Society of Aviation and Flight Educators

Pilot Training Reform Symposium

Preliminary Report

June 6, 2011

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Acronyms

AC	Advisory Circular
ADM	Aeronautical Decision Making
AOA	Angle of Attack
AOPA	Aircraft Owners and Pilots Association
ASI	Aviation Safety Inspector
CFI	Certificated Flight Instructor
CPE	Continuing Professional Education
CPTP	Civilian Pilot Training Program
DPE	Designated Pilot Examiner
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FIRC	Flight Instructor Refresher Clinic
FITS	FAA/Industry Training Standards
GA	General Aviation
GAJSC	General Aviation Joint Steering Committee
MI	Master Instructor
NTSB	National Transportation Safety Board
PTS	Practical Test Standards
SAFE	Society of Aviation and Flight Educators
SAT	Safety Analysis Team
SBT	Scenario based training
SRM	Single Pilot Resource Management
TCO	Training Course Outline

I. Executive Summary

The Society of Aviation and Flight Educators (SAFE) conducted a Pilot Training Reform Symposium in Atlanta, Georgia, on May 4–5, 2011 to highlight the importance of effective pilot training in order to reduce the general aviation fatal accident rate and to promote industry growth. The symposium attracted 148 leaders and educators from the general aviation training community. These individuals represented manufacturers, training providers, courseware providers, insurers, academia, the Federal Aviation Administration (FAA), and other stakeholders in this community.

The first day of the symposium consisted of six panels established to demonstrate the need for pilot training reform and to examine the elements of our current pilot training system. On the morning of the second day of the symposium, SAFE convened six breakout groups corresponding to each of the day one panels and consisting of attendees and panelists. The breakout groups brainstormed issues on their respective topics and crafted recommendations to address deficiencies. The breakout groups reported out on their recommendations to a symposium plenary session, then listened to a symposium keynote address from FAA Administrator Randy Babbitt followed by an industry leadership panel discussion.

The six breakout groups were tasked with generating five recommendations for reforming pilot training. The original recommendations are documented in Appendix B. The recommendations included some duplication across the break out groups, and in some cases recommendations were incomplete. With only three hours available to brainstorm, document, and agree on meaningful recommendations, SAFE was impressed with the resulting quality of thought and recommendations that came from this effort. To further ensure that the recommendations remain intact while representing a consistent framework for reform, SAFE has consolidated the thirty recommendations into six actionable and specific projects that can be identified, acted on, and tracked by appropriate organizations and entities. These six project proposals address accident root cause analysis, flight review improvements, doctrine and standards modernization, flight instructor training and testing improvements, flight instructor accreditation by industry, and curricula improvements, and are contained in Appendix A.

For the most part, the changes that may result from the proposed work require no lengthy regulatory change. Rather, they may be implemented via changes in policy, publications, and procedures. SAFE believes that implementation and reform in a timely fashion is critical to the future of general aviation. Moreover, it is important to acknowledge that these six projects do not constitute the whole of pilot training reform. Instead, these projects represent the beginning of a multi-year process that likely will branch off into other projects necessary to effect reform.

SAFE will transmit this report to those organizations identified in the project proposals. SAFE requests a reply from those organizations by September 30, 2011, that outlines their responses to the proposals and how they will act on them. SAFE will issue a progress report on the status of the proposals after all of the organizations have responded, but no later than December 31, 2011. SAFE may issue a further progress report at a later date to document the impact of implemented proposals.

The ultimate outcomes SAFE and other stakeholders seek—reduced fatal accidents and industry growth—can only be measured over an extended time period and only if the products and outputs from the projects proposed herein are widely adopted by the general aviation community. This will likely require a cultural change in the community with regard to safety and especially attitudes toward risk management.

II. Symposium Origin and Purpose

In August 2010, several SAFE members discussed the current state of the general aviation industry with respect to safety, but especially to fatal accident rates, economic health, and student pilot starts and retention. These individuals concluded that the trends in these areas were not healthy. For example, the fatal accident rate had stagnated for a decade following sixty years of slow but steady reductions. Student pilot starts and retention rates had decreased precipitously, a trend that began thirty years ago.

During expanded discussions within SAFE, the organization's leadership concluded that the general aviation pilot training system itself was a major factor influencing the above trends. These individuals and other stakeholders believe that the current pilot training system could be improved in a manner that would address fatal accident causality, while stimulating increased student pilot starts and retention.

After further discussion, these individuals proposed to the SAFE board of directors that the organization sponsor a pilot training reform symposium that would begin to address these issues, propose constructive solutions, and catalyze industry and government entities to collaborate on such solutions over the long term. The initiative was approved in the fall of 2010. At a press conference at the Aircraft Owners and Pilots Association (AOPA) Summit in Long Beach on November 11, 2010, SAFE announced that it would chair a pilot training reform symposium in Atlanta on May 4-5, 2011.

The day before the SAFE press conference, AOPA announced the creation of its Flight Training Student Retention Initiative, conducting a one-day seminar to explain the initiative to industry representatives and to solicit input from them. Many SAFE officials and members participated in this invitation-only seminar. Unlike the SAFE effort, the AOPA initiative is not focused on safety issues, but rather on stimulating growth through changes in the pilot training system. Though the AOPA and SAFE initiatives are complementary, SAFE believes that the safety issue plays a vitally important role in attracting and retaining student pilots, thereby stimulating industry growth. This is particularly true with regard to what many term the "latent" market, i.e., those people who may be interested in learning to fly, but are apprehensive about general aviation's safety record.

SAFE structured the symposium to address the symptoms of distress, safety, and decreased growth, as well as the components of the training system that needed to be changed, including doctrine, standards, curricula, and instructors.

