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Starting a Safety Management System Culture in Small Flight School Organizations

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Introduction

A strong safety-oriented culture is a key requirement for the implementation of a Safety Management System (SMS) (Stolzer, Halford, & Goglia, 2008). Therefore, developing and maintaining a strong safety culture is a critical prerequisite for small flight school organizations considering the implementation of an SMS. This case study describes how one small flight school used collaboration and employee engagement to strengthen its safety culture and generate support for the implementation of an SMS.

SMS concepts, practices, tools, and policies represent the future for safety management in the aviation industry according to Stolzer, Halford, and Goglia (2008). The definition of an SMS is “a dynamic risk management system based on quality management system (QMS) principles in a structure scaled appropriately to the operational risk, applied in a safety culture environment” (Stolzer et al., 2008, p. 18-19). The Federal Aviation Administration (FAA) and the International Civil Aviation Organization (ICAO) have both developed programs designed to educate service providers on the need for SMS, as well as strategies for implementing SMS, because they believe that the SMS concept is important for continued improvement of safety in the face of increasing aviation system complexity and advancing technology (Federal Aviation Administration, 2015; International Civil Aviation Organization, 2009).

Given that these important organizations believe SMS is an important component of the aviation industry of the future, it is critical for future pilots to be knowledgeable regarding their roles in SMS processes. Therefore, it is important, even for small flights schools, to embrace and teach SMS concepts to student pilots because what students learn and experience first, will have a strong and lasting influence on them throughout their flying years (Federal Aviation Administration, 2008).

How prepared are smaller flight schools to take on the task of an SMS implementation? Even more perplexing is how does a small flight school get started if they don't have a well-defined, policy and documentation-backed safety culture? Stolzer et al. (2008) stress that a strong safety culture is a requirement for the implementation of an effective SMS and ensuring the existence of this safety culture is one of the first steps an organization must take when implementing an SMS.

This emphasis on culture is important because the culture of an organization reflects its shared beliefs, values, and norms; and an organization's culture influences the way in which its people behave (Stolzer et al., 2008). Therefore, it makes sense to ensure the establishment of a strong safety-oriented culture as one of the key early steps towards implementing an SMS.

The thesis of this article is that identifying a common set of values and goals, along with a shared sense of purpose regarding the need for a safety culture, can be an effective strategy for small flight school organizations to overcome resistance to changes needed to transform or develop a safety culture. The proposed method for achieving this is to engage everyone in the organization, in a collaborative effort to define the values, purpose, methods, and behavioral norms needed to meet the safety goals established by the group. The concept of engaging staff at all levels of the organization, early in the effort to establish new cultural norms, is supported by multiple studies (Wilson-Donnelly, Priest, Burke, & Salas, 2004; Williamsen, 2007; Hajmohammad & Vachon, 2014; FAA, 2015). A secondary component of this thesis is that flight school staff and pilots have an underlying desire to contribute and to participate as members of a safety-oriented organization, despite the common management concern regarding organizational resistance to cultural change (Thomas & Hardy, 2011).

To see if this specific thesis and the existing literature on safety culture development might apply well to a small flight school operation, a case study at a flight school was developed. Initial opinion data was gathered through a blind survey instrument. Collaborative discussion and planning sessions were subsequently conducted in order to gather feedback from staff.

The findings are compared to expectations derived from existing literature on cultural change, safety management, learning, and motivation to validate the paper's thesis. The findings also lead to potential strategies for strengthening the safety culture at smaller-sized flight schools.

Literature Review

FAA Aviation Circular AC 120-92B describes an SMS as a system “that helps you make better safety management decisions” (FAA, 2015, p. 5). An effective SMS is built upon four fundamental structures: “policy, safety risk management, safety assurance, and safety promotion” (Stolzer et al., 2008, p. 25) designed to promote the active involvement of the organization's leaders in safety management; nurture open, safety-related communications both vertically and horizontally throughout the organization; and ensure that everyone in the organization embraces safety as a critical component of their job responsibilities (FAA, 2015).

An organization's top management must document the policies defining and describing how safety will be achieved. Management must also define the role each member of the organization holds and how each individual is accountable for fulfilling their role. The accountability policy must include the organization's top leadership and their role in ensuring safety and adherence to SMS policies (Stolzer et al., 2008, p. 25).

The second SMS component, a risk management system, identifies, analyzes, assesses, controls, and manages safety risks to ensure they are appropriately addressed. Such a system

must ensure that risks to safety are vigilantly detected and acted upon in a timely manner (Stolzer et al., 2008).

