

Safety occurrences student perceptions regarding failures to report

Brian G. Dillman
Purdue University

John Voges
Southern Illinois University Carbondale

Michael Robertson
Southern Illinois University Carbondale

Abstract

Flight operations in general and flight training operations specifically must maintain safe operating environments. A key ingredient to the success of any safety culture is the need for information about unsafe events, activities, or potentially hazardous operations. Critical flight operation information must flow to flight managers and safety officers. This is essential if they are to make appropriate responses to individual events or observe trends which might speak to systemic issues needing addressed. On occasion, participants in or witnesses to unsafe or potentially unsafe circumstances fail to communicate the information that is vital to maintaining the continuity of the safety culture. The purpose of this paper is to discuss the perceptions of students in relation to voluntary reporting systems and the potential reasons for failing to file safety occurrence reports. The study population consisted of 254 students from the Aviation Program's at Purdue University and Southern Illinois University Carbondale. This study used a survey with eighteen questions based on a Likert-type scale to determine the perceptions of those students. The results of the study found that a lack of time, ridicule from others and embarrassment from peers were among the primary reasons for not submitting safety occurrence reports.

Keywords: Safety Occurrences, Flight Training, Self Reporting, Safety Program

Safety Observations

Many activities that depart from what might be considered “normal” operations typically filter to a safety officer via many avenues. They may come from eyewitness accounts from other pilots, they might be generated by ATC personnel, or they can originate with flight line and other program personnel. On occasion this information might even come from the general public. While these more typical paths of information provide some glimpse of the nonstandard activities which actually occur, these reported abnormal operations are only the tip of the iceberg.

Many institutions such as Southern Illinois University Carbondale and Purdue University have established reporting programs much like NASA’s Aviation Safety Reporting System (ASRS) to help improve the safety of their training operation. While these programs are effective, much like the ASRS system their success is dependent upon the willingness of the respondents to “tell on themselves” and their perceptions of treatment of confidentiality.

It is this dependency on the willingness, or lack thereof, of individuals to report a safety observation that is the main focus of this paper. There are many possible reasons for failing to provide this vital information to persons charged with gathering these safety observations; fear of punishment, lack of management support, lack of feedback communication, lack of a priority towards safety, and a different perception as to what is considered “safe” and “unsafe” just to name a few.

Fear of Punishment

There has to be a certain level of trust inherent to a safety reporting system. This foundation of trust is embedded in the assurance that the information gathered will not be used against the reporter and that it will be utilized for the prevention of future occurrences. While investigating the role of safety climate and communication in accident interpretation, Hofmann and Stetzer (1998) found that there are fundamental predispositions which can guide parties charged with investigating organizational accidents to likely lay the blame on workers. It is this potential for blame that Naveh, Katz-Navon, and Stern (2006) found was mainly attributable to the lack of safety reports when investigating medical treatment error reporting. Without protection from prosecution or the assurance of anonymity, it is possible that up to 85% of all safety deficiencies, which are related to unsafe behavior, may not be reported (Nielsen, Carstense, & Masmussen, 2006).

Management Support

It is clear that high quality safety reporting is integral to an overall Safety Management System (SMS). Nielsen, et Al. (2006) found that a successful implementation of an incident reporting scheme was followed by a decline in the incidence of major incidents at a Danish metal plant. A key factor in implementing the scheme was top management commitment, which was lacking at another plant, where the implementation of a similar scheme failed. Other industries which share aviation’s high commitment and responsibility to safety have recognized the need and value of such reporting and management systems. The nuclear power industry has moved to employ similar data collection along with comparable efforts by the maritime and medical communities (Connell, 2004). With such high stakes, effective organizational implementation and support is vital to the success of a safety reporting system. Achieving this outcome requires

more than a memo or letter in a handbook that states the importance of safety. According to Huntzinger, (2007, p. 55) “The message is obvious. Senior Management commitment [to safety] goes beyond writing a check or some other hands-off action”. It takes dedication of time and continued public statements emphasizing the expectations and necessity with an emphasis on safety reporting.

Feedback Communication

Communication is vital to the success or failure of a safety reporting system. When personnel perceive that safety information is available, they may conclude that safety may be candidly discussed. The feedback loop faces twin challenges. These are the effort to get sufficient reporting participation and the development of an adequate response system. Feedback to reporters is believed to influence participation levels. Belief by reporters that the information is actually used assures them that the time taken to file a report is worthwhile. Reporters need to perceive a benefit for reporting (Kohn, Corrigan and Donaldson, 2000). Consequently, their willingness to report should be higher because it is the norm to openly confer about safety issues (Naveh, et Al. 2006). Naveh, et. Al. also determined that in the absence of a forum for frank discussion, silence prevails and errors tend to be concealed. Even when the reports are filed, the perception can be skewed and shifting blame occurs in an effort to prevent punishment. Hofmann and Stetzer (1998) found that even though respondents in one experimental condition received clear information indicating that a worker was the cause of an accident, if they were workers in teams where open and upward communication regarding safety was not encouraged, they were less willing to place the fault with a co-worker. For this reason, communication about the safety reporting system in conjunction with open dialogue and appropriate feedback is absolutely necessary for both the number and accuracy of safety reports. (feedback to the input participant needs to be timely.