III. Background

The general aviation fatal accident rate has been stagnant for over a decade. After decreasing 76 percent in the thirty-year period 1939-1969, and decreasing another 55 percent during the period 1969–1999, the rate has crept up 15 percent for the ten-year period 1999–2009. The fatal accident rate for general aviation is roughly two orders of magnitude greater than that of scheduled airlines. Yet the airline industry achieved a further reduction totaling 80 percent in their already low accident rate during the period 1997–2009. This was accomplished primarily through non-regulatory means that emphasized industry and government collaboration.

The general aviation safety record indicates that between 75 and 90 percent of all accidents are related to pilot causes and factors. While National Transportation Safety Board (NTSB) causes and factors may vary, many in industry believe that they do not accurately pinpoint the root causes of most general aviation accidents. For example, many believe human factors issues, rather than deficiencies in physical piloting skills, predominate in fatal accidents. A weak safety culture, hazardous attitudes, and poor application of higher order pilot skills such as risk management are also likely contributing factors.

While the fatal accident rate has stagnated, the number of people entering general aviation has declined sharply. In the thirty-year period 1979–2009, the number of student pilot starts (a key indicator of new entrants) declined 60 percent. New private pilot certificates issued (a key indicator of training completion) declined 75 percent. General aviation hours flown (a major barometer of ongoing general aviation activity) decreased 42 percent during this same period.

The general aviation pilot training system is a major factor influencing both fatal accident causality and student pilot starts and retention. The current pilot training system has its roots in the Civilian Pilot Training Program (CPTP) created and operated back in 1939–1941. Despite the name, that program's purpose was to create a reservoir of trained pilots to serve exigent military requirements. The program was not created to prepare pilots to use general aviation aircraft for personal or business use in our National Airspace System.

The training doctrine developed to serve the CPTP was maneuvers-based, emphasized rote instruction to pass knowledge and practical tests, and was instructor-centric. Despite some significant recent improvements in training doctrine, today's pilot training system continues to operate much in the same manner as the CPTP.

Newer training concepts and doctrine have emerged in recent years, however. These include scenario-based training, emphasis on higher order pilot skills such as risk management, and student-centered instruction. Both the airlines and the military have steadily moved in this direction; although a few innovative training providers have followed suit, general aviation has largely failed to embrace these and similar concepts.

IV. Symposium Organization and Activities

SAFE structured the pilot training reform symposium to address key indicators of general aviation distress and the elements of the pilot training system itself.

Two areas of distress vis-à-vis the pilot training system were addressed:

1. Safety: This included issues affecting and influenced by the current training system such as risk management.

2. Growth: This included issues influencing the appeal or lack of appeal of the training system such as curricula and instructor effectiveness.

The symposium also examined the four core components of the training system to identify aspects in need of reform in order to become more effective:

3. Doctrine: This includes "what" we teach and "why" we teach it. Doctrine primarily encompasses handbooks and other documents issued by the FAA, but industry participates in their development and sometimes issues its own doctrine.

4. Standards: This includes both the FAA knowledge tests and practical test standards (PTS). These standards drive how training is structured and conducted.

5. Curricula: This is the "how, when, and where" of pilot training and includes syllabi, training vehicles, setting, and other elements of the delivery system. Unlike doctrine and standards, FAA actually has a lesser role in curricula development, although it does become involved in curricula approval for pilot schools and training centers.

6. Aviation Educators: This is the all-important "who" of the pilot training system and includes flight and ground instructors and other educators who are responsible for integrating the other training elements and for representing the training system to the customers.

The first day of the symposium consisted of panels of industry experts that addressed the above six areas. On the second day of the symposium, breakout groups were convened for each of the six issues. The breakout groups spent the morning considering the previous day's presentations, adding their own analyses and perspectives, brainstorming solutions to the issues identified, and then crafting recommendations. They then reported out on the recommendations to a plenary session of all attendees. The symposium concluded with a keynote address by FAA Administrator Randy Babbitt and an industry leadership panel. Symposium presentations and proceedings are available at the symposium web site, www.PilotTrainingReform.org.

V. Planned Post-symposium Activities

SAFE intends to make the symposium recommendations the centerpiece of its ongoing efforts to stimulate collaborative industry/FAA action to reform pilot training in a manner that will reduce the general aviation fatal accident rate and stimulate student pilot starts and retention. To accomplish this, SAFE plans the following post-symposium activities:

1. Review symposium recommendations and other input: SAFE completed this process as of May 20, 2011. Appendix A of this report includes SAFE's consolidated report recommendations in the form of six executable, collaborative project proposals. The original thirty recommendations from the six breakout groups are tabulated in Appendix B. Supplementary recommendations and suggestions from the symposium website and other sources are contained in Appendix C.

2. Complete draft report and transmit to organizations for response: SAFE intends to accomplish this no later than June 15, 2011. As a result of the broad scope of the original recommendations and SAFE's consolidation into six major projects, SAFE will transmit the report to a broad cross-section of stakeholders that it believes are in a position to implement the recommendations, including general aviation organizations, the FAA, and the media.

3. Obtain responses: SAFE will request responses to the six consolidated projects listed in Appendix A from the organizations by September 30, 2011. Organizations will be able to reply using one of the following four options:

   a. Agree and describe how the organization will implement proposed actions,

   b. Disagree and explain why,

   c. Offer alternative proposals, or

   d. Suggest another organization(s) as more appropriate to execute the project.

4. Publish responses: SAFE will publish a consolidated list of the responses to our report transmittal, tentatively scheduled by December 31, 2011.

5. Follow on action: SAFE expects that the ultimate work undertaken to execute the projects will be accomplished by existing industry/FAA entities such as the General Aviation Joint Steering Committee (GAJSC); the FAA itself; ad hoc groups, alliances, or coalitions of industry organizations; and individual stakeholders.