The third SMS component, a safety assurance system, provides proactive monitoring and systemic improvement for the SMS through the use of quality assurance tools and methods to ensure the SMS objectives are achieved. The safety assurance system must measure, track, and assess the performance of the SMS in order to ensure that the system is effective. Audits, management review of safety issue resolution activities, and internal analysis and evaluation of safety policies and procedures all help to ensure the effectiveness of the SMS (Stolzer et al., 2008).

The fourth component of an SMS, safety promotion, ensures that everyone in the organization understands their safety responsibilities and knows how to carry out those responsibilities (Stolzer et al., 2008). Employees, managers, and top leaders must all know the organization's safety policies and how to use their associated reporting procedures, risk management tools, and communications mechanisms. Most importantly, all of the members of the organization must be trained to carry out their duties in a manner consistent with the organization's safety policies and procedures (Stolzer et al., 2008).

The thesis for this article is that there must be a strong, organization-wide safety culture in order to implement and sustain a successful, effective safety management system because such a system requires all of the organization's members to be active participants who share common goals and accountability for a successful outcome (Stolzer et al., 2008). *Safety Management Systems in Aviation* describes the importance of cultural considerations in the implementation of an SMS and offers a variety of methods for leading efforts to change an organization's culture (Stolzer et al., 2008). If an organization's leaders want to establish SMS, they must understand

how to develop and implement a safety culture because of “the inextricable tie between a strong safety culture and successful implementation of SMS” (Stolzer et al., 2008, p. 25). Culture is a crucial component of any safety management initiative because culture influences people’s perceptions of what is important, where the power lies within the organization, and what the expectations are for success (Blair, 2003). “Organizational culture can help or harm safety efforts. An organization’s culture is more powerful than any individual” (Blair, 2003, p. 18).

Edgar Schein (2010) argues that culture “helps to explain some of the more seemingly incomprehensible and irrational aspects of what goes on in groups, occupations, organizations, and other kinds of social units that have common histories” (p. 21). He further clarifies the importance of culture, when it comes to individual behaviors, by explaining that culture “defines for us what to pay attention to, what things mean, how to react emotionally, to what is going on, and what actions to take in various kinds of situations” (Schein, 2010, p. 29). In other words, culture has a strong degree of influence on how people behave, interact with each other, and make decisions.

There is strong, consistent support for the importance of cultural factors and the existence of a strong safety culture when it comes to accident prevention, safety risk management, and safety management systems as evidenced by the number of works on topics related to this theme (Lund & Aaro, 2004; Antonsen, 2009; Luria & Rafaeli, 2008; Stolzer et al., 2008). If changing or evolving the culture to be more safety-oriented is a priority, then it makes sense to understand how to approach the creation of a cultural change. Antonsen (2009) describes how culture can be interpreted as being “both a product and a process” (p. 188). In other words, while culture can shape or influence individual and organizational behavior, it is also the product of the interaction between the members of the group that embodies it (Antonsen, 2009). This suggests

that through the use of appropriate group work, cultures can be redefined, changed, or developed. Furthermore, Edmondson (2002) found that team-based group learning, in an environment that was psychologically safe and interactive, fostered progress on organizational goals. In summary, “culture change will not occur without the involvement, commitment, and active support of organization members throughout the entire organization” (Cameron & Quinn, 2006, p.103). Cameron and Quinn (2006) emphasize that too often, organizations that attempt to improve in some manner, fail to take the time and make the effort to develop a common viewpoint among employees about where the organization currently stands, and what it needs to achieve in the future.

In addition to the establishment of a strong safety-oriented culture, senior management’s commitment to SMS-related programs is essential. Management must learn the comprehensive costs and benefits associated with both accidents and safety programs. Management must also understand their role in encouraging safety as a valued component of the organizational culture (Friend & Pagliari, 2000).

Kotter (1996) provides a comprehensive approach to leading and managing organizational change that sets the stage for developing this common viewpoint. Key points in Kotter’s model include establishing a sense of urgency regarding the need for change, creating a guiding coalition, developing a vision and a strategy for change, and empowering employees for broad-based action (Kotter, 2008; Kotter, 1996).

The creation of a sense of urgency is an important starting point for leading a cultural change. Kotter emphasizes that “a true sense of urgency is rare ... [and] it has to be created and re-created” (Kotter, 2008, p.15). Kotter expands on this point by describing his observations of how challenging it is for organizations to sustain change initiatives because the urgency tends to

wane over time – especially if they have experienced a few successes with their initial efforts (Kotter, 2008). The implication is that the small flight school organization must find methods to keep the staff engaged in growing the safety culture because the energy that currently exists within the organization, to address safety improvement opportunities, will likely dissipate over time unless efforts are made to renew the sense of urgency.

