GENERAL SAFETY MANAGEMENT SYSTEMS GAP ANALYSIS SURVEYS FOR US AIRPORTS

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INTRODUCTION

The cost of accidents has become critical for the aviation industry; however, currently, most airports deal with safety issues in a reactive manner and without a systematic approach to optimize available resources and to minimize risk. Moreover, the ICAO's Contracting States have agreed to that the implementation of Safety Management Systems (SMS) will become an international standard effective in November 2010. This decision represents one of the most significant changes in the regulatory framework for the operation of airports in recent years.

The FAA is strongly supporting the adoption of such an international standard and intends to implement SMS at U.S. airports in a way that complements the requirements of 14 CFR Part 139, Certification of Airports. The FAA is now evaluating the best way to introduce an SMS requirement and plans to issue a notice of proposed rulemaking (NPRM) about SMS in the near future. As part of the actions already taken in that direction, the FAA has developed an SMS advisory circular for airports, initiated the second SMS Pilot Study and is sponsoring the development of additional guidance, which this research is a part of.

As part of an Airport Cooperative Research program (ACRP) project to develop a Guidebook on Airport Safety Management Systems, two surveys were conducted to compile the perceptions of airport personnel. The first survey had the objective to identify the SMS elements in place at Part 139 airports. The second survey was conducted in the form of interviews with key personnel of airports participating in the 1st FAA Pilot Project on Airport SMS. The latter had the objective of obtaining feedback for a draft Guidebook prepared by the research team. These interviews offered another opportunity to conduct a general gap analysis with 15 participating airports.

An analysis of the data gathered from the airport surveys was performed to assist in determining what SMS strengths and weaknesses exist within US airports. Based on the analysis, an assessment is made on existing SMS elements available at US airports, and the Guidebook on airport SMS (ASMS) should address these differences. As a secondary benefit, the results of the survey provided insight, although with limitations, into the present safety culture at different airport locations, airport types and for the airport community as a whole. This paper presents a summary of the results obtained from the airport surveys. The analysis of survey responses and interviews provided a general gap analysis for ASMS on Part 139 airports.

SAFETY MANAGEMENT SYSTEMS

According to FAA AC 150/5200-37 (1) SMS is "a formal, top-down business-like approach to managing safety risk. It includes systematic procedures, practices, and policies for the management of the safety." SMS is a tool to translate an organization's concerns about safety into effective actions to mitigate hazards.

The four basic SMS pillars (components) described in FAA AC 150/5200-37[(1)] are: policies and objectives; safety risk management; safety assurance and safety promotion. Each pillar includes several elements, each of which represents a specific SMS function that is important for the system. With an effective SMS it will be easier for the airport to develop a positive safety culture, and at the same time, a positive safety culture will help develop an effective SMS.

Pillar 1 – Safety Policies and Objectives. Management can support SMS by setting the safety standards and policies for the airport organization, encouraging participation in the SMS process, and supporting safety objectives by allocating the required resources.

Pillar 2 - Safety Risk Management. An SMS manages risk proactively. Identifying hazards and assessing the associated risk in terms of likelihood and is a structured, disciplined way to assess risk. Control measures then are used to reduce risk to an acceptable level.

Pillar 3 - Safety Assurance. The safety assurance pillar of SMS includes self-auditing, external auditing, and safety oversight. Safety oversight can be achieved through auditing and surveillance practices. Safety assurance aims to ensure that the activities, plans, and actions taken to improve safety are implemented and effective.

Pillar 4 - Safety Promotion. SMS is most effective when it takes hold within an organization with a positive safety culture. The elements related to safety promotion are intended to support efforts in developing and maintaining a strong safety culture. They also will provide tools to ensure that safety information and understanding is transferred throughout the organization.

AIRPORT SURVEY AND QUESTIONANNAIRE

The objective of the airport survey was to determine current safety practices, procedures, and programs that could form the basis of an ASMS. The survey was targeted to cover the spectrum of 14 CFR Part 139 airports to identify differences in practices as a function of airport categories.

An airport survey comprising 50 questions was made available to participants as a web-based survey. Hard copies were also made available when the responder preferred this alternative. The intent was to solicit ample responses from a cross section of airport types and various airport staff positions within each organization. Input was requested from upper management, middle management, supervisory and non-supervisory personnel.