6. Follow-on report: SAFE plans to issue a summary progress report, tentatively scheduled by June 30, 2012, describing the projects that are underway in industry and FAA to address the symposium recommendations, as well as actions that have already borne fruit. For example, a number of stakeholders have already made online training syllabi freely available to students and instructors per a recommendation from the Aviation Educators group.

Appendix A. Consolidated Symposium Recommendations

The Pilot Training Reform Symposium breakout groups generated thirty recommendations addressing safety, industry growth, doctrine, standards, curricula, and aviation educators. Each of the six groups reported out on their five top recommendations either to reduce fatal accidents, or to increase student starts and retention, or to serve both goals.

SAFE consolidated the thirty recommendations into six specific projects that can be acted on and implemented by FAA and/or industry groups. It is important to note that these projects can be achieved by non-regulatory FAA and industry actions, with an emphasis on correlation with accident root cause analysis, impact on the current pilot population as well as new entrants to general aviation, and implementation in a reasonable time frame.

Although SAFE did not want to lose the goals contained in the individual recommendations, we wanted to avoid duplication to ensure that scarce industry and FAA resources are properly and efficiently allocated, while still allowing symposium attendees to clearly see how their recommendations are being acted on. Thus the six projects incorporate all of the breakout group recommendations as individual elements. SAFE believes such consolidation offers the best means for accomplishing the objectives contained in the various recommendations.

The general aviation pilot training system is a crucial element that influences fatal accident causality, student pilot intake and retention, and the activities of the current pilot population. Accordingly, the following proposals focus on new pilot trainees, existing pilots, and the flight training community as a whole:

1. Conduct a thorough general aviation fatal accident root cause analysis to pinpoint underlying accident causality as a means to create effective remedial actions.

2. Create a new flight review option that can be enabled as an FAA-sponsored pilot proficiency award program.

3. Revise FAA doctrine and standards to implement scenario-based testing, risk management, and other higher order pilot skills.

4. Modify flight instructor doctrine, initial testing, and renewal procedures to include the teaching of higher order pilot skills.

5. Implement voluntary flight instructor professional accreditation programs and continuing education that emphasize higher order pilot skills, scenario training, and interpersonal relationship skills.

6. Create and implement model curricula that incorporate higher order pilot skills, scenario-based training, and integration of simulation and other teaching methods to include interpersonal relationship skills.

SAFE notes that Proposal 1 assumes leadership by the GAJSC, an entity co-chaired by FAA and industry. Proposals 2 thru 4 must be led by FAA with strong industry participation and vetting through the GAJSC. Proposals 5 and 6, on the other hand, must be industry-led with appropriate FAA liaison.

To facilitate correlation between the six distinct projects and the original recommendations made by the various breakout groups, we have employed the following referencing system:

Safety:	SAFE R1-R5
Growth:	GROW R1-R5
Doctrine:	DOCT R1-R5
Standards:	STAN R1-R5
Curricula:	CURR R1-R5
Educators:	EDUC R1-R5

The original recommendations from the symposium breakout groups are included in Appendix B.

SAFE received additional suggestions for pilot training reform through the symposium website, via e-mail, and from other sources. Since these recommendations were not vetted by the breakout groups, they are reported separately in Appendix C for information only. They have not been correlated with the proposed projects in Appendix A; however, SAFE will ensure that they are ultimately transmitted to appropriate organizations for consideration and possible action.

SAFE emphasizes that FAA participation and leadership is essential in order for pilot training reform to be effective. In particular, two FAA Flight Standards Service organizations are crucial to success: the General Aviation and Commercial Division (AFS-800) based in Washington, DC, and the Regulatory Support Division (AFS-600) based in Oklahoma City, OK. SAFE notes that the managers of these two divisions and other staff attended the entire symposium and actively participated in symposium events. SAFE also notes that FAA Administrator Randy Babbitt, in his keynote address on May 5, 2011, endorsed the purpose of the symposium and the need for collective FAA and industry action.

<u>PROJECT 1</u>: Accident Root Cause Analysis

Title: Conduct analyses to determine underlying root causes of general aviation accidents as a basis for implementing more effective mitigations

Lead/Co-lead: GAJSC and SAT

Participating organizations: Working group participation as determined by SAT.

Summary: The accident causes and factors reported by the National Transportation Safety Board (NTSB) may not accurately pinpoint the root causes of general aviation fatal accidents. This may result in mitigations that are not fully effective or that possibly could be counterproductive. A root cause analysis of these accidents may reveal causes such as human factors issues, poor pilot training, and other factors that will allow FAA and industry to create better mitigations. For example, SAFE believes that poor risk management may be an underlying cause of many general aviation fatal accidents, a belief expressed by several symposium panelists as well.

Project inputs/actions: The SAT will charter working group(s) as required to analyze fatal accident data to determine the root causes of these accidents. The group(s) will issue summary reports of their findings.

Project outputs: The working group summary reports will be used to focus mitigation efforts, leading to better doctrine, standards, and other mitigations.

Expected outcomes: The re-focused efforts will ultimately result in actions by general aviation pilots that will mitigate root causes of fatal accidents and thereby prevent those accidents.

Associated Symposium primary recommendations and short titles:

1. SAFE R5 - Identify the top ten contributing and causal factors in aircraft accidents.

Timelines:

- Form SAT working groups: September 30, 2011

- Complete initial root cause analyses: June 30, 2012

- Issue summary report: December 31, 2012

- Adopt recommended mitigations: March 31, 2013

PROJECT 2: Flight Review Improvement

Title: (1) Create a new flight review option that can be enabled as an FAA-sponsored pilot proficiency award program (14CFR61.56e). (2) Revise conventional flight review guidance.

Lead/Co-lead: FAA (AFS-800) / Industry

Participating organizations: Vetted through GAJSC Steering Committee.