Priority Towards Safety

Some fields, like aviation, require the acceptance of a certain amount of risk in order to successfully complete the required tasks. A balance must be achieved between flight operations and safety personnel. Occasionally, that balance gets skewed towards the operations side and shifted away from the priority of safety. Consequently, although the priority of safety is high, staff members are less likely to report errors if their profession dictates behavior that contradicts the priority given to safety (Naveh, et. Al. 2006). Establishing this priority ultimately resides with management which is then usually carried out by safety and operations personnel. This priority must be manifested not only in paperwork and documentation, but in words and actions.

Perception of “Safe” and “Unsafe” Acts

Various individuals are willing to accept varying levels of risk. The label of “unsafe” can be very subjective when it comes to accidents or incidents. One individual may perceive a situation as being more dangerous while another sees the identical circumstances as less dangerous. Obviously if there was an accident, there had to be a corresponding unsafe act. However, if an accident or incident was avoided, there can be the perception that an “unsafe” act did not occur. Hunter (2006) found that pilots who had been in more hazardous aviation events

tended to rate the scenarios as lower in risk, and had a more inaccurate estimate of the safety of general aviation. Specifically within the category of private pilot certificate holders, the risk perception changes with age, with younger pilots having a more accurate view of flight risk than older pilots (Hunter, 2006). The varying degrees of risk perception can effect how pilots perceive being in an undesirable situation. This could determine whether or not they would play the “what if” game and determine that they need to share what could have happened if the error chain hadn’t been broken. Morris and Moore, (2000) found that images of how a better outcome could have occurred in the past make it easier to construct images of plans for changing actions so that a better outcome will occur next time. While this may benefit the individual directly involved, it does nothing to improve the overall knowledge of every individual which is the specific goal of a safety reporting system.

Management versus Operations

The potential reasons listed herein are a few examples of why an individual would fail to submit a safety occurrence report when directly involved in a situation related to safety. While the above motives are not exhaustive, they highlight many of the critical areas where safety reporting programs often fall short. It is important to note that the perceptions of the individuals engaged in the day to day operations are the determining factors in these areas.

Statement of the Problem

Multiple safety reports at both Purdue and SIUC are received from those individuals actually involved in the occurrence. There are many that are heard about through word of mouth or from third party individuals such as Air Traffic Control, support service staff or other members of the airport community. While it is important to get this information from whatever source is possible, the data and associated causes are more easily determined through first hand knowledge. It was for this reason that an effort was made to determine the reasons as to why there was a lack of willingness to report. Are we not communicating? Are we not providing enough feedback? Is there a fear of retribution? Is there a lack of support and priority of safety by management? Is there a difference in perception of safe vs. unsafe acts? While it is likely that there could be multiple reasons for the deficiency, it was important to analyze the reasons and determine appropriate corrective actions.

Methodology

The authors designed a survey instrument to assess these student perceptions regarding failures to report a safety related occurrence. This instrument was created by the aviation safety officers of Southern Illinois University Carbondale and Purdue University. The instrument was reviewed for validity by five instructors who were employed by these programs and who were also graduates of the curriculum. The study was a joint investigative project conducted in the spring of 2006. It surveyed the students from both flight programs with flight experience ranging from 50 to 200 hours. The students ranged in age from 18 to 22 years of age and varied in certification from Student Pilot through Commercial Pilot certificates with instrument ratings. For the purpose of this paper, within the survey the terms accident and incident were used synonymously to reference reportable safety occurrences.

Completion of the survey was voluntary and was given over a period of one week to allow as many students an opportunity to complete the questionnaire as possible. In the end, 91 out of 124 potential students at Purdue University and 87 out of 130 potential students at SIUC completed the survey. This is a response rate of 73.4% and 73% respectively. The total number of reports from both universities was 179, but 9 students failed to answer all of the questions and it was determined that this omission did not accurately represent the true perceptions so those surveys were removed from the final data. In addition to the incomplete data, there were 13 reports that had contradictions in the categorical data as to whether or not they had been involved in a safety occurrence and whether or not they filed a safety report. These reports were also removed to preserve the validity of the remaining data. Therefore, a total of 157 valid reports out of a possible 254 were received which was a combined response rate of 60.2%.