The questionnaire used to survey Part 139 airports is presented in an Appendix to this paper. The ASMS elements assessed in this survey were categorized into the five pillars of the SMS as described earlier. The survey also contained five safety culture indicators implicit in the questionnaire; outlined as follows:

1. Safety Leadership & Commitment. How management and supervision value safety, establish and maintain high safety standards, hold people accountable, are visible and model for safe behavior, provide necessary resources to minimize risk and maintain a low risk environment and apply proactive long-term problem solving techniques.
2. Employee Involvement & Ownership. How employees are engaged and participate in safety-related activities and demonstrate their ownership to safety, such as doing what should be done, going the extra mile, reporting near misses/incidents, looking out for each other, contributing to improvement and resolving issues.
3. Safety Communication & Feedback. How information is effectively transferred within the organization from top to bottom and bottom to top, shift to shift and department to department.
4. Safety Training. Training that covers governmental and company regulations for employees, new hires and transferred employees is implemented effectively and evaluated for effectiveness.
5. Safety Attitude & Motivation. How employees are recognized and reinforced for good safe work performance, and how they deal with safety while competing for productivity goals.

SURVEY RESPONSES

One hundred and one valid surveys were submitted during the period of August 28th – October 28th 2007 which is about 20% of Part 139 certified airports. During this 2-month period, 37 states were represented. Only two states, Florida and Texas, contributed with 10 or more surveys. Furthermore, six states submitted 4 or more surveys; six states contributed with only 3 surveys, ten submitted 2; and 13 submitted just 1.

The majority of respondents, 88%, were in Airport Operations, of which 44% were upper management (VP or Director), and 41% were middle managers (Deputy or Manager). Therefore, as a result of this response profile, the data is overwhelmingly skewed towards management viewpoints. This fact limits the power of our observations regarding the differences between perspectives of different airport staff levels. Table 1 summarizes the number of responses by airport type and Table 2 summarizes the participation by FAA region.

Table 1 – Number of Airports Responding – by Type and Class

Airport Category	# Airport Responses	Total # of Airports	% Airports Responding
By Hub Type (Size)			
Large	15	30	50.0%
Medium	18	37	48.6%
Small	12	72	16.7%
Other	56	381	14.7%
By Part 139 Class			
Class I	74	366	20.2%
Class II	12	59	20.3%
Class III	3	52	5.8%
Class IV	12	97	12.3%

Table 2 – Number of Airports Responding – by Region

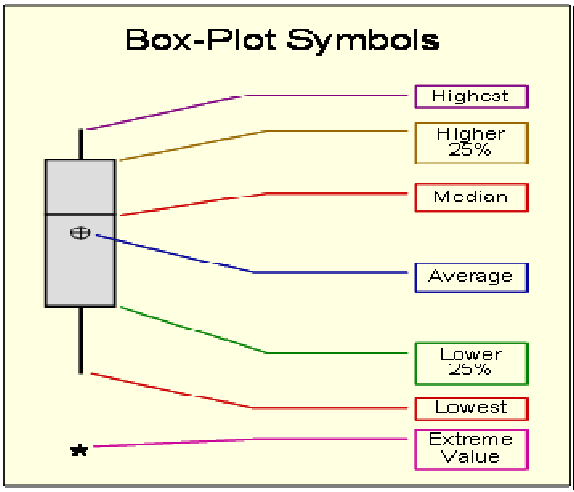
Region Code	Region	Total # of Airports	# Airports Responding	% Responding
AAL	Alaska	28	0	0.0%
ANM	Northwest Mountain	77	13	16.9%
AWP	Western Pacific	77	11	14.3%
AGL	Great Lakes	95	20	21.1%
ACE	Central	37	10	27.0%
ASW	Southwest	66	14	21.2%
ASO	Southern	100	23	23.0%
AEA	Eastern	66	8	12.1%
ANE	New England	25	2	8.0%

SUMMARY OF SURVEY RESULTS

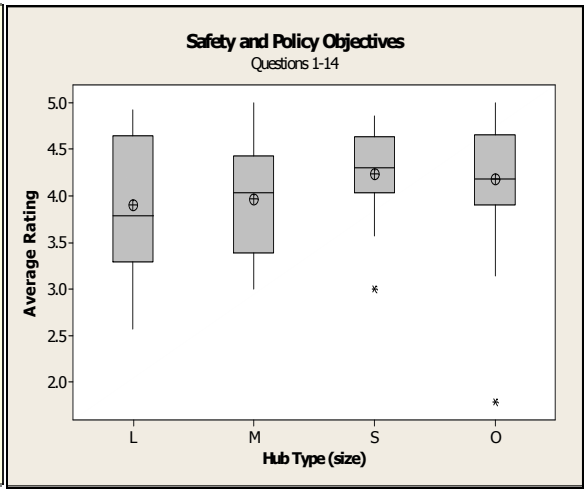
Figure 1 presents the summary of the scores for SMS pillars based on hub sizes as categorized by large, medium, small and other. Figure 1.a is the legend that explains the presented box-plots. The median for each dataset is indicated by the black center line, and the first and third quartiles are the edges of the gray rectangle area, which is known as the inter-quartile range (IQR). The extreme values (within 1.5 times the inter-quartile range from the

upper or lower quartile) are the ends of the lines extending from the IQR. Points at a greater distance from the median than 1.5 times the IQR are plotted individually as asterisks. These points represent potential outliers. The small circle represents the average value.