Summary: This project creates a bold plan for providing existing pilots with another option for complying with the flight review. This option recognizes that the large majority of fatal accidents are caused by human factors issues such as improper risk management, rather than by a failure to properly exercise physical pilot skills. The project will have the following components:

For those opting to participate in the new pilot proficiency award program:

1. Pilots will only have to complete a traditional, physical skills flight review once every four years. The physical skills review will, however, include prescribed maneuvers and procedures. The standard of completion will be contained in an appendix to the private pilot practical test standard (PTS).

2. Pilots must meet a minimum activity level of "X" flight hours per year to participate (the FAA/industry team will determine this minimum number through safety data analysis).

3. The training program within the four-year period will have prescribed annual training requirements that will consist of an online training module with specific completion standards. The content will emphasize higher order skills such as risk management, leading fatal accident causes and their remediation, and other material selected annually by FAA and industry. Most of the training module will be scenario-based.

For those pilots opting to take a traditional flight review:

1. The FAA/industry team will create a revised flight review standard starting with existing guidance material.

2. The FAA/industry team will create instructor training and standardization material and emphasize compliance with this standard.

Project inputs/actions: The GAJSC will charter a working group that will meet as required and produce draft documents for review by the GAJSC.

Project outputs:

1. Advisory circular describing/implementing the new pilot proficiency program option.

2. Revised traditional flight review guidance.

3. Additional guidance for flight instructors on conducting flight reviews.

Expected outcomes: Over time, the existing pilot population will be exposed either to better current flight reviews or a new pilot proficiency program option, and they will use this guidance to modify their flight operations to employ better risk management procedures and other higher order pilot skills. This project can only achieve long-term success through a massive FAA and industry promotional campaign and a gradual change in the general aviation culture with respect to recurrent training.

Associated Symposium primary recommendations and short titles:

1. SAFE R2 - Incentivize pilots to undertake additional training.

2. SAFE R3 - Flight reviews should be certificate-specific.

3. EDUC R3 - Improve the guidance for conducting flight reviews and incorporate it in CFI training.

Timelines:

- Form work group: September 30, 2011

- Draft AC and other guidance: June 30, 2012

- Final AC and other guidance: December 31, 2012

PROJECT 3: FAA Training Doctrine and Standards Modernization

Title: Complete the modernization of FAA training doctrine and standards

Lead/Co-lead: FAA (specifically AFS-800 and AFS-600) / Industry

Participating organizations: Industry participation vetted through GAJSC.

Summary: FAA pilot training doctrine material such as handbooks, and standards such as knowledge tests and practical test standards (PTS), undergo continuous review and revision. Current doctrine and standards, however, may not fully reflect the adequate integration of higher order pilot skills, resulting in the incomplete training and testing of pilots.

Project inputs/actions: This project creates a permanent process for providing industry input into the development of doctrine and standards. The process could take place within the framework of the GAJSC or a group chartered under the Federal Advisory Committee Act. SAFE recommends that the GAJSC charter a working group, accountable to AFS-800 and 600, that would have two purposes: (1) examining current doctrine and standards to determine high priority change requirements, and (2) recommending a permanent process for maintaining doctrine and standards that includes industry input.

Project outputs:

1. Report on needed doctrine and standards changes.

2. Report on permanent process for maintaining doctrine and standards.

Expected outcomes: Doctrine and standards that are kept current and integrated, and that address higher order pilot skills will enable better training and testing.

Associated Symposium primary recommendations and short title:

1. DOCT R2 - Establish a formal process for government and industry to update doctrine and standards.

2. DOCT R3 - Improve instructor doctrine by adding risk management training.

3. STAN R1 - Create a baseline knowledge testing standard correlating training and testing.

4. STAN R2 - Create a PTS changes committee to improve communication to AFS-600.

5. STAN R4 - Develop guidance on how to conduct effective scenario-based testing.

Timelines:

- Form working group: September 30, 2011

- Issue report on doctrine and standards changes needed: March 31, 2012

- Issue report on process for maintaining doctrine and standards: September 30, 2012

PROJECT 4: Flight Instructor Improvement

Title: Improve flight instructor training, certification, and renewal requirements.

Lead/Co-lead: FAA (specifically AFS-800) / Industry

Participating organizations: Industry participation vetted by GAJSC.

Summary: Symposium panelists, breakout groups, and attendees identified not only the flight instructor as a key element in pilot training reform, but also found deficiencies in flight instructor training, certification, and renewal. Five of the six breakout groups identified deficiencies in instructor training and qualification. This included failure to provide effective student-centered training, failure to promote a safety culture and active risk management, failure to employ best practices, failure to effectively use a syllabus, and other deficiencies. This suggests deficiencies in initial instructor training, ineffective knowledge and practical tests, and incomplete or ineffective renewal procedures.

Project inputs/actions: An FAA/industry working group will be formed to consider the three keys to producing and maintaining effective instructors: training, testing, and renewal. SAFE recommends that this working group operate in tandem with a group led by industry (see Project 5) that SAFE also recommends be formed to emphasize the professional aspects of instructor activity, i.e., those elements that exceed basic FAA certification requirements and that are more concerned with providing value to the customer/student and promoting growth in the student pilot population.

Project outputs: The working group will produce a report that addresses improvements in instructor training, testing, and renewal. This report will, in turn, generate action items that must be accomplished by AFS-800 and 600 to improve instructor doctrine and training, testing standards, and renewal processes. SAFE anticipates that these changes can be accomplished without rulemaking.

Expected outcomes: Improved instructor training, more realistic and effective testing, and more focused renewal processes to ensure that instructors remain current are crucial to implementing pilot training reform. It is especially important that instructor performance be re-focused on teaching outcomes that will reduce fatal accidents. This includes promoting a safety culture, teaching effective risk management, using student-centered training, and placing greater emphasis on scenario-based training.

Associated Symposium primary recommendations and short title:

1. SAFE R4 - Provide guidance to instructors on how to terminate students who cannot safely develop skills to exercise airman privileges.