The drive for this continually renewed sense of urgency comes from leadership exhibited not only at the top, but throughout the organization (Kotter, 1996). While senior level management will have to define the cultural tone by exhibiting both leadership and commitment to the establishment of a safety culture (Stolzer et al., 2008), Kotter (1996) suggests that top level management must also find ways to create leaders with shared vision at all levels of the organization to continually renew the sense of urgency around the organization's change initiatives. Kotter states that "the primary function of leadership is to produce change, and if a culture encourages that activity throughout the hierarchy, it will produce a great deal of risk taking, initiative, communication, and motivation" (Kotter and Heskett, 1992, p. 45).

Enabling leaders at all levels of the organization can result in inspiring everyone to collaborate and lead. This type of organizational interaction has many parallels to the idea of a self-directed team. The concept of a self-directed, cultural evolution initiative is further supported by Margaret Wheatley's work on self-directed organizational change in which she finds that "if the work of change is at the level of an entire organization or community, then the search for new meaning must be done as a collective inquiry" (Wheatley, 2006, p. 148). Wheatley maintains the concept of finding a new meaning is important because people need to have the opportunity "to explore an issue sufficiently to decide whether new meaning is available and desirable" (p. 148) before they can embrace change.

Ballesteros (2007), Reason (2008), and Argyris & Schön (1996) also talk about the importance and relevance of organizational learning in the context of implementing and guiding cultural change. This is relevant because in their descriptions of the organizational change dynamics, the pool of change agents is not confined to a few selected leaders. This is consistent with Wheatley's call for engaging the organization. Winterberger (2010) also emphasizes the importance of engaging expertise from all parts of the organization for input on the analysis and implementation of safety. In the small flight school environment, this emphasis translates to the need to engage everyone.

Simon and Cistaro (2009), also cite the importance of engaging employees during efforts to transform a safety culture. It helps to create transformational leaders and champions at all levels of the organization consistent with Kotter's (1996) approach to leading change. Similarly, Hajmohammad and Vachon (2014) described the importance of building individual commitment through empowerment and participation to establish a safety-oriented culture. It is an additional perspective highlighting the relevance of collaboration across the entire organization.

Collaborative development of new meaning and organizational learning can integrate opposing viewpoints on the development of a strong, organizational culture as described by Reason (1997) in his chapter on engineering a safety culture. Reason summarized the various approaches to changing an organization's safety culture to being either a management-driven change to an organization's practices, or a collective shift in the integrated individual and group values, beliefs, and behaviors. Though Reason favors the management-driven approach to cultural change, it seems possible that combining the two approaches, by engaging staff at all levels of the organization as change leaders and managers, would achieve both objectives of Reason's approaches and improve the effectiveness of the change. The entire staff would

potentially have insight, ownership, and clarity regarding the change and the need for the change. Such a process would result in organizational learning and better acceptance of any procedural change by energizing the staff around the new meanings they have collaboratively developed (Wheatley, 2006).

The collaboration process would also facilitate the development of three basic conditions for the growth of a safety culture: trust, commitment, and understanding of the flight school's non-punitive safety management initiative (McCune, Lewis, & Arendt, 2011). The establishment of these basic conditions would further enable the staff to accept safety-related changes at the flight school.

Before the concept of organizational learning is accepted as the best or only path forward for achieving organizational culture change, it should be noted that Argyris & Schön caution that organizational learning can produce unintended results such as destructive learning (Argyris & Schön, 1996). Careful preparation and monitoring must be incorporated into the process of leading organizational learning to prevent such an outcome from occurring.

Methodology

The existing literature consistently describes how a well-developed safety culture is a prerequisite for the successful implementation of an SMS within a given organization. The literature also reviews key concepts regarding methods and requirements for the development of a safety-oriented culture. In order to test the applicability of concepts found in the research, a small flight school was selected to conduct a case study.

A 14-question blind survey, distributed to everyone in the company, including the company owners, solicited information on their beliefs and perspectives of safety at the flight school. The survey attempted to identify potential sources of resistance and potential sources of

motivation for moving forward with change initiatives to strengthen the flight school's safety culture. According to Williamsen (2007), Dan Petersen, a well-known safety expert and thought leader, recommends the use of a survey as an excellent method for gaining insight into the safety culture perceptions, beliefs, and opinions of people at all levels of an organization. After the survey collected initial information from the staff, follow up meetings were held to engage employees in collaborative working sessions to define how to move forward with the further development of the safety culture.