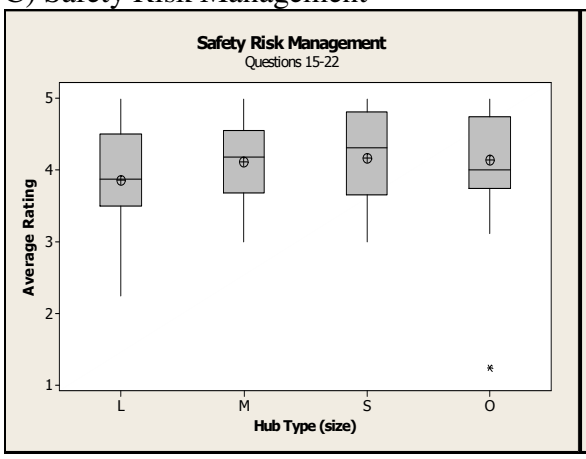
a) Box Plot Legend



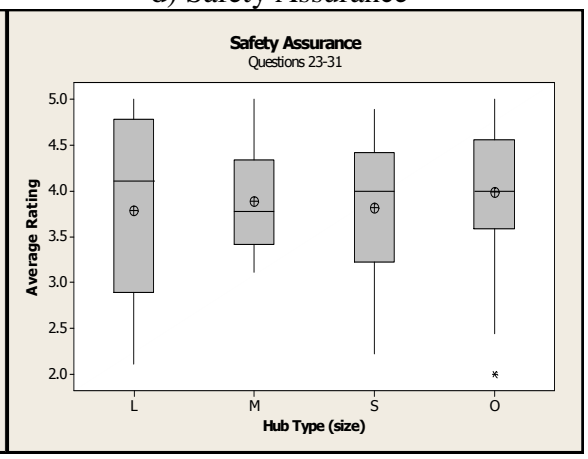
b) Safety and Policy Objectives



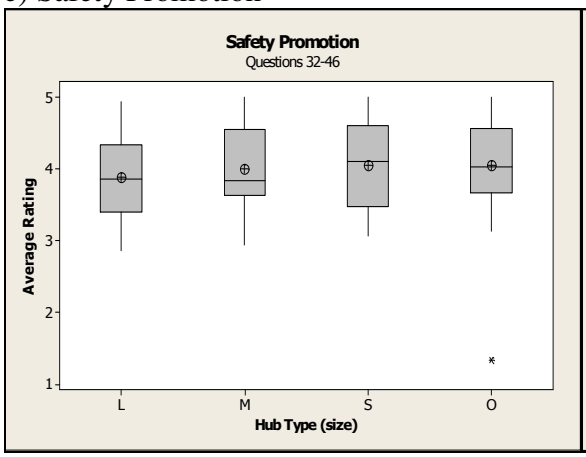
C) Safety Risk Management



d) Safety Assurance



e) Safety Promotion



f) Emergency Response Coordination

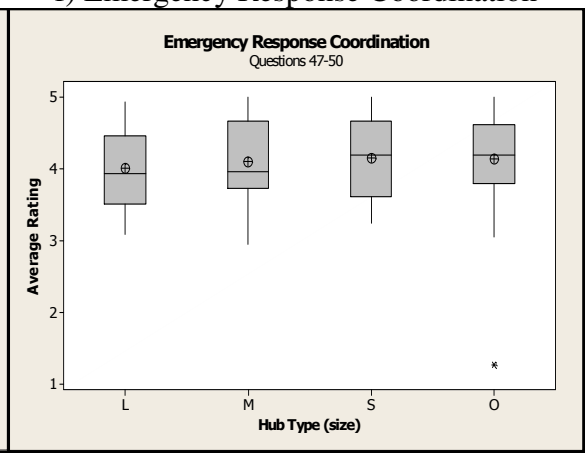


Figure 1- Distribution of the scores of SMS pillars based on airports sizes.

Figure 1.b presents the results for safety and policy objectives. Responses from large airports had the largest variability. Small airports had the highest average score as compared to other airport sizes. A higher score implies that the respondents believed that the concept was acknowledged and practiced in their organization to a higher level.