2. DOCT R1 - Refocus training to emphasize learner-centric methods, professionalism, and a safety culture with active risk management.

3. DOCT R5 - Review instructor renewal processes to create more effective methods for active and inactive instructors.

4. STAN R5 - Improve currency and quality of independent instructors.

5. CURR R2 - Provide instructor training on risk management.

6. EDUC R1 - Create nationwide instructor special emphasis program emphasizing best practices.

7. EDUC R4 - Grant instructor renewal authority, with specific mandatory training topics, to select designated pilot examiners.

8. EDUC R5 - Change guidance and flight instructor PTS to require CFI candidates to demonstrate using a plan of action and a syllabus.

Timelines:

- Form working group: September 30, 2011

- Complete report: June 30, 2012

- FAA creates plan for implementing report recommendations: September 30, 2012

PROJECT 5: Flight Instructor Accreditation

Title: Develop a voluntary, entry-level flight instructor accreditation process that goes beyond the minimum FAA requirements and emphasizes the providing of better value to students, while improving flight instructor credibility.

Lead/Co-lead: SAFE/Master Instructors LLC and other organizations; FAA provides liaison and linkage to other flight instructor initiatives (see Project 4).

Participating organizations: Alliance of organizations and stakeholders in the flight training community (courseware providers, schools and training centers, national organizations).

Summary: Most professions have professional accreditation standards that exceed regulatory requirements. These standards emphasize the currency of the practitioner, specializations, focus on customers and clients, and other elements beyond the scope of the original licensing authority. Except for the Master Instructor (MI) program—whose participants are generally at the peak of the flight instruction profession—such a process does not currently exist for flight instructors at the entry level. Symposium panelists, breakout groups, and attendees identified the need for an entry-level professional accreditation to fill the gap between initial and master level instructors. To motivate participation in such a program, SAFE notes that participation in such an accreditation program must also ensure renewal of the FAA flight instructor certificate as is currently the case with the Master Instructor program.

Project inputs/actions: SAFE and allied general aviation organizations will form a flight instructor professionalism working group that will address this requirement. The group must also have an FAA liaison from AFS-800, and the group will coordinate with the working group managing Project 4.

Project outputs: The initial output will be a plan for establishing a voluntary, entry-level professional accreditation process similar to the current MI program, but focused on those skills needed by a working instructor who is actively providing instruction soon after FAA certification. Although technical skills and subjects will be included, this accreditation will also emphasize customer and business skills.

Expected outcomes: An emerging, effective professional accreditation process for entry-level instructors will go a long way towards addressing current deficiencies. Furthermore, the process will help with industry efforts to promote growth and will have corollary benefits by addressing safety issues that could influence the fatal accident rate.

Associated Symposium primary recommendations and short title:

1. SAFE R1 - Create a best practices advisory circular.

2. GROW R2 - Create a repository for customer service material for flight training providers.

3. GROW R3 - Courseware providers should create training modules to help CFIs develop professional customer service skills that increase customer retention.

4. GROW R4 - Promote mentoring programs for both training providers and students.

5. CURR R4 - Implement continuing professional education (CPE) for flight instructors.

6. EDUC R2 - Establish a mentoring program for instructors.

Timelines:

- Formation of working group: September 30, 2011

- Plan for establishing accreditation process: March 31, 2012

- Implementing process/entity established: September 30, 2012

- Initial training modules/program created: March 31, 2013

- Begin program operation: June 30, 2013

PROJECT 6: Curricula and Training Improvements

Title: Restructure standard industry curricula and training infrastructure to reduce fatal accidents and promote increased student starts and retention of students.

Lead/Co-lead: Industry lead (could be a committee/working group/alliance of manufacturers, courseware providers, training entities, simulation providers, academia, and others); FAA must provide a liaison, probably from AFS-800.

Participating organizations: Manufacturers, courseware providers, training entities, simulation providers, national GA organizations, academia.

Summary: Curricula development is primarily an industry responsibility. The curricula and its associated elements provide the infrastructure for the training delivery system and the essential laboratory for testing new doctrine and standards ideas. This will be an opportunity for industry to lead by example and guide the FAA in the appropriate direction. It might also be an opportunity to promulgate standard curricula that incorporate training best practices. It will also provide a leadership opportunity for the entities involved and a platform to promote their ideas and products.

Project inputs/actions: An industry-led working group will be formed to explore how curricula innovation can move forward rapidly to accelerate the pace of training reform.

Project outputs: The primary output should be a report or plan on how to restructure curricula. It should also include development of "model" curricula for various markets.

Expected outcomes: The ultimate measure of success for pilot training reform will be a mass migration by the training community to innovative curricula that provide value to students. Other benefits will include reduced fatal accidents, increased student retention and completions, and encouragement for continued participation.

Associated Symposium primary recommendations:

1. GROW R1 - Develop a delivery system/presentation that communicates the value of the GA experience.

2. GROW R5 - Focus on improvements in each phase of the pilot life cycle that will grow general aviation.

3. DOCT R4 - Simplify/modify/eliminate current FAA Industry Training Standards (FITS) program to make it easier to promote standard curricula.

4. STAN R3 - Revise guidance for use of simulation in flight training and testing to encourage its use.

5. CURR R1 - Use scenario based training to improve risk management for students.

6. CURR R3 - Emphasize load factor and angle of attack (AOA) training.

7. CURR R5 - Create guidance for the use of simulation and provide credit for use.

Timelines:

- Form curricula working group: September 30, 2011

- Produce initial report or plan for curricula innovation: March 31, 2012

- Develop initial model curricula: September 30, 2012

Appendix B. Symposium Breakout Group Recommendations

SAFE created breakout groups for each panel that presented on the first day of the symposium. This was done in order to develop consensus within the pilot training community and among symposium attendees with regard to actions that were needed to accomplish pilot training reform.