The survey results were reviewed with the staff members at meetings for the purposes of validating the aggregate data and determining the level of support regarding the outcomes. The staff meetings were initiated with strict ground rules that were enforced to preclude judgmental commentary. People were encouraged to explore all sides of any questions or issues that emerged with a promise from the senior management team that no performance or attitude judgments would be made. The survey outcomes were also discussed with small groups of staff in casual, private follow up meetings, where no management was present, to see if different concerns or perspectives would emerge. It was anticipated that this combination of interactions would work because of the trust and integrity the researcher has established with the staff through previous polling efforts.

The resulting conversations were energetic and productive resulting in a consensus to move forward with further brainstorming and planning around the implementation of an SMS. Once an initial plan of action was produced, follow up individual interviews were conducted with every employee, from top management on down, to identify barriers and concerns about future efforts to strengthen the school's safety culture and improve its safety management practices.

Case Study Background

The flight school used for this case study operates a fleet of 14 aircraft and has a staff consisting of 12 flight instructors, two dispatchers, two managers, and two administrative staff. This flight school also serves as the flight training operation for a local college's professional aviation program.

The drive to implement an SMS for this small flight school stems from external pressure by the local college. The aviation department at this college has mandated the implementation of an SMS for consistency and alignment with its curriculum.

The flight school's management team, which includes the owner, is willing to implement an SMS to satisfy the college's demands; however, some of the flight school's staff felt the need to adopt additional safety-oriented practices, especially those associated with a formal SMS process, was not urgent. Their concern stemmed from assumptions made with respect to the potential for extra documented work and excessively rigorous operating practices. They believed that excessive rigor could impose unreasonable constraints and unnecessary inefficiency on the training process. These concerns were based on assumptions formed during staff discussions on safety practices and procedures the company had considered as a means to fulfill the college's SMS requirement. Therefore, defining a strategy to address these resistance-generating concerns was an important first step.

The rationale for focusing on the development of a safety management culture for this small organization is derived from the definition of an SMS. Stolzer et al. (2008) emphasize that successful implementation of an SMS is tied to the organization's commitment to operating with a strong safety-oriented culture. The existence of an established safety-oriented culture is characterized by a shared, clearly-defined, and consistent set of values, operating practices, and

behavioral norms oriented towards safety (Stolzer et al., 2008). This suggests that attempting to implement an SMS is likely to result in failure if the organization does not have well-defined, shared values, beliefs, and behavioral norms regarding safety management.

Implementing cultural change at this flight school is entirely realistic given its size and nature. It is a small family-owned and operated business. The instructors, who generally are not family members, have bonded well with both the management team and with each other. They have also repeatedly expressed commitment to making the flight school a premium quality flight training organization.

A few years ago, a highly regarded member of the flight school's community perished in a tragic accident. This traumatic loss united the staff and triggered the review and discussion of the flight school's safety practices. While a number of concepts and proposals were discussed, only a few have been implemented. Informal staff interviews suggest there is an interest in instituting a more formal and systematic approach to safety, but there is also a mixed sense of urgency regarding any large-scale immediate actions. Those who expressed concern about implementing a more systematic approach to safety tend to feel such highly structured safety programs are most appropriate and feasible for larger air carrier operations. Additionally, most of the staff believes the flight school already has a strong, practical, safety-oriented culture. Understanding and working through these obstacles to cultural change is a key requirement for successful, further development of the flight school's safety culture.

Survey Results

The survey was completed by 33 respondents. The entire staff of 18 at the flight school completed the survey. Fifteen of the respondents were flight school students or rental customers. Since little correlation and no significant patterns of data were found among the non-staff

respondents, the data analysis was focused on the staff responses. Ultimately, the safety culture will be defined by the flight school's community-wide beliefs and behaviors; however, the flight school staff must establish themselves as a unified body of leaders and champions for safety first.

The survey results, in combination with staff discussions and qualitative data gathered from follow-up staff interviews, suggest the staff at the flight school can potentially be inspired and motivated to further develop a safety-oriented culture. Though the initial data gathered by the survey suggests there may be some resistance to changing the current culture, qualitative data gathered from individual staff interviews near the end of the study revealed subsequent commitment by all employees to improving safety and safety management practices.

In general, the staff believes safety is a core value for the organization and learning more about professional safety management practices will be beneficial to their aviation careers as shown in Table 1 and Table 2 below. The two neutral responses in Table 2 were submitted by flight instructors. Neither of these two flight instructors were high total time [greater than 3,000 hours' experience] pilots. The management team members are all high-time pilots; therefore, the neutral responses do not reflect the beliefs of management at this flight school.