Figure 1.c presents the results for the components of safety risk management that contained questions 15 to 22 of the questionnaire. The average of the ratings for all airport sizes is pretty close to 4. As illustrated in Figure 1.c, there is a wide variety in the perspective of the responders from large airports about the components of safety assurance. Airports of all sizes seem to agree more on the components of safety promotion and emergency response coordination. The variability in all sizes is small as compared to the other pillars of SMS as shown in Figure 1.e and 1.f. It is worth mentioning that large airports had the lowest score in all categories while small airports outscored in safety perceptions.

The summary of the scores across all airport sizes is presented as a series of charts. Figure 2 shows the average scores for each category of safety management, including the four SMS pillars and emergency response. The highest score was for Emergency Response as expected since this is a Part 139 requirement. The lowest score was found for safety assurance.

Figure 3 depicts the average scores by key safety culture indicator. The highest score was for Safety & Leadership Commitment. This was expected since the questionnaire responses were overwhelmingly provided by management level airport staff.

Interviews

In 2007, the FAA created an Airport SMS Pilot Study that included 22 volunteer airports. Those airports were to develop their SMS Manual and Implementation Plan. Participating airports were required to follow a Statement of Work and Pilot Study Participant's Guide, which detailed 21 deliverables and time frames for the study. The FAA reported results from these studies in October 2008.

During September and October (2008), the ACRP research team developed a questionnaire and interviewed 15 participants of the first Airport SMS Pilot program by telephone. Some specific objectives of this survey were to identify: unique solutions applied that can help specific

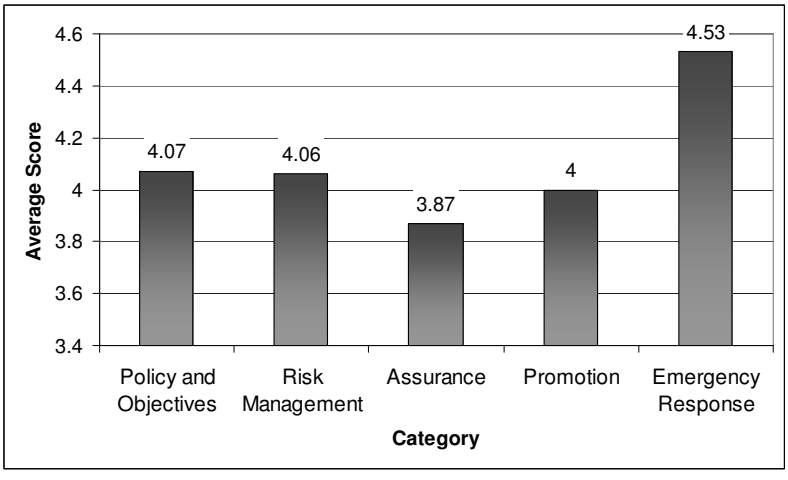


Figure 2 – Average Scores by SMS Category

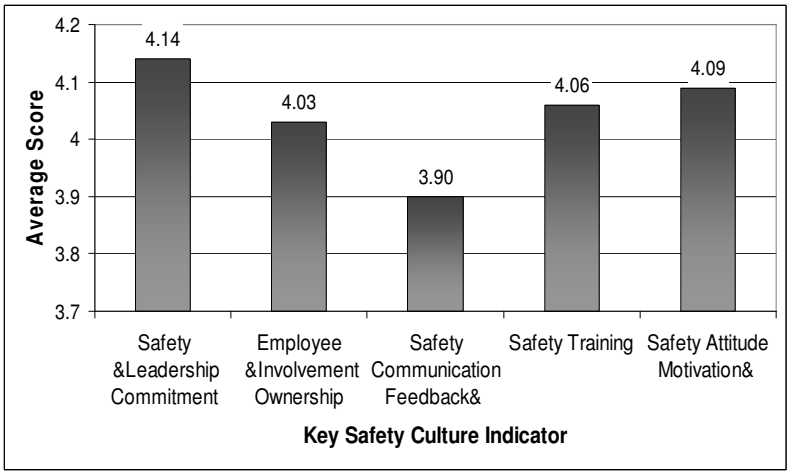


Figure 3 – Average Scores by Safety Culture Indicator

types of airports, variations on their SMS organizational structure, risk criteria and type of risk matrix adopted and main difficulties found during the course of developing their SMS programs.

Out of fifteen airports interviewed, only two did not hire consultants to develop their SMS programs and had some difficulty finding references to help them understand what is an airport SMS and how it works.

CONCLUSIONS

The conclusions described in this section are organized in two sets. The first part addresses the conclusions from the airport survey using an online gap analysis questionnaire. The second set of conclusions describes those determined from the interviews with airports participating in the First FAA Pilot Program.

