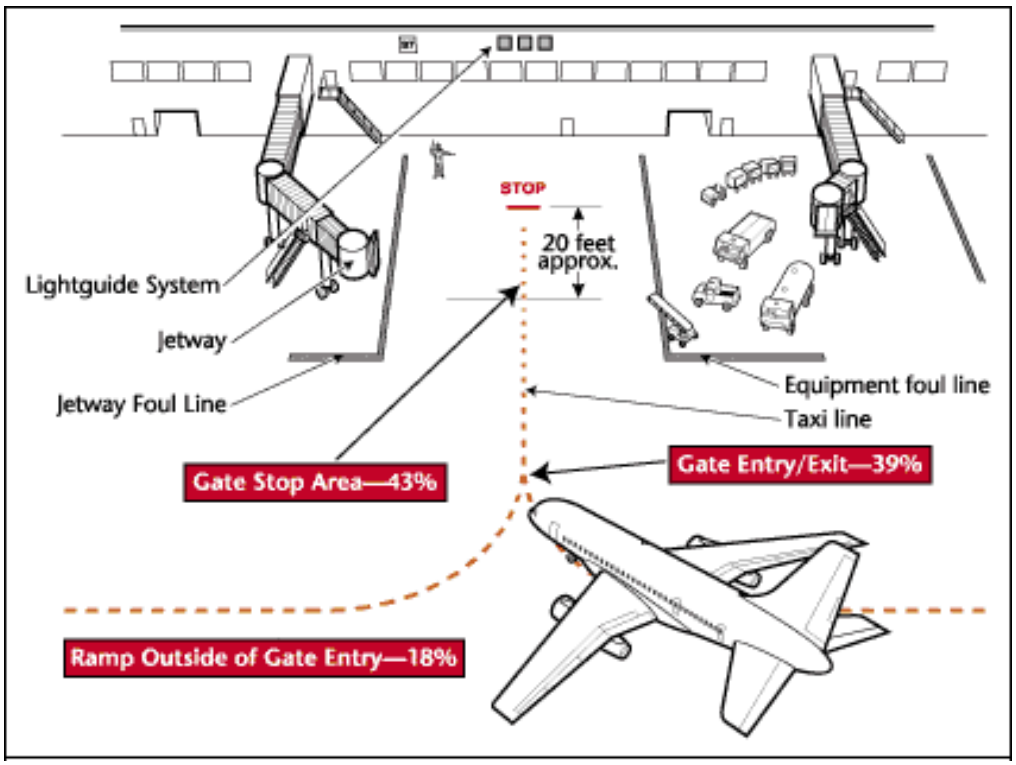

Figure 2 Ramp operations areas and percentage of incident locations

It was also noted that there were fewer incidents on the ramp fringe areas during arrival (13%) than during departure (30%). This may be related to the large number of pushback, power-out, and power-turn procedures occurring during departure operations.

2.1. DAMAGE OCCURRENCE

Ground equipment, and by association, ground personnel, appear to be most vulnerable to damage or injury in ramp operation incidents. Ground equipment in general was the clear "loser" in the reported incidents, as depicted in Figure 2. Ground equipment damage occurred most often in the gate stop area, less so in the gate entry/exit areas, and rarely on the ramp fringe areas.

In contrast, aircraft-to-aircraft damage usually occurred in the ramp and gate entry/exit areas, where the taxiing aircraft were sharing the common maneuvering area and were likely to be in radio contact with a controlling agency.

There were a lot of reports of injury to personnel, and two-thirds of those injured were ground crew members. Although this number does not seem substantial, it obviously represents a substantial impact in the lives of the persons who were injured. It also represents a potentially large financial loss to the company in flight delays, employee lost-time, insurance, medical, and other costs.