Table 1

The Number of Staff Who Believe Safety is a Core Value at this Flight School

	Frequency	Percent
Strongly disagree	1	5.5
Disagree	0	0.0
Neutral	0	0.0
Agree	7	38.9
Strongly agree	10	55.6
Total	18	100.0

Table 2

The Number of Staff Who Believe Learning More About Safety is Relevant to Their Career

	Frequency	Percent
Strongly disagree	0	0.0
Disagree	0	0.0
Neutral	2	11.1
Agree	8	44.4
Strongly agree	7	38.9
Missing	1	5.6
Total	18	100.0

Table 3 shows there are staff members who do not believe additional safety management discipline and follow-through are needed. Five staff members, who are flight instructors, disagree or strongly disagree with the need for more safety discipline at the flight school. Table 4 shows these five staff members also believe the flight school already has a culture in which safety is consistently practiced and reinforced.

Table 3

The Number of Staff Who Believe More Safety Discipline is Needed

	Frequency	Percent
Strongly disagree	1	5.5
Disagree	4	22.2
Neutral	7	38.9
Agree	3	16.7
Strongly agree	3	16.7
Total	18	100.0

Table 4

Breakdown of Staff Who Responded “No Additional Safety Discipline is Needed” and Their Beliefs Regarding “Safety is Consistently Practiced and Reinforced as Part of the Culture”

	Frequency	Percent
Agree	2	40.0
Strongly agree	3	60.0
Total	5	100.0

However, Table 5 shows that the majority of the staff agree that it makes sense to implement additional safety management practices, even if it results in new reporting and recordkeeping procedures. This suggests that there are no substantial staff barriers to the concept of implementing new, additional safety management practices.

Table 5

The Number of Staff Who Believe Implementing Additional Safety Management Procedures Makes Sense

	Frequency	Percent
Strongly disagree	0	0.0
Disagree	0	0.0
Neutral	3	16.7
Agree	9	50.0
Strongly agree	6	33.3
Total	18	100.0

While the majority of the staff is willing to consider new safety management practices, Table 6 suggests the staff have varied views on the level of trust in the company when it comes to protecting the identity of people who submit reports on safety hazards, errors, and issues. Table 7 depicts the staff’s varied opinions regarding the openness of other people in the flight

school's community to admit to procedural errors and to take the time to submit safety issue observation reports.

Table 6

The Number of Staff Who Trust the Company to Protect Their Identity as a Safety Report Submitter

	Frequency	Percent
Strongly disagree	0	0.0
Disagree	0	0.0
Neutral	4	22.2
Agree	6	33.3
Strongly agree	8	44.4
Total	18	100.0

Table 7

The Number of Staff Who Believe Implementing a Formal Safety Management Program Will Be Difficult Because People Will Be Reluctant to Participate

	Frequency	Percent
Strongly disagree	1	5.6
Disagree	7	38.9
Neutral	6	33.3
Agree	4	22.2
Strongly agree	0	0.0
Total	18	100.0

Despite the concerns expressed by some of the staff about the willingness of other people to participate in voluntary safety issue reporting and safety management procedures, Table 8 reveals that none of the staff indicated they would refuse to submit safety reports to the

company. Over 66% of the staff said they would participate actively in a voluntary safety hazard and error reporting program.