Airport Survey

The following were the main observations extracted from the airport survey and gap analysis report:

- Although the survey response rate was lower than hoped, the spectrum of airport categories and regions were well covered, with a few exceptions. For example, no response from the Alaska region was submitted during the survey and only 2 airports from the New England region responded to the questionnaire. The sample size represented approximately 20% of the total number of Part 139 certificated airports in the U.S.
- The highest rated Key Safety Culture Indicator, (KSCI) was Leadership and Commitment and it comes at no surprise since 88% of the respondents are in upper management and would typically have the most involvement and understanding of these statements. The rating indicates a solid level of agreement to all statements within this category.
- The lowest rated KSCI is Communication and Feedback. Historically, this indicator receives lower ratings due to the complexity of how people provide and/or limit

information. Many respondents think that they have communicated adequately or assume that what was stated was understood by all. Politics, language differences, hidden agendas, egos, and cultural issues all contribute to affect the open flow of information up and down the organization as well as across departments and sub-groups.

- When comparing airports by category, scores for large hubs on reporting airside safety concerns and close calls were moderately lower compared to average results, indicating some room for improvement on the informed culture for these airports. When evaluating the existence of safety policies, documented processes and standard operating procedures (SOPs), medium hubs had relatively lower scores compared to large and small hubs.
- The scores related to measurable airside safety objectives were lower than average survey scores across all categories. Few safety performance indicators and trend analysis are currently used by Part 139 airports. Moderately lower scores compared to overall average were also reported for procedures to collect, track, and trend the number of airside safety incidents and occurrences. Most likely the airports do not extensively use safety performance indicators and evaluate their trends. This is possibly the same reason for the relatively lower scores on sharing historical and current airside safety trends with airport staff.
- Relatively lower scores were also common for existing processes to identify airside hazards and assess risks. Most likely, the airports use few standard and systematic processes to conduct risk assessments and airside hazards are mostly reported from regular daily inspections. It is important to note that Part 139 self-inspections normally will lead to some type of qualitative risk assessment and lead to prioritization of corrective actions.
- A few airports use a more systematic and proactive process to identify and report hazards. One respondent described: “Hazards are identified by periodic and daily inspections by various airport departments. Safety Hazards are photographed, documented and sent to the Safety Representative for further evaluation. If immediate action is required, the area is secured to prevent damage to equipment or the loss of life.”
- Another set of responses with comparable lower scores for all airport categories was for the question on employee feedback on the effectiveness of the training they receive.
- Hub airports feel that communication between departments is not strongly effective when dealing with airside safety issues. The non-hub airports had higher scores compared to all types of hub airports. Large organizations are more prone to have some deficiencies in communications between departments and staff levels.
- Based on the relatively lower scores for safety assurance (questions 23 to 31), it became evident that this is an area with good room for improvement for all types of airports. Surprisingly, the overall scores for safety risk management (questions 15 to 22) were slightly higher, most likely because many airports have a risk management sector. However, these sectors are geared for insurance purposes and rarely address safety risk management of the airside. Variability for safety assurance was higher for Large Hubs.
- Scores for manager and supervisor good comments and encouragement for doing jobs safely were statistically lower for Class III airports (scheduled flights only for small planes). However, the sample size for Class III airports was very small (n=3) and the

power of these conclusions is considered low. When asked if they had written safety programs and SOP's addressing airside operations, the Class II and Class IV airports had relatively lower scores. It demonstrates some room for improvement for these classes of airports, although the scatter of responses for Class II was considered high.

- Scores for airport workers following safe work rules, safety policies, and procedures were relatively lower for classes II and IV airports. Responses for the existence of updated training materials were lower than average scores for Class II airports. In general, airport staff receives little feedback from reports, suggestions and concerns on airside safety. Comparably lower scores were also observed for airport classes II and III on the feedback and lessons learned from safety reviews and investigations.
- With a few exceptions, the study revealed that availability and characteristics of SMS pillars and safety culture is fairly uniform across the FAA regions. The scores associated to the focus of accident and incident investigations were moderately lower for the NM region. It should be noted that the majority of airports investigate these events mostly to support insurance related issues and to a lesser degree to evaluate the actual causes so that the hazards can be treated.

Interviews with Pilot Program Participants

The major gaps identified when interviewing the airports participating in the First FAA Pilot Program were the following:

- Many airports have a safety policy; however, in some cases it is not a formal safety policy and, in the majority of the cases, it does not contain the elements needed for SMS and is not effectively communicated to employees
- There is no systematic Safety Risk Management process in-place that based on risk assessments
- Hazard reporting is done to the Operations Section and limited to phone calls and e-mails. Neither of these systems in formally non-punitive or confidential
- Most airports avoided 'safety drop-boxes' because it is more difficult to manage and obtain the reports in a timely manner. This is particularly true for larger airports; however one of the large hubs will be using their suggestion boxes to report hazards as well. Other means include mouth-to-mouth and radio communications
- Some airports have a few safety performance indicators (SPI) that they measure. However these SPI do not cover the spectrum of airport safety concerns and there is little trend analysis to help identify weaknesses associated with safety.