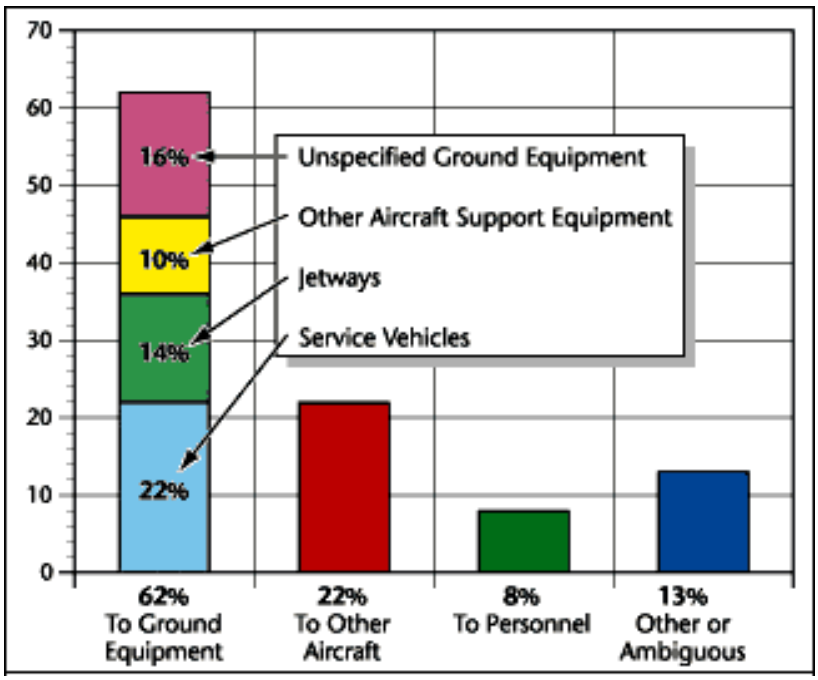

Figure 3 Types of damage by percentage of data set

2.2. THE MAIN PLAYERS

Reporters stated that they were provided with ground personnel for ramp guidance in 64% of the incidents. The marshaler is the "PIC" of the ground crew, and has primary responsibility for correct signals being passed to the flight crew. The marshaler is often a relatively senior member of the ground crew, and usually has received specific training for this position. Other ground crew members may have varying degrees of training and experience in their positions. These positions include:

1. one or more wingwalkers, who are often baggage handlers or other ground crew members.
2. a tug driver, who must watch both the aircraft and the other ground personnel during the tow or push operation.
3. a chock handler, whose position may be covered by a marshaler or a tug driver.

Marshalers were reported as present in 56% of the incidents, and one or more wingwalkers were present in 17% of the incidents. According to reporters, marshalers were not present, but should have been, in 12% of the incidents. Based on this recommendation from flight crews, it appears that the presence of a marshaler might have had a positive effect in the 13% of incidents in which no ground crew member was present (see Figure 3). Reporters also concluded that wingwalkers should have been present in 26% of the incidents.

In 20/20 hindsight, many reporters, like this Captain, clearly recognized the value of wingwalkers: "My aircraft made contact with another company aircraft. There was only one marshaler directing me and no one watching the wing. [The marshaler later] stated that he did not even see that the wings had collided. Had there been a wingwalker in the congested parking area, this incident would not have occurred."

2.3. PARKING

Ramp guidance issues included incorrect or inappropriate gate assignments; inadequate ground crew staffing during aircraft movement, especially during night and bad weather operations; and improper taxi or parking instructions from ATC, company ramp control, or ground personnel. Marginally visible taxi lines, and poorly-placed lead-in lights and building-mounted light systems were also cited as contributing factors to incidents.

Communication is an integral part of ramp guidance. One particular communication technique--the nearly universal "all-clear" salute--was notably absent in many of the reported incidents. Ineffective communication was at the heart of this towing incident that resulted in aircraft damage. It is interesting to note that in 85% of the reports, the reporter's aircraft was moving at the time of the incident, and that 80% of these movements were considered "normal." In almost half of these incidents, the flight crew reported that a ground crew member was still signaling "come ahead," even after the aircraft had come into contact with an item of ground equipment.

2.4. RECOMMENDATIONS FOR REDUCING RAMP OPERATION INCIDENTS

There are a number of actions that air carrier managers can take to reduce ramp incidents. The following recommendations are based on the findings presented above and on suggestions from a panel of highly-experienced ASRS analysts:

1. Require certification for the marshaler and wingwalker positions.
2. Provide scenario-based training for ground crews, using ramp incident reports available from the ASRS database.
3. Increase the use of radio communications between flight and ground crews.
4. Maintain paint lines, taxiway markings, and light guidance systems in highly visible condition.
5. Establish and enforce speed restrictions and communications procedures for vehicles drivers.

CONCLUSION

Ultimately, however, the responsibility for safe operation of the aircraft rests with the flight crew. Therefore, regardless of any actual or assumed inadequacy on the part of management or the ground crew, it is up to the flight crew to take action to prevent incidents. The discussion presented above suggests the following preventive actions for flight crews:

1. Perform a flight crew briefing of the gate entry or exit procedure. Follow the established procedure for operation at that gate. Reaffirm cockpit coordination and CRM techniques.
2. All flight crew members should maintain an outside scan during aircraft movement. Be self-aware when judging ground equipment clearance. Any portion of the operation that doesn't "feel right" probably isn't right!
3. Be particularly wary of faded or painted-over foul lines, the use of orange cones to mark foul lines or taxi lanes, or reflections on guidance light systems.
4. If no taxi guidance is provided, a "no taxi" situation exists. Wait for an "all-clear" salute or other specific guidance (which may include the "all-clear" salute), from the person identified as having the authority and responsibility for marshaling the aircraft. If the marshaler is lost from sight, a "no taxi" situation again exists.

5. Use wingwalkers if ramp congestion is even a remote consideration. One is good; two are better. However, consider that the marshaler may be focusing on the nosewheel position rather than watching the wingwalkers.
6. Be aware that the marshaler may be unable to see wingwalkers.
7. Recognize that ground crews may be unable to communicate verbally with each other or with vehicle drivers.

Finally, in the words of a United Kingdom Flight Safety Committee member, remember that ***"during ramp operations, everything is alright until is isn't alright!"***

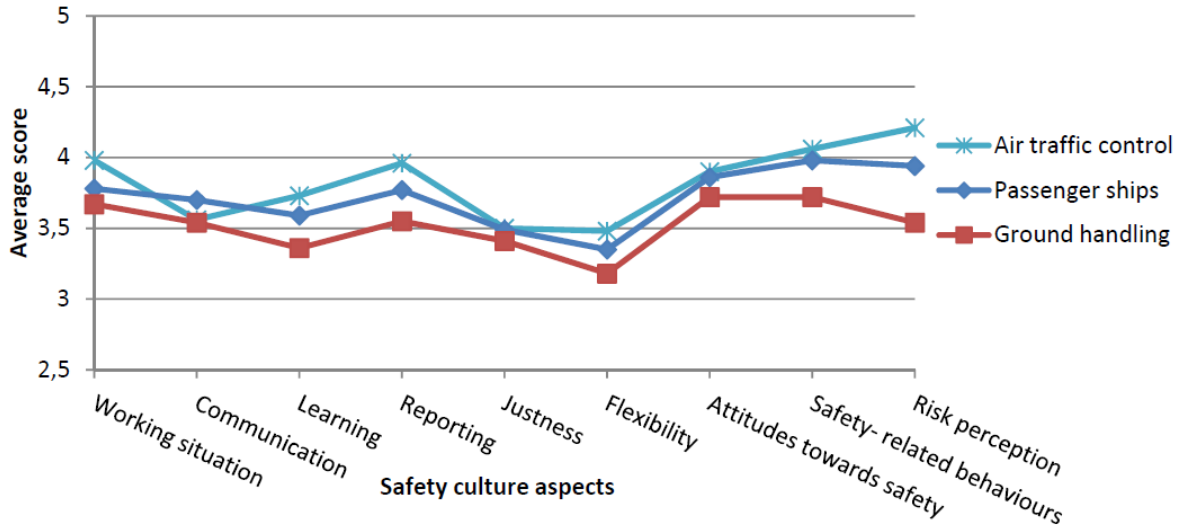

Figure 3 Comparison of average scores for safety culture aspects from three transport branches (identical item sets within aspects): air traffic control (operative units), passenger shipping, and airport ground handling (ramp organization)

The results of the safety culture assessment of the ramp division revealed a generally good existing safety culture. However, the study points too many specific topics and areas that could be the focus of continued improvement. Generally, to achieve continuous safety improvements in ground handling the application of safety management systems are essential as well as creating good safety cultures constituting driving forces to safety.

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