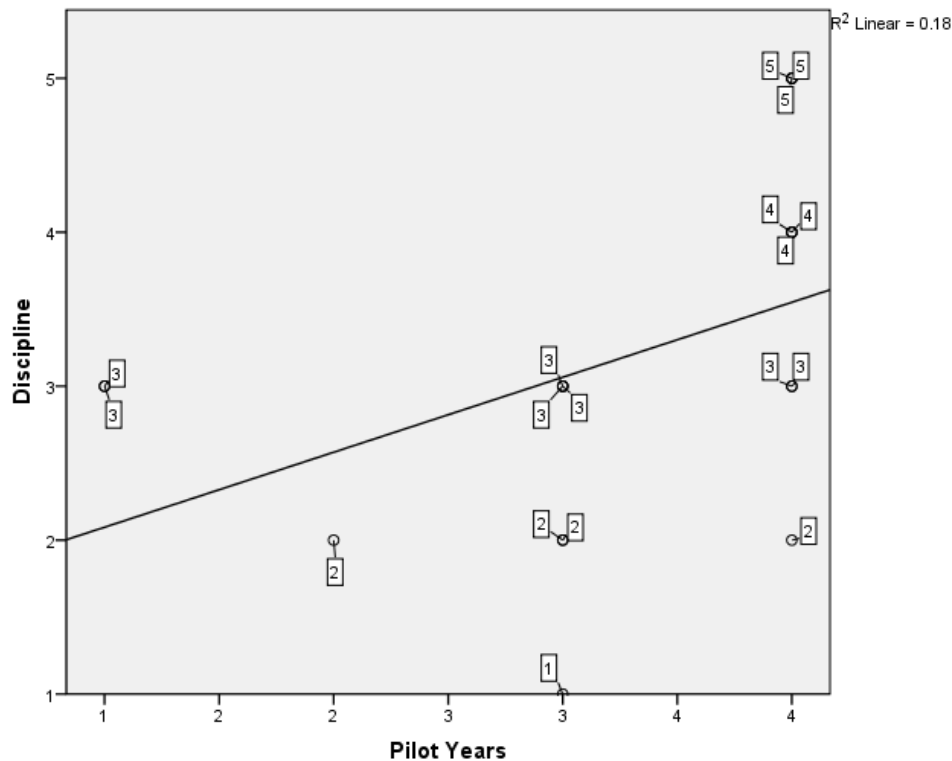
Table 8

The Number of Staff Who Indicated They Would Contribute Safety Reports Themselves

	Frequency	Percent
Strongly disagree	0	0.0
Disagree	0	0.0
Neutral	6	33.3
Agree	3	16.7
Strongly agree	9	50.0
Total	18	100.0

Finally, while the small sample size of 18 responses makes it difficult to generalize these findings outside of this case study, it appears as if there is some correlation between the years of experience as a pilot and a staff member's belief in the need for additional safety discipline at the flight school. Figure 1 suggests that some of the newer staff pilots believe that the current level of safety discipline is already adequate. Also, the staff with the strongest belief in the need for more safety discipline had the most years of experience as a pilot.

Examination of the relationship between hours of flight experience and beliefs regarding safety revealed no discernable correlation. Perhaps this is related to the general aviation environment; however, no data are available to explain the difference between years of experience and hours of flight time when it comes to their relationship to the beliefs above. These observations are tempered by the lack of a strong, significant correlation between years of piloting experience and the belief that more discipline is needed. The *Pearson R* is 0.425 and it was not significant at the 0.05 level.



1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Pilot Years: 1= 0-1 year, 2= 1-3 years, 3= 3-5 years, 4= 5-10 years, 5= more than 10 years

Figure 1. Scatter plot of responses to the survey question asking if more safety discipline and follow-through is needed at this flight school. The linear projection is based on a simple linear regression of the scatter plots. The numbers in the rectangular boxes represent each actual data point. Multiple boxes with the same number surrounding a circular point means that multiple responses were recorded for that combination of pilot years and response value.

Discussion

The literature on driving change in the culture of an organization emphasizes the importance of leadership and inspiring a sense of urgency. It also emphasizes the importance of stimulating leadership at all levels of the organization. In small organizations, the implication is the use of collaborative workgroups, that engage everyone, may produce the most energy and commitment to generating the organizational changes needed to grow the safety culture. In a

small organization, engaging everyone is relatively easy to do. It is much more difficult to achieve that in a large organization.

In the small flight school organizational environment, the entire staff has clear visibility regarding the attitudes and behaviors exhibited by each other. As more and more of the staff adopt certain specific behaviors, new social norms will emerge and these will often be more influential than any single person's attitude or behavior (Lund & Aaro, 2004). This is critical since the existence of a strong safety culture is a prerequisite for the implementation of a safety management system (Stolzer et al., 2008).

The data collected in the case study survey suggest some resistance to the introduction of more formal safety management discipline may have existed at the time of the survey. Table 3 shows more than half the staff members have neutral or negative opinions about the need to implement more safety discipline. Only six staff members feel more safety discipline is clearly needed. Collective inquiry, in the form of a collaborative effort to define future safety strategies, should be considered as an approach for understanding the true meaning of this result (Wheatley, 2006). Though seven staff members were neutral on the need for more safety management discipline, their lack of a sense of need suggests they may be content with the status quo. This may indicate complacency in which opportunities for improvement are recognized, but actions to implement changes are deferred indefinitely (Kotter, 2008). In fact, the flight school had been discussing and deferring the implementation of SMS and of other culture-altering initiatives for some time. Kotter (2008) states that "a real sense of urgency is rare, much rarer than most people seem to think" (p. 9) and he maintains that a sense of urgency is needed to drive out complacency so change and culture development can proactively occur.

Five staff members did not agree additional safety management reporting and/or new safety management practices are needed per the initial survey. These may or may not be individuals who were reluctant to take on additional safety management tasks. It is interesting to note that all of the flight school's employees, including these five flight instructors, believe the flight school does a good job promoting and driving safety already. These staff may have felt that the flight school's current safety practices were good enough and more discipline was not required at the time they answered the survey.