In addition to the identification of major gaps, the interviews also helped identify many practices and processes already in-place at Part 139 airports that can be integrated to an airport SMS. For example, the Certification Manual describes many safety responsibilities and daily self-inspections are proactive hazard identification procedures. Many of the larger and medium airports already have functioning document and records management and some have other comprehensive management systems, such as environmental and wildlife management systems, and their framework and processes may be used to handle safety issues. The following list presents some of the elements that may be in-place at many Part 139 airports:

- *Reporting*: many airports have phone hotlines that can be used by employees to report safety issues to operations. In some cases, airports have intranet and internet websites where an SMS webpage can be created to report safety issues and hazards or disseminate information associated with SMS.
- *SMS Structure*: some airports have environmental, wildlife or occupational health management systems. Many of the elements, processes and procedures can integrate an SMS. In many cases airlines may have working SMSs and their experience can be passed to the airport.
- *Hazard Identification*: daily self-inspections serve as very effective means of identifying safety hazards. Airport staff is trained to identify safety issues in their area of operations and they can be trained to identify hazards in other areas as well.
- *Accident/Incident Investigations*: Airport sections dealing with public safety usually have personnel trained to conduct accident investigations. Additional training may be required because in general such investigations aim towards how the accident occurred rather than determining the root causes
- *Safety Committees and Meetings*: many airports have groups and committees created to address some specific issues (e.g. ramp safety) that have regular meetings. Many of these groups can integrate the airport SMS as sources of brainstorming on safety issues or to support the SMS manager.
- *Control of Documents and Records*: Part 139 airports must keep records of training, inspections, accidents and incidents. The processes to keep these records may integrate the airport SMS. Many airports already have document management systems that are applicable to SMS.
- *Safety Objectives*: Many airports have defined safety objectives and indicators that can be incorporated to the SMS. These objectives can be maintained and even extended to departments of sections.
- *Trend Analysis*: Some airports maintain accident and incident data (e.g. number of bird strikes) that are used to analyze trends and review procedures. Certificated airports keep track of runway incursions and keep monitoring the incident locations to identify "hot spots" and mitigation actions.
- *Auditing*: An audit function exists in many airports, particularly the larger ones, as a component of an existing management system. Such audit units can adapt their procedures train airport operations staff to handle safety audits.

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2. ACRP, A Guidebook for Airport Safety Management Systems, Transportation Research Board, November, 2009
3. FAA, Introduction to safety management systems (SMS) for Airport Operators. FAA Advisory Circular AC 150/5200-37 (2007)
4. ICAO SMS Manual, Second edition. Doc 9859 AN/460 Safety Management Systems. (2006)

Appendix - Survey Questionnaire

Please rate each statement by selecting or circling the corresponding level of agreement.

Select a level based on what you typically experience on your job.

1 = Strongly Disagree, **2** = Disagree, **3** = Not sure, **4** = Agree, **5** = Strongly Agree**, N/A** = Does not apply

Safety Policy and Objectives	Rate
1. My Airport's policy clearly addresses management's approach to airside safety. *There is a clear message from management about the importance of safety when it comes to airside operations.*	1 2 3 4 5 N/A
2. Management and supervisors regard airside safety at least as important as operational performance. *Managers and supervisors do not only care that jobs are done right, but they also make sure that they are done safely*	1 2 3 4 5 N/A
3. Established safety policies, documented processes and standard operating procedures (SOP's) are consistently followed by everyone. *Everyone follows the 'safety rules' when they are doing their jobs*	1 2 3 4 5 N/A
4. Management and supervisors set the right example by always following the safety rules and procedures. *Managers and supervisors always follow the safety rules when they are doing their jobs, or when assign duties to others.*	1 2 3 4 5 N/A
5. My co-workers report all airside safety concerns and close calls, even when they may be responsible. *All employees are reminded by managers and supervisors to report (either verbally or in writing), unsafe events or conditions, even if is clear that something unsafe happened because of their actions.*	1 2 3 4 5 N/A
6. Management is quick to address airside safety issues, even before an incident happens. *Management tries to correct unsafe situations/events as soon they can, once they know about it.*	1 2 3 4 5 N/A
7. Measurable airside safety objectives are established and documented for each department. *In my department and all others, we have in writing a set of safety objectives.* *For example: "We will reduce the number of rushes between aircraft and passenger bridges by 20%; We will increase the amount of training for all employees by x number of programs/hours; We will reduce the infractions by drivers to our airside vehicle program by half", etc.*	1 2 3 4 5 N/A
8. The airside safety responsibilities of managers and staff are clearly defined. *We all know who is responsible to address safety issues in our department, and we are also aware of what our obligations are when it comes to safety incidents, issues or concerns.*	1 2 3 4 5 N/A
9. My co-workers and I always get good comments and encouragement for doing our jobs safely. *Supervisors and managers let us know, either through written or verbal recognition, that our efforts and concerns for safety are appreciated.*	1 2 3 4 5 N/A