Survey Results

The first three statements on the survey were utilized to determine the category that the individual respondents fell within in regards to their own personal utilization and need for safety occurrence reports. The first statement was, "I have had a safety related occurrence and did not self report." Of the 157 respondents, 50 identified this as a true statement which accounts for 32.7%. The second statement was, "I have had a safety related occurrence and did self report." Of the 157 respondents, 28 identified this as a true statement which accounts for 18.3%. The third and final categorical statement of the survey was, "I have never had a safety related occurrence." Of the 157 respondents, 85 identified this as a true statement which accounts for 55.6%. Of the 157 respondents, there were 6 that had been involved in safety occurrences on multiple occasions, and they had reported some while kept others to themselves which accounts for the previous percentages totaling more than 100%.

Following the categorical information, there were eighteen questions based on a Likert-type scale to determine the perceptions of students in regards to reasons for submitting or failing to submit a safety observation. For the purposes of this paper, we focused on the 50 students that had been involved in a safety occurrence for which they did not complete a safety report and the corresponding perceptions that could shed some light on why the report was not submitted. This data can be found in the following tables and it is also contained in Appendix A.

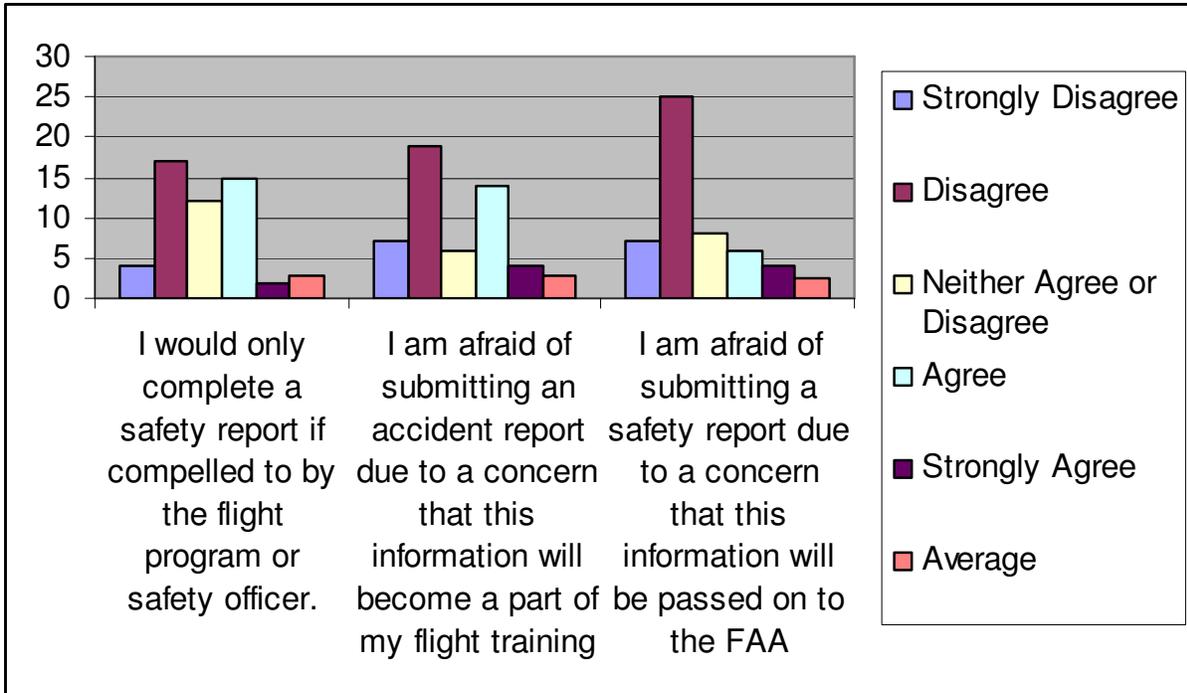
In addition to the Likert-type questions, there was an opportunity to complete an open ended section where students could give their perceptions in their own words. Again this data was limited to those 50 students that had been involved in a safety occurrence but failed to fill out a report informing anyone of the event.

The data revealed that student's tendencies to report were influenced in part from factors associated with the time, energy and effort involved in completing the document and that effort to follow through with the report was relational to the significance of the event itself. An additional area of concern for these students was how they might be perceived in the program by their peers, other students, instructors, faculty and authorities. These points are illustrated by the following representative comments.

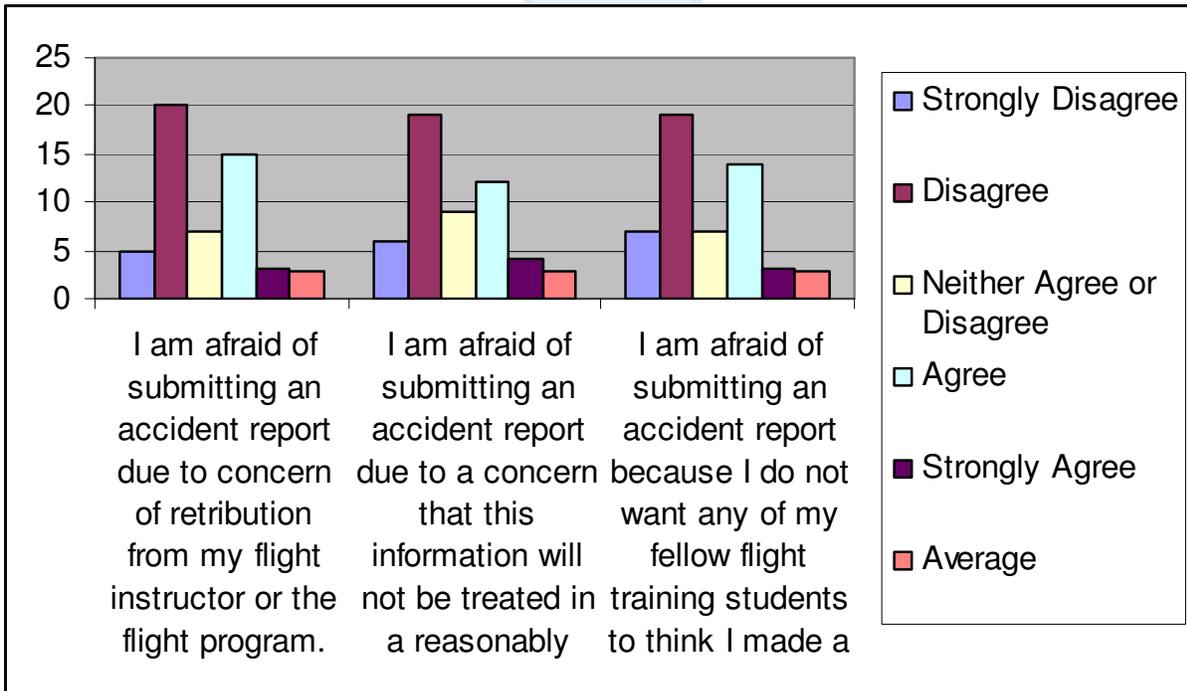
- Shame. I knew I did something wrong and I am disappointed. I know I will learn from my mistake and never do it again.

- I don't believe that people are really "afraid" to write reports, rather they simply forget or don't have time. Perhaps signs on the wall or any type of reminder may help people to report incidents
- If it were a serious mistake, I think that reporting it would bring too much unwanted attention/concern
- When something related to safety happened, I was usually in the air and forgot about it by the time I got back and landed
- Safety Meetings - know that you'll be an outcast
- Basically, I didn't think about it. I know what to do to take my own safety measures about the incident, but didn't think about the report.
- Basically, I don't remember by the time I get back to the ground or I'm pressed for time. Usually I don't find the minor incidences worth reporting
- Usually after a flight I am trying to catch the bus and try to hurry out of there and just completely forget about filling out a safety occurrence. Usually I just don't remember to do it.
- I think that many times I feel that the occurrence was minor and could have been avoided simply by me being more attentive. Most of my slots this semester I have felt safe and that there were few if any incidents, though in past semesters there have been, but I always forget once I got on the ground. And I feel like a ninny to be telling about everyone else's errors when I know I still make many myself
- I Forgot
- Most of the times, when I've seen a reportable occurrence, I simply forgot that the safety report was there. It would help if the forms are in a more visible location, or a large sign such as "Have you seen something that compromised safety today?" on the door to the hangar. In the future, I will report things, just in the business of the day I tend to forget that things exist.
- For the most part I did not fill one out simply because I forgot about them, and nothing strikingly dangerous happened
- Another reason why I haven't filled one out is because I was too lazy to go get one. Also just don't think about it. Try moving from Safety Officer's door to exit of Hangar. Easier access and also would be a constant reminder
- I was present when a student went off the runway and an instructor saw what had happened and his remarks were very rude and basically his conclusion was the student was an idiot. Also during night flight an incident occurred while another instructor was on duty. The person that made the report wanted to remain nameless, but the instructor wanted this person to confront the student face to face in his office. This program has a huge problem in that area and I am afraid to ever report anything
- I thought that this survey was very helpful and that these questions are very important for students to really think about and understand