By the end of the study period, 100% of the staff agreed to support and participate in the identification and development of improved safety management processes and tools during one-on-one interviews. Some stated their initial apprehension was relieved once they understood they would have the opportunity to help shape and define any new policies and procedures. Therefore, no obvious barriers, within the flight school's organization, are standing in the way of efforts to start building a stronger safety-oriented culture. The same is true for the implementation of a safety management system based on the final qualitative inputs gathered from individual interviews at the end of the study – as long as everyone had an opportunity to participate in the development of the new strategies, procedures, and expectations. The weakness of this conclusion is the possibility that individual responses were different from those collected by the survey because of the in-person nature of how the final attitudes were collected. Informal post-study observations appear to support the more positive result of employee willingness to engage in the cultural change process.

There was some skepticism and concern within the organization regarding the work required to implement such a system and there were some trust concerns regarding how the data would be used. Therefore, the approach for implementing an SMS in this small flight school

organization must be designed carefully. However, the qualitative input sections of the survey collected a variety of ideas for refining the safety management policies, assuring the continuous improvement of safety practices, and promoting safety through seminars, messaging, and emphasis of safety considerations. Most significantly, by the end of the study, all employees expressed a desire to help evolve the school's safety culture and practices.

It is possible that some of the concern about the imposition of new work and process demands may have been the result of a perception that the SMS had been mandated upon the company without good reason. Some of the freeform text comments that accompanied the questionnaire responses imply this. This is an important consideration for organizations working to change their safety culture. Engaging everyone in a small organization, in the collaborative learning and development process, can potentially ward off concerns that might otherwise develop if the same ideas are externally imposed on them. The literature on creating effective change in an organization's culture suggests that a participative and collaborative approach to identifying a common set of goals, perspectives, and strategies for achieving a stronger safety-oriented culture could work well in smaller organizations such as the one described in the case study.

In a smaller-sized organization, such as the flight school in this case study, large portions, if not all of the staff can potentially participate in the culture change tasks. The sense of urgency for the case study flight school was established by the combination of a tragic accident and the demand from the local college that an SMS be implemented soon. That sense of urgency now needs to be cultivated and renewed so that it is sustained and is meaningful to future staff who may question the need for an increased level of safety discipline. This essentially means imbedding the sense of urgency into the culture (Kotter, 2008). The other components of

Kotter's change methodology can be adapted to leading the cultural change initiative in an inclusive and collaborative way that creates both buy-in and common understanding regarding the changes developed by the collective organization.

Creating change in this kind of collective and collaborative manner will ensure that everyone in the flight school is at least aware of the key guiding values, priority goals, and standard approaches and methods for achieving the school's safety goals because everyone will have contributed to the definition of the goals and methods. Such an approach will also generate opportunities for both individual learning and organizational learning. The opportunity for learning about safety practices and SMS concepts can be an incentive for participating in the process in a small flight school environment. Many flight instructors, in such an environment, have career aspirations that will be well-served by knowledge of SMS concepts and SMS implementation challenges. In the case study, there was clearly an interest on the part of the flight instructors to learn more about safety practices and SMS concepts.

These ideas align well with the observation that an organization that has an effective SMS in place will also display the characteristics associated with having a learning culture (Stolzer et al., 2008). Continuous learning, improvement, and collaborative efforts to identify, analyze, and manage risk are all fundamental components of both an SMS and a safety culture.

To test whether or not the literature-based position on collaborative, learning-oriented approaches to developing a safety-oriented culture may be applicable in the small flight school environment, follow up discussions were held with small groups of the staff as well as with individual staff members. The results of these conversations were consistent and unanimous regarding the interest, enthusiasm, and importance of engaging all of the staff in collaborative workshop-like sessions to provide both learning opportunities and culture-defining opportunities

regarding safety and SMS implementation activities. By the end of this case study, everyone from the top level management ranks to the most junior staff members expressed interest in being part of the process and contributing to improved safety management. This is remarkable given the fact that some degree of concern was expressed in the survey results and given that 100% of the staff believed the flight school already had a safety-oriented culture.

Conclusions

The key conclusions of this study are that small flight school organizations may well have the opportunities to effectively develop a stronger safety-oriented culture and to implement an SMS that is structured in manner appropriately scaled to their operational risks. Based on the case study conducted for this article, the use of a survey instrument, and frank, open-group discussions, to determine the potential barriers and obstacles to undertaking such an effort will be helpful for engaging the staff.

The literature emphasizes the importance of a strong and consistent management commitment to establishing both a safety-oriented culture for the organization and a safe climate for the staff to define, collaboratively develop, and learn about the new standards, processes, and practices that form the new culture (Wilson-Donnelly et al., 2004). Also, ensuring the existence of a strong safety culture is a critical early step in the process of implementing an SMS.