10. Relevant information on regulatory requirements for airside safety is current, readily available and communicated. *We are immediately informed as soon as a new rule or regulation that affects us has been issued or when it changes; or we know were to find it when we need it and when we go looking, it is always up to date.*	1 2 3 4 5 N/A
11. There are written safety programs and SOP's addressing airside operations in my department. *We have a Manual, or a set of documents, that describe all the safety programs (such as training and reporting) and procedures that we follow while doing our jobs.*	1 2 3 4 5 N/A
12. All airside SOP's are routinely reviewed and updated. *All SOP's (Standard Operating Procedures) say exactly what we do when performing our jobs.*	1 2 3 4 5 N/A
13. Airside records are current and readily available. *Information is stored in records and when this information needs to be referenced, it is easy to find and the records are always up to date. For example, airside equipment maintenance records.*	1 2 3 4 5 N/A
14. The airside safety policies and programs followed by tenants (ground handlers, refueling companies, etc.) are consistent with those of the airport authority. *There are no conflicts/problems between our safety programs and those of the other companies operating at the airport*	1 2 3 4 5 N/A

Safety Risk Management

15. There is a standard process to identify airside safety hazards and evaluate the risks. *We have a way to find out/look for, issues or events that can create a safety problem on the airside, to identify how likely it is to happen, and how much damage it could cause if it was to happen.*	1 2 3 4 5 N/A
16. My co-workers contribute to the identification of airside safety hazards and risk assessment. *We all get a chance to participate in the process described above in Question#15*	1 2 3 4 5 N/A
17. My co-workers are involved in the development of SOP's. *Whenever there is a new operating procedure, or update to an existing one, we are asked to describe our experience and to discuss how the SOP can be improved.*	1 2 3 4 5 N/A
18. My co-workers know the risks associated with their respective job tasks. *We all have the proper training and a good understanding of what can go wrong out there.*	1 2 3 4 5 N/A
19. There is a reporting system through which employees can easily report any safety hazard, issue or concern. *There is a clear way, that everyone knows about, to report any issues concerning safety on airside operations*	1 2 3 4 5 N/A
20. Airside incidents, other than mandatory reportable incidents, are promptly investigated. *Any time that there is an incident on the airside, even when is not mandatory to report it, management (or any other person responsible) takes quick action to investigate what happened.*	1 2 3 4 5 N/A
21. Corrective and preventive actions are taken in response to incident investigations. *Whenever there is an accident or incident, after the investigation has been conducted, something is done about it to prevent it from happening again.*	1 2 3 4 5 N/A
22. At our airport, the focus of accident and incident investigations is to learn why and how the incident happened, not to find fault or assign blame. *Accident and incident investigations always find the reasons of why something happened, instead of looking for who was responsible for it.*	1 2 3 4 5 N/A

Safety Assurance

23. The number of airside safety incidents and occurrences is collected, tracked, and trended. *We have a way to measure if our safety is getting better or worse. For example, your airport may keep track of the number of FOD found during daily inspections and check if it is going down over time.*	1 2 3 4 5 N/A
24. Historical and current airside safety trends are routinely shared with all staff. *All staff receives information on how are we doing on safety (getting better, worse, etc), and what seems to be the reason why.*	1 2 3 4 5 N/A
25. Airside safety programs are periodically evaluated and modified as needed. *All our safety programs are evaluated, every so often, to make sure that they are working.*	1 2 3 4 5 N/A
26. Staff from all levels is involved in safety discussions when a change is made to the work place, procedures or organization. *Whenever we buy new equipment, or build something new, departments are moved around, etc; we all have a chance to present our opinion on how this new item, activity or change may create safety issues.*	1 2 3 4 5 N/A
27. My co-workers regularly contribute suggestions to improve safety. *Everyone working at the airport has a chance to make suggestions to improve safety.*	1 2 3 4 5 N/A
28. My co-workers stop and correct unsafe conditions within our control. *Whenever we notice something wrong (an unsafe situation or procedure), we take time to correct it right away.*	1 2 3 4 5 N/A
29. My co-workers follow safe work rules, safety policies, and procedures when and where required. *We all follow all the SOP's when we do our jobs.*	1 2 3 4 5 N/A
30. My co-workers take responsibility for airside safety. *We all take safety very seriously.*	1 2 3 4 5 N/A
31. My co-workers are encouraged to let a person know if they think that person is doing something unsafe. *If we note that someone is not following the appropriate safety procedures, or is doing something that looks unsafe, we immediately tell that person.*	1 2 3 4 5 N/A

Safety Promotion

32. Management and supervisors regularly promote safety. *Management and supervisors visibly sponsor and encourage safety initiatives and practices, for example by asking for, and being open to, suggestions from all staff on how to improve safety.*	1 2 3 4 5 N/A
33. My co-workers are involved in activities that promote airside safety. *We all participate in safety meetings, training, and other occasions were safety is the main topic.*	1 2 3 4 5 N/A
34. My co-workers feel comfortable sharing safety concerns. *We always deal with our safety concerns in a friendly manner and my co-workers don't get upset if someone points out that something is not being done properly regarding the overall safety.*	1 2 3 4 5 N/A
35. My co-workers receive enough training to do their jobs safely. *The training that we receive makes us feel safe when we are doing our jobs. In addition, we received indoctrination training on safety immediately after we were hired.*	1 2 3 4 5 N/A
36. My co-workers consistently apply the safety training they have received. *We actually do apply all the training that we received when we are doing our jobs.*	1 2 3 4 5 N/A

37. Employee training records are current and readily available. *We all have an up to date record of our training in our files.*	1 2 3 4 5 N/A
38. Relevant training material is up to date. *All the training that we receive makes sense and includes the latest equipment and procedures that we actually use.*	1 2 3 4 5 N/A
39. Employees regularly provide feedback on the effectiveness of the training they receive. *In addition to course evaluations (e.g. the 'smile sheet'), feedback is requested some time after training has been completed to evaluate how effective it was (i.e. to determine if the training was of benefit in practice, if the information or knowledge has been retained by participants, etc).*	1 2 3 4 5 N/A
40. My co-workers receive sufficient refresher training to retain knowledge and skills. *The training that we receive includes refreshing training, to make sure that we do not forget the things that we have not done for a while, or that have changed.*	1 2 3 4 5 N/A
41. My Department's vision and mission for safety is clear. *We all know and understand where management stands when it comes to safety, and what are they trying to gain.*	1 2 3 4 5 N/A
42. My co-workers receive feedback from reports, suggestions and concerns on airside safety. *Any time that we make a report, suggestion or present an idea on how to improve safety, somebody gets back to us on what is going to be done about it, even if they will not do anything.*	1 2 3 4 5 N/A
43. My co-workers are informed of the lessons learned from safety reviews and investigations. *We are always informed of the conclusions of accident and incident investigations so that we can learn from it.*	1 2 3 4 5 N/A
44. Airside safety issues are effectively communicated between departments. *All information about safety issues are passed on to other departments, so that all are aware of them, regardless of which department experienced it.*	1 2 3 4 5 N/A
45. My co-workers respond positively when they receive safety reminders.	1 2 3 4 5 N/A
46. Unsafe conditions that cannot be immediately corrected are brought to the attention of management, or those who can do something about it. *When we notice an unsafe situation/procedure that we can not correct, we inform the appropriate person to resolve it.*	1 2 3 4 5 N/A

Coordination of the emergency response plan

47. The Airport Emergency Plan is coordinated with all other tenants at the airport, and those external agencies that take part in it. *Airport management coordinates emergency response with tenants, operators and other stakeholders and service providers so that every group knows who is responsible for each task during emergency situations.*	1 2 3 4 5 N/A
48. Emergency response exercises are conducted and reviewed periodically. *We do emergency response exercise periodically at a small scale, and a large one every so often that includes everybody.*	1 2 3 4 5 N/A
49. Emergency response exercises involve external organizations and service providers. *The exercises that we do include external agencies (firefighters, ambulances, local police, military, bomb squad, etc).*	1 2 3 4 5 N/A
50. My co-workers or I know what we should do during an emergency, based on the practice we received in drills and tabletops. *We all participate in emergency drills to make sure we know the appropriate safety procedures.*	1 2 3 4 5 N/A

Thank you for completing this survey!

Please provide examples of good safety practices or effective programs in place at your airport *(e.g. Boston Logan International Airport established a Ramp Safety Team comprised of more than 25 public and private agencies meeting once a month, to develop strategies to identify and solve problems that create unsafe situations*).

In addition, please briefly describe tools or formal processes used at your airport for the assessment of risk *(i.e. how do you identify hazards and evaluate risks? Perhaps you use a risk matrix; or your airport has a safety committee that performs risk assessment).*