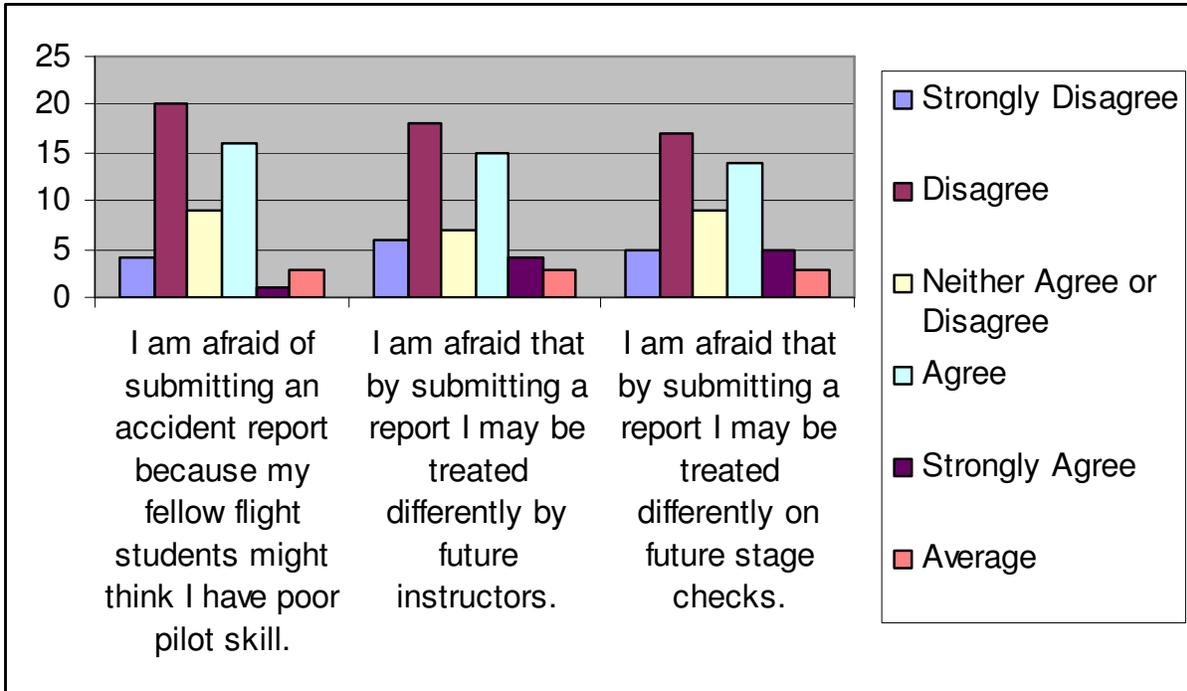
Questions 1 - 3



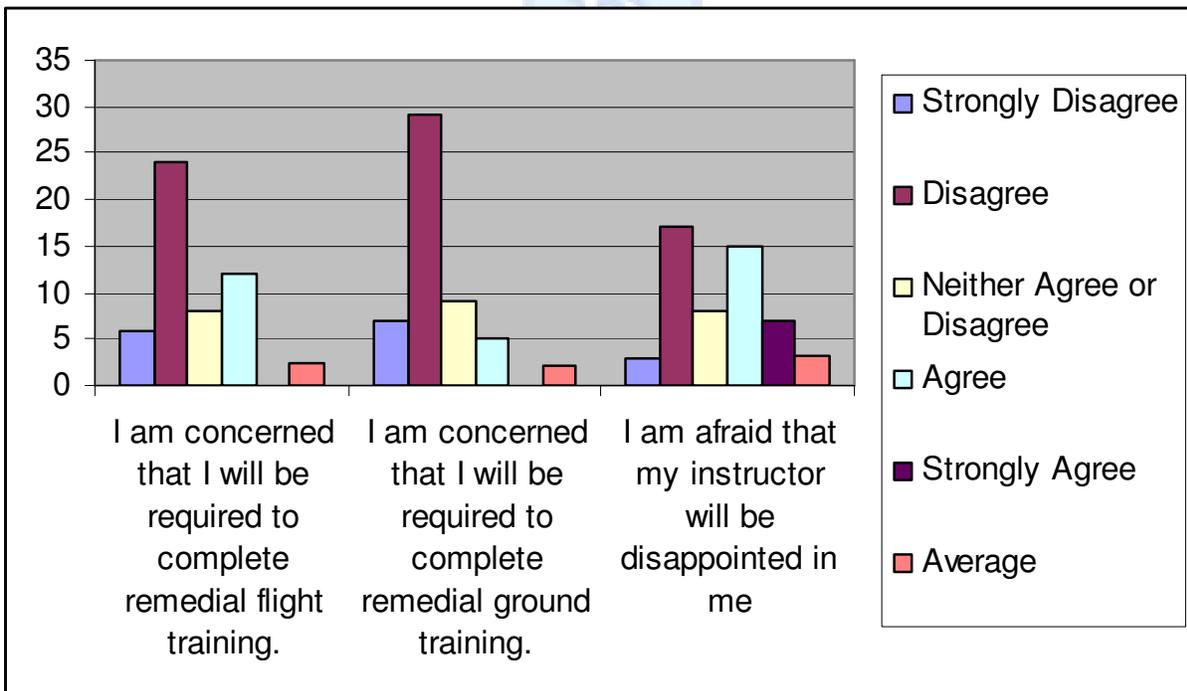
Question 4 - 6



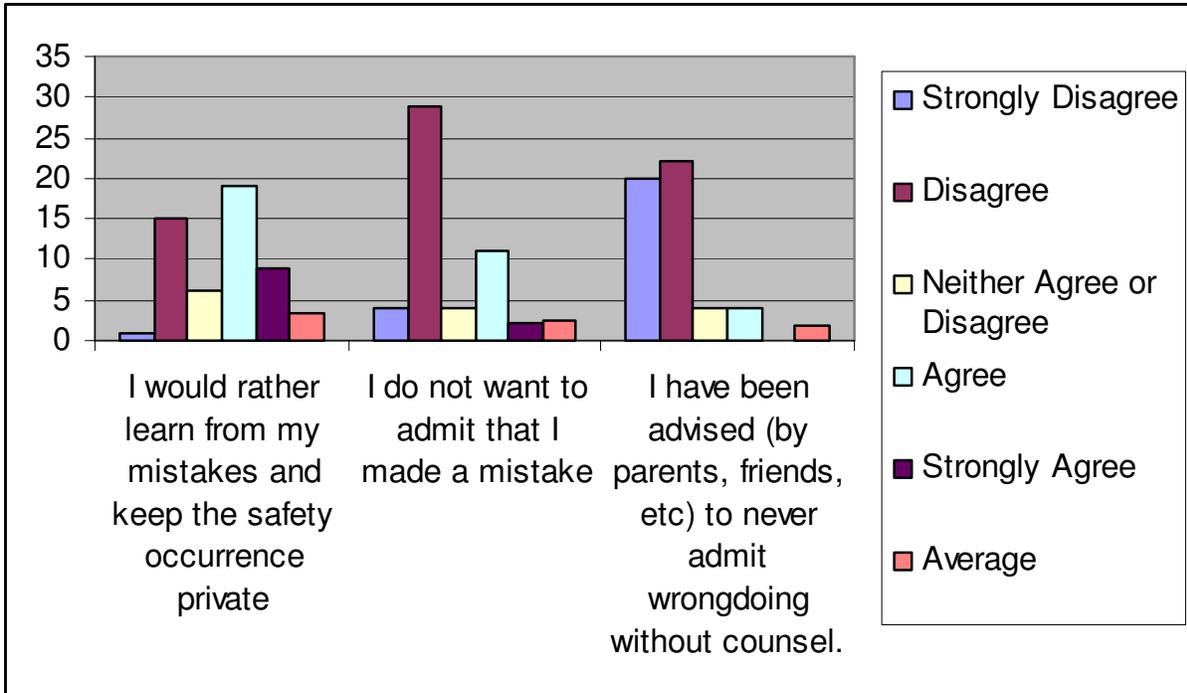
Question 7 - 9



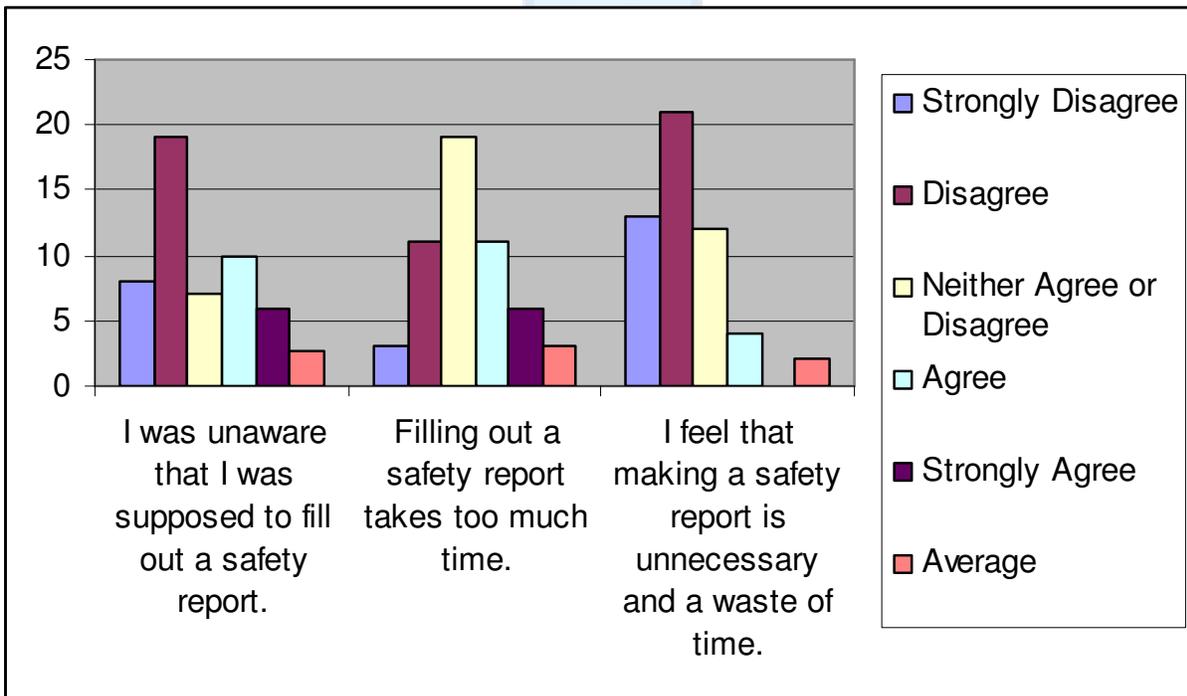
Question 10 - 12



Question 13 - 15



Question 16 - 18



Discussion

The data from the Likert-type questions revealed a bell curve of data. There were no conclusive results drawn from those survey questions other than some general observations and to point out that there are a few individuals that will be hard to reach. It is important to mention that in any organization there will be the perception by a few that it is in their best interest to keep any errors or potential errors to themselves for fear of punishment. On average there were 20 respondents that either agreed or strongly agreed that there could potentially be repercussions from self-reporting data. It is also significant to note that 28 respondents either agreed or strongly agreed that they could learn from their mistakes but they wanted this knowledge and this experience to be a private matter. The psychology that impacts a person's desire to learn quietly from their own mistakes is understandable. Lessons learned in this manner will be lessons lost to others and the program as a whole under similar circumstances.

Respondents showed a sense of confidence that they would not be required to complete additional flight or ground training by self reporting. Additional training would imply additional cost to the student. If it is perceived by the student that an economic consequence would be self induced it is likely that self reporting would be suppressed. There was a strong reflection in the data that showed students were not being advised by friends or family to never admit when they have done something wrong. In fact, 42 of the 50 respondents used for this study reflected that they disagreed or strongly disagreed that they had been counseled in such a manner. It is expected that if individuals have been exposed by familial example or peer pressure to conceal behavior, self reporting again would be unlikely.

It is important to strive towards a perception from all individuals that the flight department can be trusted and it is in the best interest of those currently flying to be proactive in being open to discussing errors and potential areas for safety improvement. It is also important to note that although the data was not collected, several of these respondents were freshmen and have only been involved in the flight program for a very short time. It takes time to build trust between administration and line personnel (students) and this could potentially account for those respondents that did not feel comfortable divulging their errors.

The most interesting results came from the area where students could share their open opinions. Three main themes appeared from this section; the lack of time and availability to fill out a safety report, the potential embarrassment and/or ridicule from others and the few instances where insensitive individuals that do not handle safety occurrences in a respectful and professional manner who are in positions of authority can do significant damage to the image and reputation of a safety program trying to create an open culture for safety advancements.

There were several responses to the fact that there was a need for ease of access to the reports, there was a lack of time after returning from a flight to fill out a report, and the fact that there was too much time between when the event occurred and when the student would have the opportunity to fill out the report. All of these circumstances led to the individuals either forgetting about the event or forgetting some of the details. At both Purdue and SIUC the safety reporting forms are paper based and creating multiple reporting methods may be one way to enable students to more easily contribute their observations and thoughts. Phone messages, active questioning, routine forms to be filled out after each flight, online forms, and face to face opportunities are all potential areas for improvement.

Peer pressure and the effects of gossip and rumors in an organization should not be underestimated. Students are very aware of how their activities are being observed and scrutinized by others. Some students responded that they were concerned with how they would

be viewed by fellow students, instructors or flight school managers if they were to disclose they made a mistake. Respondents mentioned terms like “shame” and “embarrassed” when describing how they might be perceived if the details of substandard performance were to come out.

In regards to those insensitive individuals in positions of authority, it is important to create a standardized format for addressing safety concerns such that it is done fairly and professionally. While those individuals that are zealous in their efforts to weed out erroneous behavior may have good intentions, it can do significant damage to the overall efforts in establishing and maintaining a safe program. On the occasions when this occurs, it is important to openly and publicly discuss the correct ways to handle situations where an error is made. There must be a certain amount of damage control that occurs to prevent the perception of lack of caring and a combative atmosphere. A private and public apology must be made to those involved and a serious commitment must be made to try and prevent a similar event from occurring.

Conclusions and Recommendations

Establishing positive perceptions of a safety reporting system is a hard fought and continual effort that is vital to the success of a flight program. It is beneficial to all parties involved and must be of the utmost importance in order to be proactive rather than reactive in flight training. As mentioned previously, this success is dependent upon management support and a priority to develop a safety culture within an organization as well as the flow of information to its managers. That success will vary in direct correlation to the extent that reporting systems do not impede and moreover enhance self reporting. Key to this success is the how the system is perceived by its users. It is essential for the integrity of a safety reporting system to have at its core an enlightening climate. Just as importantly, this climate must be perceived that its primary purpose is to identify areas for improvement and promote corrective actions that is by design constructive and not punitive.

There is always room for improvement and it is important to periodically evaluate student perceptions of the safety program. Surveys such as these can be beneficial in getting baseline data in which to base further investigations. It is important to note more than 50% of the total respondents to this survey at both Purdue and SIUC did not perceive that they had an occurrence. While this at face value is reassuring, given the issues of inexperience, trust and differentials in reporting systems, further exploration is warranted. As a follow-up to this study, the authors plan to pursue one-on-one interviews with a random sampling of students within the program to obtain more qualitative data for future analysis. The authors further recommend additional studies to sample students at other flight training institutions as well as other aviation industry operators to expand the survey populations. It is difficult to reduce student perceptions of safety reporting systems down to numbers and percentages when the really good information is contained within open-ended questions and face-to-face dialogue.

References

- Connel, L.J., (2004) Cross Industry Applications of a Confidential Reporting Model. *NASA ASRS (pub. 62)*. Retrieved January 18, 2007, from <http://asrs.arc.nasa.gov/publications/research.html>
- Huntzinger, D. (September, 2007) SMS, Arriving for Keeps: *Business and Commercial Aviation*, 101 (3), 54-59
- Hofmann, D.A., Stetzer, A. (1998) The Role of Safety Climate and Communication in Accident Interpretation: Implications For Learning From Negative Events. *Academy of Management Journal*, 41 (6), 644-657.
- Hunter, D.R. (2006) Risk Perception Among General Aviation Pilots. *The International Journal of Aviation Psychology*, 16 (2), 135-144.
- Kohn, L.t, Corrigan, J.M., & Donaldson, M.S. (Eds.) (2000). To Err is Human: Building a Safer Healthcare System. *Institute of Medicine, National Academy Press*. Chapter 5, 86-108.
- Morris, M.W., Moore, P.C. (2000) The Lessons We (Don't) Learn: Counterfactual Thinking and Organizational Accountability After a Close Call. *Administrative Science Quarterly*, 45 (4), 737-765.
- Naveh, E., Katz-Navon, T., Stern, Z. (2006) Readiness to Report Medical Treatment Errors: The Effects of Safety Procedures, Safety Information, and Priority of Safety. *Medical Care*, 44 (2), 117-123.
- Nielsen, K.J., Carstensen, O., Rasmussen, K. (2006) The Prevention of Occupational Injuries in Two. *Medical Care*, 44 (2), 117-123.
- Voges, J., Dillman, B.G. (2006). [Survey of current aviation flight majors at Purdue and Southern Illinois University - Carbondale]. Unpublished raw data.

Appendix A

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Average
I would only complete a safety report if compelled to by the flight program or safety officer.	4	17	12	15	2	2.88
I am afraid of submitting an accident report due to a concern that this information will become a part of my flight training record.	7	19	6	14	4	2.78
I am afraid of submitting a safety report due to a concern that this information will be passed on to the FAA	7	25	8	6	4	2.5
I am afraid of submitting an accident report due to concern of retribution from my flight instructor or the flight program.	5	20	7	15	3	2.82
I am afraid of submitting an accident report due to a concern that this information will not be treated in a reasonably confidential manner.	6	19	9	12	4	2.78
I am afraid of submitting an accident report because I do not want any of my fellow flight training students to think I made a poor decision.	7	19	7	14	3	2.74
I am afraid of submitting an accident report because my fellow flight students might think I have poor pilot skill.	4	20	9	16	1	2.8
I am afraid that by submitting a report I may be treated differently by future instructors.	6	18	7	15	4	2.86
I am afraid that by submitting a report I may be treated differently on future stage checks.	5	17	9	14	5	2.94

I am concerned that I will be required to complete remedial flight training.	6	24	8	12	0	2.52
I am concerned that I will be required to complete remedial ground training.	7	29	9	5	0	2.24
I am afraid that my instructor will be disappointed in me	3	17	8	15	7	3.12
I would rather learn from my mistakes and keep the safety occurrence private	1	15	6	19	9	3.4
I do not want to admit that I made a mistake	4	29	4	11	2	2.56
I have been advised (by parents, friends, etc) to never admit wrongdoing without counsel.	20	22	4	4	0	1.84
I was unaware that I was supposed to fill out a safety report.	8	19	7	10	6	2.74
Filling out a safety report takes too much time.	3	11	19	11	6	3.12
I feel that making a safety report is unnecessary and a waste of time.	13	21	12	4	0	2.14