The breakout groups met on the morning of the symposium's second day. Moderators from the previous day's panels as well as SAFE volunteers facilitated the breakout group activities. In the time available, the groups discussed various aspects of their issue area and brainstormed potential solutions. They completed the process by crafting the five most important recommendations that they believed would address the pressing issues identified by their groups, and that would reduce fatal accident rates and/or increase student pilot starts and retention. Each breakout group leader then reported their group's five recommendations to a plenary session of symposium attendees.

Given symposium time constraints, SAFE believes the breakout groups were remarkably successful in identifying core issues relating to pilot training reform. SAFE recognizes that, in some cases, separately developed recommendations may overlap or even duplicate each other. There was insufficient time to generate supporting data or to craft an effective implementation strategy; consequently, SAFE chose to consolidate the report recommendations into six cohesive projects that could be implemented by identifiable industry and FAA organizations. As stated in the introduction to Appendix A, SAFE has linked the corresponding breakout group recommendations to these six projects. In addition, SAFE has archived the full report out presentations on the symposium website at www.PilotTrainingReform.org.

The following six sections in this appendix summarize the activities and recommendations for the particular breakout group:

Section	Breakout Group
B-1	Safety: Meeting Safety Challenges through Pilot Training Reform
B-2	Growth: Growing General Aviation through Pilot Training Reform
B-3	Doctrine: Flight Training Doctrine: The Foundation of Pilot Training Reform
B-4	Standards: Flight Training Standards: Raising the Bar with Modernized Pilot Training
B-5	Curricula: Flight Training Curricula: Opportunities to Re-shape the Delivery System
B-6	Educators: Perspectives from Master Instructors and Flight Instructors of the Year

Appendix B-1. Safety Breakout Group Recommendations

Safety: Meeting Safety Challenges through Pilot Training Reform

The Safety breakout group developed four recommendations that emphasized improved pilot performance through enhanced training. A fifth recommendation emphasized the need for better accident data. The main themes of these recommendations included:

- Improved flight instructor performance.

- Improved pilot recurrent training through incentives and better guidance material.

- Better guidance for instructors to use in evaluating student performance and determining their aptitude to continue training.

- Better analysis of accident causality.

All but one of the Safety breakout group recommendations assumed an implementation period of about one year and were achievable without new regulations. The recommendation regarding the flight review, however, may require FAA interpretation.

The breakout group offered the following five recommendations in support of the above themes (SAFE = Safety):

SAFE R1 – Create a best practices advisory circular to address specific areas of instructor performance.

SAFE R2 – Incentivize pilots and flight instructors to undertake additional training through various means such as the FAA Wings program.

SAFE R3 – Flight reviews should be certificate specific (this may require an appropriate interpretation of 14CFR61.56).

SAFE R4 – Provide written guidance to flight instructors on terminating training for students who are unable to develop necessary skills.

SAFE R5 – Gather additional data to identify the top ten contributing and causal accident factors.

Appendix B-2. Growth Breakout Group Recommendations

Growth: Growing General Aviation through Pilot Training Reform

The panel determined that a holistic approach to the customer was vital to producing reasonable and valid recommendations. We identified the life cycle of the customer in the following steps:

1. General Aviation Awareness (making the prospect aware of learning to fly as an option)

2. Student Pilot Recruitment (enticing the prospect to the "door" of a flight training organization and prompting enrollment)

3. Student Pilot Retention (working with the customer to stay in training)

4. Pilot Retention (working with the pilot to continue engagement and recurrent or follow-on training after the certificate is achieved).

Therefore, our first recommendation is to put this to the industry to agree on these steps in the life cycle so that we may act with a common language and direction. The next four recommendations each address a step in the life cycle with an actionable item we felt was within the scope of the participants and achievable within an 18-month timeframe. We had consensus from the group on all items, which lends validity to those recommendations.

Recommendations (GROW = Growth):

GROW R1 – Develop a delivery system/presentation that communicates the value of the GA experience.

GROW R2 – Create a repository for customer service material for flight training providers.

GROW R3 – Courseware providers should create training modules to help CFIs develop professional customer service skills that increase customer retention.

GROW R4 – Promote mentoring programs for both training providers and students.

GROW R5 – Focus on improvements in each phase of the pilot life cycle that will grow general aviation.

Appendix B-3. Doctrine Breakout Group Recommendations

Flight Training Doctrine: The Foundation of Pilot Training Reform

In the process of creating its recommendations, the Doctrine breakout group's discussion and brainstorming emphasized some common themes that should underlie pilot training doctrine. These include:

- Scenario-based training (SBT) needs to be at the heart of FAA's training doctrine. SBT concepts need to be woven through all FAA Handbooks, Advisory Circulars, and other documents. Concepts supporting SBT that also require emphasis include Aeronautical Decision Making (ADM), Single Pilot Resource Management (SRM), and Risk Management/Mitigation. Maneuvers-based training obviously will continue to require emphasis, e.g., take-offs and landings.

- Doctrine must recognize the requirement for student participation in the instructional process, as well as the need for life-long learning.

- Aviation instructor professionalism must be emphasized and continuing education for instructors must become more effective.

This panel offered the following five recommendations to support the above themes (DOCT = Doctrine):

DOCT R1 – Training doctrine needs to reflect a learner-centric approach, both for the new student and the experienced client. This needs to include a "day-one" discussion of risk and risk mitigation.

DOCT R2 – Doctrinal guidance must be reflected in knowledge tests. There should be a formal and permanent process by government and industry to update doctrine and testing. The resulting doctrine updates must flow easily to CFIs, DPEs, and ASIs. The FAA web site, faa.gov/library/manuals/aviation, should be the single location of documents pertinent to aviation training.

DOCT R3 – Risk management must be embedded in training doctrine. The aviation educator must be able to describe the process for risk identification, assessment, and mitigation. The client must be able to apply this process during training and in future flight operations.

DOCT R4 – The FAA/Industry Training Standards (FITS) concepts need to be preserved and moved into permanent doctrine, allowing the current bureaucratized FAA acceptance process to evolve.

DOCT R5 – Flight Instructor Refresher Clinics (FIRC) should reflect updated doctrine. The doctrine needs to accept and recognize the different strata of vocational applications of the CFI certificate. The renewal process should recognize this.

The breakout group generally recognized that all of these recommendations were needed to address fatal accident causality and arrest the decline in student starts by reflecting how flight operations are conducted in the real world. Standardized, updated doctrine would also eliminate inconsistencies among student/clients, instructors, pilot examiners, and FAA inspectors.

The group also recognized that the timeline for implementing these efforts must be coordinated with actions recommended by the other working groups and that implementation efforts could be consolidated to address recommendations from several breakout groups.

Appendix B-4. Standards Breakout Group Recommendations

Flight Training Standards: Raising the Bar with Modernized Pilot Training

Standards are always in play in pilot training. Students come to training with their own standards, flight instructors impose their own standards, and the FAA defines standards for written testing and for the practical test.

Two identified problems were: (1) instructor certificate renewal, to be addressed by a symposium recommendation; and (2) certification of new instructors, which remains without a recommendation from the symposium but which requires further study. Moreover, less active instructors fall out of currency, which is shown by their inability to complete the airman application form correctly, unfamiliarity with the practical test standards, and not being current on teaching methods. The group identified many possible solutions including advisory circulars, self-policing, FAA actions, student questionnaires, and flight review changes for instructors, but nothing really seemed to fit. All agreed there is a need for change to what is happening now.

Another topic is the practical test standards (PTS). Applicants come to certification tests with little knowledge of the PTS content. Some maneuvers are not representative of real world operations. For example, the commercial pilot maneuver called "Eights on pylons" may not represent the skills a commercial pilot really needs, but yet it is a required maneuver on commercial and flight instructor practical tests. The PTS must be aligned with real world skills and knowledge.

Simulation rules, regulations and guidance are out of date with the current state of simulation technology. ACs must clarify the type of training that may be provided and logged for all types of devices. Regulations are confusing on what can be done in such devices. Logging of flight time using some form of simulation is unclear and misunderstood by instructors.

A critical area is the knowledge base upon which the written tests and practical tests are built. We cannot improve testing until we identify what knowledge must be mastered and to what level. Once we know that, the knowledge test can be built. Decisions can be made on the best types of questions and the best testing approach. These decisions will be then lead logically to a basis for the oral portion of the practical test.

Recommendations are (STAN = Standards):

STAN R1 – Create a baseline knowledge testing standard correlating training and testing.

STAN R2 – Create a PTS changes committee to improve communication to AFS-600.

STAN R3 – Revise guidance for use of simulation in flight training and testing to encourage its use.

STAN R4 – Develop guidance on how to conduct effective scenario-based testing.

STAN R5 – Improve currency and quality of independent instructors.

Appendix B-5. Curricula Breakout Group Recommendations

Flight Training Curricula: Opportunities to Re-shape the Delivery System

Recommendations from the Training Curricula and Methods (Curricula) Reform breakout group were formulated within the context of cultural tenets that the group felt <u>must</u> permeate the aviation industry moving forward, including: referring to and treating *students* as *customers and clients*; making customizable and relevant curricula available to flight schools, instructors, and customers; treating customers ethically and honestly; adhering to best practices as well as basic marketing and business practices; and clearly elucidating *what's in it for me* (WIIFM) vis-à-vis customers, instructors, and flight schools. "Starting over" in terms of emphasis areas for, and the distribution of Curricula products was the overarching theme.

The group also identified potential risks/obstacles that could hinder implementation of new Curricula. No matter how well designed, the success of Curricula programs ultimately depends on equipment requirements, buy-in from manufacturers, alignment by Doctrine and Standards with the Curricula, buy-in especially from instructors and flight schools, and cost (time and money).

It was also recognized that parallel tracks often exist between instructor-specific Curricula and customer-specific Curricula. Furthermore, the design of Curricula has two key components, each influencing safety: the mental component for accident prevention, and the physical component (i.e., stick and rudder skills) for recovery from loss of control.

The practicality of the recommendations generated likely will have immediate and positive effects on safety and retention rates, adding incentive and momentum for further reform. Implementation would also serve to better educate instructors who are unaware of the importance of the underlying concepts identified by the recommendations, and instructors who are inadequately prepared to educate their customers about the subject matter therein.

Breakout group participants reached consensus on the five recommendations presented below. The recommendations are not only being proposed for implementation on relatively short timetables, but are also intended to serve as springboards for broader reform initiatives.

Recommendations are (CURR = Curricula):

CURR R1 – Use scenario based training to improve risk management for students.

CURR R2 – Provide instructor training on risk management.

CURR R3 – Emphasize load factor and angle of attack (AOA) training.

CURR R4 – Implement continuing professional education (CPE) for flight instructors.

CURR R5 – Create guidance for the use of simulation and provide credit for use.

Appendix B-6. Educators Breakout Group Recommendations

Educators: Perspectives from Master Instructors and Flight Instructors of the Year

The Aviation Educators panel consisted of a number of high profile stakeholders from the aviation training industry. National Flight Instructors of the Year ranging from 1976 to 2010 were among the key members who brought their professionalism and day-to-day training concerns to the breakout session. In general, the group focused on the fact that professionalism of flight instructors was passion-based and had everything to do with a common belief in the law of primacy. If the instructor who teaches a student has the right tools and has the right knowledge about the systems that they fly and has the passion to do the job right and accepts nothing but the best performance, then the student will receive a quality product as a result. The major issues discussed and deliberated by this panel were:

- Creating a professionalism designation such as a "Professional Instructor" designation based upon the principals of the existing Master Instructor program to encourage professionalism in newly minted flight instructors

- Propagate the widespread use of a syllabus by all flight instructors and always teaching from a recognized instructional baseline.

- Using Scenario-Based instructional techniques and teaching Single Pilot Resource Management from day one

- Using the PTS as a guide and not as an instructional handbook

- Using best of breed training concepts from around the country and making these available to all instructors

- Identification of regional and/or local experts to serve as flight instructor mentors in specialized areas of flight instruction such as TAA, mountain flying, aerobatics, flight instructor certification, and other areas

- Using SAFE and other professional organizations to host regional CFI Special Emphasis Clinics to aid in reinforcing the right basics for newly minted instructors to help teach them how to do their job

- Finding a way to allow a Designated Pilot Examiner to perform a local one-on-one mentored Flight Instructor renewal session to reinforce professionalism and pilot examination shortfalls

The panel intently discussed these and many other ideas to arrive at the recommendations finally delivered to the symposium and the FAA attendees. Recommendations are (EDUC = Educators):

EDUC R1 – Create a nationwide instructor special emphasis program emphasizing best practices.

EDUC R2 – Establish a mentoring program for instructors.

EDUC R3 – Improve the guidance for conducting flight reviews and incorporate it in CFI training.

EDUC R4 – Grant instructor renewal authority, with specific mandatory training topics, to select Designated Pilot Examiners.

EDUC R5 – Change guidance and flight instructor PTS to require CFI candidates to demonstrate using a plan of action and a syllabus.

Appendix C. Additional Recommendations and Suggestions

Participants were invited to submit recommendations through the symposium website both before and for a time after the event. The results from the website and several emails are included in brief form below. The numbering scheme is similar to that used earlier in this report, but "S" before the numbers denotes unvetted suggestions. The suggestions have been posted to one of the six focus areas. For simplicity, only a summary title has been provided. Details of each suggestion are available from the symposium committee. These suggestions will be investigated by a yet-to-be-formed working group.

Safety:	SAFE		Standards:	STAN	
Growth:	GROW		Curricula:	CURR	
Doctrine:	DOCT		Educators:	EDUC	

Control	Title
CURR S01	Create CFI training program on building relationships.
CURR S02	Include information in training program on how to use pilot license.
CURR S03	Implement Angle of Attack Awareness and Proficiency training for Private Pilot students with an adjunct curriculum to what is now taught.
CURR S04	Adopt the advanced avionics changes suggested for commercial and flight instructor required experience.
CURR S05	Create briefing cards for each PTS task and maneuver.
CURR S06	Create template for post-flight brief and guided student self-critique for each PTS task and maneuver.
CURR S07	Clearly show the current "standard" training syllabus in a scenario format.
CURR S08	Keep the fun in pilot training by greater use of the cross country flight as training that can also be an actual recreational means of travel.
CURR S09	Incorporate some scenario based question series into the knowledge tests.
CURR S10	Incorporate multiple tasks into each lesson and explain how each task can relate to the others.
CURR S11	Use scenario based training in ground school course outlines that simulate standard recreational or business or pleasure flying missions instead of "a chapter a night for 12 weeks."
CURR S12	Include aircraft ownership and basic mx concepts in pilot training.
CURR S13	Redefine "high performance airplane" to include 200 hp, Cirrus and Corvallis.
DOCT S01	Improve training in area of weather and encourage student to dedicate adequate time to training.

DOCT S02	Handbooks should be updated to better correlate the reason the maneuver is taught.
DOCT S03	In the FAA handbooks, add an end of chapter summary and questions to evaluate reader's comprehension of that chapter's content for each chapter.
EDUC E03	Train flight instructors in customer service.
EDUC S01	Every 3rd renewal for a CFI must be a checkride with a DPE or FSDO rep.
EDUC S02	Publish an FAR that requires CFI's training student pilots for the Sport-Recreational-Private-Instrument-Commercial ratings to use a Training Course Outline (TCO) or Syllabus similar to Part 141.
EDUC S04	Provide GA aircraft manufacturers and type clubs with information on registrations of aircraft purchased in the used market.
EDUC S05	Issue final rule for "Pilot in command proficiency check and other changes to the pilot school certification rules".
GROW S01	Hit the market for non-pilots who are in the demographic group of those able financially and time-wise.
GROW S02	De-commercialize private pilot book and video training, promote on-line and free sources for private.
GROW S03	Establish Mentor Programs.
GROW S04	Adjust to Cultural Changes.
GROW S05	Form a trade association or some other coalition geared specifically toward GA Flight Schools w/affordable membership dues.
SAFE S01	Get the pilots looking out the window again.
STAN S01	Update the Computer Testing Supplements.
STAN S02	Use appropriate resources for knowledge exams consistent with their objective.
STAN S03	Allow candidates to take FAA written exams online at any flight school, instead of at designated test centers.
STAN S04	Expand ADM Standards.
STAN S05	Allow an endorsement for helicopter touchdown autorotations that can be issued by an appropriately trained CFI in lieu of demonstration on practical test.
STAN S06	Allow for a DPE to make comments on the 8710 after a checkride regarding applicant preparation and performance.
STAN S07	FARs eliminate possibility of renewal early by FIRC.

Appendix D. Contact Information and Other Supplementary Data

Pilot Training Reform Symposium: www.pilottrainingreform.org/

    Proceedings HD Video Channel: http://vimeo.com/channels/201235#24177537

    Robert Wright, Chair, email: flyrawright@yahoo.com

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Pilot Workshops.com: http://www.pilotworkshop.com/

Nflightcam.com: http://nflightcam.com/

Rich Stowell's Aviation Learning Center: http://www.richstowell.com/

Starr Aviation: http://www.cvstarrco.com/cv/starraviation/

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