The literature-defined approaches appear to be effective within the context of the case study used for this article. The use of widespread engagement and empowerment of the entire staff to develop its safety culture seems to have mitigated early concerns expressed in the survey results. Additionally, it appears as if everyone employed at the flight school is genuinely interested in contributing to the ongoing improvement of safety at the school. The case study

flight school now has an engaged staff that is eager to move forward with the organizational learning and collaborative SMS development effort.

Recommendations

The findings of this article and the use of the case study as a means of applying the existing research provided promising results. It is recommended that a broader study be conducted to determine how well these findings can be generalized in the small flight school environment.

Separately, it is also recommended that flight schools choosing to undertake an initiative to strengthen their safety culture and to implement an SMS, heed Kotter's advice regarding the need to create a sense of urgency around why such an initiative makes sense. The flight school in the case study experienced varying levels of proactive effort over the past two years in terms of executing on this initiative. Kotter reminds us that "a true sense of urgency is rare ... [and] it has to be created and re-created" (Kotter, 2008, p.15). It will not sustain its intensity on its own. Therefore, the management and the culture must continually work to renew it.

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Appendix

Survey Questions:

Please place an X in one answer box for each of the following questions. An optional comment area is included for each question if you feel you need to clarify your response. It is expected that the comment area will be blank in most cases.

1. Safety is a core value that is presently taught and emphasized here.
<input type="checkbox"/> Strongly Disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neutral <input type="checkbox"/> Agree <input type="checkbox"/> Strongly Agree
Comments:

2. Safety is consistently practiced and reinforced as part of our culture here.
<input type="checkbox"/> Strongly Disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neutral <input type="checkbox"/> Agree <input type="checkbox"/> Strongly Agree
Comments:

3. More safety management, discipline, and follow through are needed here.
<input type="checkbox"/> Strongly Disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neutral <input type="checkbox"/> Agree <input type="checkbox"/> Strongly Agree
Comments:

4. I would be an active contributor of safety hazard and error observations if we had a trustworthy, anonymous safety report submission system.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Comments:

5. Learning more about professional safety management practices and operating procedures would benefit my aviation career interests.

(Leave blank if you have no professional career interests in aviation)

Strongly Disagree Disagree Neutral Agree Strongly Agree

Comments:

6. Implementing additional safety management practices, designed to uncover safety hazards that are not currently being addressed, makes sense – even if it requires new reporting and record keeping procedures.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Comments:

7. I would be more likely to participate in a safety issue reporting program if I were given the opportunity to help define and shape that program.
<input type="checkbox"/> Strongly Disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neutral <input type="checkbox"/> Agree <input type="checkbox"/> Strongly Agree
Comments:

8. I trust the company to protect the confidentiality and anonymity of the safety hazards, errors, and issues I've observed and submitted to the safety management program for analysis and improvement action.
<input type="checkbox"/> Strongly Disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neutral <input type="checkbox"/> Agree <input type="checkbox"/> Strongly Agree
Comments:

9. Implementing a stronger safety culture and a formal safety management program will be difficult here because people won't admit to procedural errors or spend the time to submit safety issue observations reports – even if the system protects their anonymity.
<input type="checkbox"/> Strongly Disagree <input type="checkbox"/> Disagree <input type="checkbox"/> Neutral <input type="checkbox"/> Agree <input type="checkbox"/> Strongly Agree
Comments:

10. List the top one to three ideas you have for encouraging the management, staff, and pilots to consistently support safe flying.	
I would like to participate in setting this up	Describe your idea(s) below
Y / N	1.
Y / N	2.
Y / N	3.

Comments about implementing a more formal approach to managing safety here:

A. Describe your role or position here: (check all that apply)
<input type="checkbox"/> Student <input type="checkbox"/> Rental Customer <input type="checkbox"/> Flight School Staff <input type="checkbox"/> Other (describe below)
Comments:

B. How long have you been a pilot?
<input type="checkbox"/> 0 – 3 years <input type="checkbox"/> 3 – 5 years <input type="checkbox"/> 5 – 10 years <input type="checkbox"/> 10 or more years <input type="checkbox"/> Not Applicable
Comments:

C. How many hours of total time as a pilot do you have?
<input type="checkbox"/> 0 - 100 <input type="checkbox"/> 100 – 500 <input type="checkbox"/> 500 – 1,500 <input type="checkbox"/> 1,500 – 3,000 <input type="checkbox"/> 3,000 – or more
Comments:

D. How long have you been employed here?
<input type="checkbox"/> 0 – 1 years <input type="checkbox"/> 1 – 3 years <input type="checkbox"/> 3 – 5 years <input type="checkbox"/> 5 or more years <input type="checkbox"/> Not Applicable (not employed here)
Comments: