General Aviation Joint Steering Committee

Safety Enhancement Portfolio

February 28, 2018

REVISION LOG

Date	Updates
02/04/2016	SE 37, SE 39, SE 41, and SE 49 added. SE 3, SE 14, SE 23, SE 26, SE 27, and SE 31 completed.
09/07/2016	SE 33 revised, SE 44 added
05/03/2017	SE 35 revised
10/10/2017	SE 2, SE 32, and SE 45 completed.
02/28/2018	SE 28 and SE 48 completed. SE 37 and SE 39 revised.

1. INTRODUCTION

GAJSC OVERVIEW

The General Aviation Joint Steering Committee (GAJSC) was created in the mid-1990s to parallel the Commercial Aviation Safety Team (CAST) under the Safer Skies initiative. The GAJSC had many successes through the mid-2000s, including the Federal Aviation Administration's (FAA) annual General Aviation and Air Taxi Activity Survey, which provided the FAA and industry with credible data on flight hours, from which meaningful accident rates could be computed. Over time, industry and FAA involvement subsided and the committee became inactive.

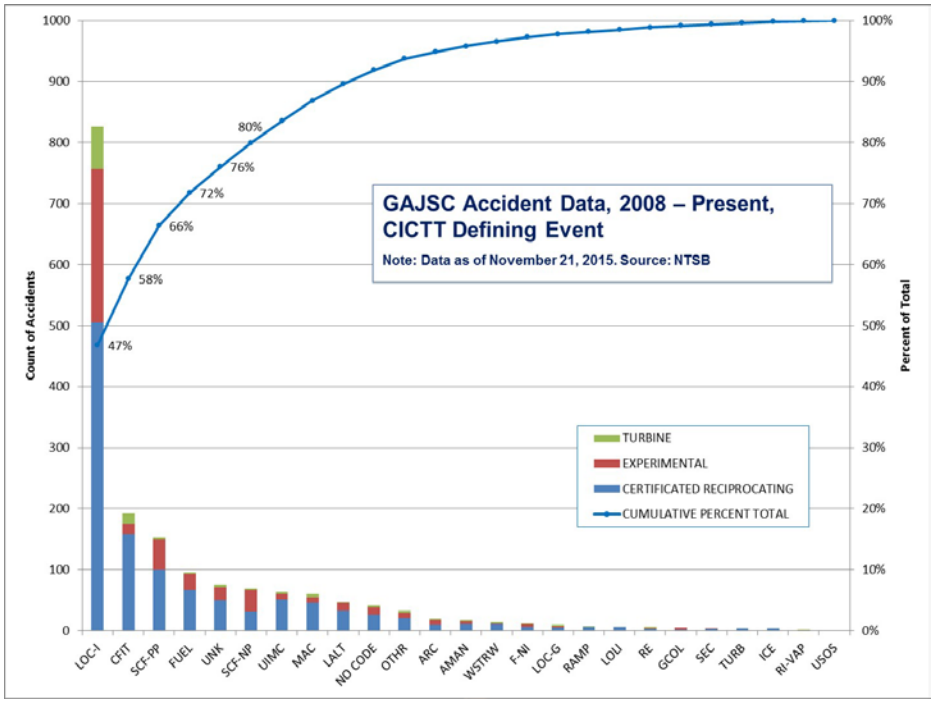
The GAJSC was reestablished in response to the Secretary of Transportation and the Future of Aviation Advisory Committee (FAAC) recommendations. The FAAC Safety Subcommittee identified the need to refocus joint FAA/industry work on proactive and cooperative safety analysis to reduce the fatal accident rate in general aviation (GA). The FAAC Safety Subcommittee also determined it was necessary to emphasize the FAA's strategic plan, also referred to as the "Flight Plan."

By analyzing the GA fatal accident rate, the GAJSC is tasked with reducing the GA fatal accident rate by 1 percent per year.[1] Meeting this reduction would result in a fatal accident rate of no greater than 1 fatal accident per 100,000 hours flown by 2018.

The GAJSC based its analysis on fatal accidents in Title 14, Code of Federal Regulations (14 CFR) part 91 GA operations, on-demand part 135 operations, and part 137 aerial application operations. The following bar chart shows the fatal accidents from 2008–2015, based on contributing factors.

[1] The FAA and industry agreed to base the new metric on the 3 safest years in GA since World War II. The 3 years with the fewest fatal accidents since World War II were 2006, 2007, and 2008. Converted to a rate, these years experienced 1.12 fatal accidents per 100,000 hours flown.

General Aviation Fatal Accidents by Top Ten CICTT Occurrence Category, CY2008–CY2015[2]



Key

LOC–I: Loss of Control–Inflight
SCF-PP: System Component Failure-Powerplant
CFIT: Controlled Flight Into Terrain
UIMC: Unintended flight in IMC
SCF-NP: System Component Failure-Non-powerplant
FUEL: Fuel Related
UNK: Unknown or undetermined
F–NI: Fire/Smoke (Non-impact)
OTHR: Other
AMAN: Abrupt Maneuver

The GAJSC, being data driven, decided to focus on loss of control (LOC), the highest risk area. The GAJSC further focused its initial effort on LOC during the "approach and landing" phase of flight because of its applicability to the three main GA communities: experimental amateur-built, certified piston engine airplanes, and turbine airplanes. This portfolio includes the GAJSC safety enhancements (SE) for LOC. The GAJSC then studied the remaining LOC accident risk, and analyzed system component failure–powerplant (SCF–PP) accidents in 2014. Ten SEs related to SCF–PP were approved in 2015 and are currently in the process of being implemented.

PORTFOLIO LAYOUT

This portfolio summarizes the 38 voluntary GAJSC SEs approved during 2012–2017. Each SE may involve several actions (or outputs) needed from multiple sources. This portfolio focuses only on FAA actions and outputs, organized by line of business.

A complete listing of all GAJSC SEs is available at the GAJSC website: http://www.gajsc.org/safety-enhancements/. The GAJSC SEs approved in September 2012 are available in their original formatting and language: http://download.aopa.org/advocacy/130327safety-committee.pdf.

[2] Source: NTSB Aviation Accident and Incident Database.

Topic	*Complete*	*Underway*	*FAA Office*
SE 1: Angle of Attack (AOA) Systems—New & Current Production	X		
Outputs 1 and 5			AFS
Output 4			AIR
SE 2: Angle of Attack (AOA) Systems—Existing GA Fleet	X		
Outputs 1 and 3			AFS
Output 4			AVP
SE 3: Aeronautical Decision Making (ADM)	X		AFS
SE 4: Over-Reliance on Automation	X		AFS
SE 5: Transition Training	X		AFS
SE 6: Transition Training	X		AFS
SE 7: Utilization of Type Clubs	X		
Output 1			AFS
Output 2			AIR
SE 8: Flight Training After Period of Flight Inactivity	X		AFS
SE 9: Part 135 Safety Culture	X		
Output 1			AFS
Output 2			AVP
SE 10: Stabilized Approach and Landing	X		AFS
SE 12: Weather Technology		X	ARP
SE 13: Weather Technology	X		AFS
SE 14: Engine Monitoring Technology	X		
Outputs 1 and 2			AIR
Output 2			AJV
Output 3			AFS
SE 15: Flight After Use of Medications With Sedating Effects	X		
Outputs 1, 2, 3, and 4			AAM
Output 2			AFS
SE 16: Flight With Impairing or Incapacitating Medical Conditions	X		AAM
SE 17: Flights With Impairing or Incapacitating Medical Conditions—Barriers to Communication	X		

Topic	*Complete*	*Underway*	*FAA Office*
SE 21: Risk Based Flight Review	X		AVP
SE 22: Flight Data Monitoring		X	
Outputs 1 and 5	X		AVP
Output 4		X	AFS
SE 23: E–AB/Flight Test	X		AFS
SE 24: Single-Pilot CRM	X		AFS
SE 25: Reduce Regulatory Roadblocks (R^3)—Streamline Novel Technology		X	
Output 1	X		AIR
Outputs 2 and 3		X	AVP
SE 26: Reduce Regulatory Roadblocks (R^3)—Part 23 ARC	X		AIR
SE 27: Reduce Regulatory Roadblocks (R^3)—Review 14 CFR 21.8 and 21.9	X		
SE 28: Pilot Response to Unexpected Events	X		AFS
SE 30: Medications List for Pilots		X	AAM
SE 31: Test Pilot Utilization and Experimental Amateur Built (EAB) Proficiency	X		
SE 32: Airman Certification Standards	X		AFS
SE 33: Safety Culture		X	AVP
SE 34: Outreach (LOC)		X	AVP
SE 35: Direct Tension Indicators		X	AFS
SE 36: V_{mc} Scenario Training		X	AFS
SE 37: Multi-Engine Emergency Management Technology		X	AFS
Output 1	X		AFS
Output 2		X	AFS
SE 39: Smart Cockpit Technology		X	AFS
Output 1	X		AFS
Output 2		X	AFS
SE 41: Survivability		X	AFS
SE 44: Maintenance Data Exchange		X	AFS
SE 45: Maintenance Placard	X		
SE 47: A&P Education/Training		X	
Outputs 1 and 3			FAA
Output 2			AFS

Topic	*Complete*	*Underway*	*FAA Office*
SE 48: Ignition Systems			
Output 1	X		AVP
Output 1	X		AIR
Outputs 2 and 3	X		AFS
SE 49: SCF–PP Outreach		X	AFS

Section 2 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for the FAA Flight Standards Service (AFS).

Section 3 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for the FAA Aircraft Certification Service (AIR).

Section 4 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for the FAA Office of Aerospace Medicine (AAM).

Section 5 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for FAA Aeronautical Information Products (AJV).

Section 6 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for the FAA Office of Accident Investigation and Prevention (AVP).

Section 7 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for the FAA Office of Airports (ARP).

Section 8 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for the FAA, with no office or Line of Business specified.

Section 9 of this portfolio includes a list and summary of the GAJSC voluntary SEs, with actions for industry, but not for any FAA office.

FEEDBACK

If you wish to get additional information or you have feedback on how we can make this document more useful, please email ASIAS@faa.gov.

2. SEs—Flight Standards Service (AFS)

SE 22: Flight Data Monitoring (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To reduce the risk of LOC accidents by using flight data monitoring (FDM) as a source of data support in overall industry-wide safety initiatives.

Output 4

The FAA will expand policy to allow operators using GA FDM programs to realize the same protections from certificate and punitive actions as is currently available in FAA-approved flight operational quality assurance (FOQA) programs. The AFS–200 Voluntary Safety Programs Branch (AFS–230) will determine the best method to extend protections to all GA operators that participate in FDM programs.

SE 35: Direct Tension Indicators (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should educate the maintenance community about the fatal and other accident risks caused by improper torqueing techniques. The community should also determine if there are potential technology solutions for new and legacy aircraft that can cost-effectively be implemented to eliminate or mitigate the risk of improper torqueing. One technology that should be considered is Direct Tension Indicating (DTI) technology, which utilizes visual indications for mechanics to confirm proper torque. Currently, ASTM International's Specification F959 provides a standard for compressible washer DTI for structural engineers. In their current state, they are single-use mechanical load cells, used to indicate when the required tension has been achieved in structural fastener assemblies.

Within the SCF–PP dataset, there were six accidents where inadequate bolt torque led to powerplant failures or loss of propellers. This SE is intended to improve a mechanic's ability to determine adequate torque and improve the inspection process.

Output 1R

AFS–850, with support from AFS–300 and industry, will conduct outreach using accident examples identified by the SCF−PP working group about the importance of proper torqueing for various types of bolts.

Output 2R

GAMA, with support from the FAA and industry, will organize a workshop with Airplane and Engine original equipment manufacturers (OEM) to determine if technology solutions, such as DTI bolts or other technology, are feasible mitigations against bad torqueing for new and legacy aircraft.

SE 36: V_{MC} Scenario Training (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should further develop training scenarios to address LOC related to minimum control speed (V_{mc}).

Nine of the accidents in the SCF−PP reviewed dataset involved V_{mc} LOC events following powerplant failures. With the improvements in desktop trainers, flight training devices, and simulators, the SCF−PP working group believes that scenario-based training offered in these formats could help multi-engine pilots identify the conditions leading to a V_{mc}-related LOC and prevent their occurrence in high-risk areas (single-engine go-arounds, takeoff loss of power events, and low-level maneuvering). Therefore, this SE is directed at the FAA and the flight training community to develop simulated V_{mc} training scenarios and provide affordable, readily-available training options to the GA multi-engine community.

Output 1

The AOPA Air Safety Institute, with support from the FAA and industry will develop training scenarios from GAJSC SCF−PP accident database.

Output 2

The AOPA Air Safety Institute, with support from the FAA and industry, will publish training scenarios online and make them available to training providers.

SE 37: Multi-Engine Emergency Management Technology (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should develop emergency cockpit management technology for multi-engine aircraft.

Nine of the accidents in the SCF–PP reviewed dataset involved V_{mc} loss of control events following powerplant failures. The SCF–PP working group believes technology that aids the pilot in decision making following an engine failure would substantially reduce the occurrence of fatal accidents.

Output 1 (Complete)

The GAJSC Safety Analysis Team (SAT) encourages development of smart cockpit technology with app developers and avionics manufacturers by developing a white paper that identifies use of smart cockpit technologies in mitigating SCF–PP accidents.

Output 2 (AFS–800)

Paper is promoted.

SE 39: SMART COCKPIT TECHNOLOGY (UNDERWAY)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should develop emergency cockpit management technology.

A review of the SCF–PP accident dataset indicated that a large percentage of the accidents resulted in fatalities due to the pilot's inability to identify the failure or appropriately manage the aircraft post-engine failure. The intent of this SE is to develop technologies which could not only help predict and alert the pilot to potential emergency situations, but also ease the workload during high stress/emergency situations.

This work ties in with SE 25 from the LOC working group for safety-enhancing technology, and can work in conjunction with the flight envelope protection system described in SE 25.

Output 1 (Complete)

The GAJSC SAT encourages development of smart cockpit technology with app developers and avionics manufacturers by developing a white paper that identifies use of smart cockpit technologies in mitigating SCF–PP accidents.

Output 2 (AFS–800)

Paper is promoted.

SE 41: SURVIVABILITY (UNDERWAY)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatalities resulting from GA powerplant system failures, the GA community should research, and if applicable, implement survivability recommendations.

During the SCF–PP evaluation of accident data, ten accidents were identified that had crash survivability issues, such as separated seatbelts, post-crash fires, and water egress issues. The purpose of the SCF–PP working group was to identify issues that would prevent fatalities in powerplant-related accidents. Because fewer than 15 percent of powerplant-related accidents

have a total fatality risk, the SCF-PP working group elected to address crash survivability issues. By improving the crash survivability and post-accident egress training, many of the fatalities encountered in the dataset could have been prevented. Therefore, the purpose of this SE is to research accident survivability factors and implement any recommendations stemming from the research.

Output 1 (ACE–100)

Implement 14 CFR Part 23 Reorganization Aviation Rulemaking Committee (Part 23 ARC) recommendations pertaining to survivability and crashworthiness.

Output 2 (ACE–100)

Establish policy to allow simplified installation of safety equipment (harnesses, airbags, etc.).

Output 3

Promote use of survivability products and technology.

Output 4 (AFS–800)

Develop increased opportunities for proper off-field landing, water ditching techniques, and survival training. Encourage pilots to participate in existing and developed programs.

SE 44: MAINTENANCE DATA EXCHANGE (UNDERWAY)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should evaluate the effectiveness of a maintenance data exchange and fully implement the system if deemed feasible and beneficial.

During the SCF–PP evaluation of accident data, it was noted that three separate v-band clamp-related accidents were represented in the 10-year sample group. Further research indicated that v-band clamp issues were occurring since the mid-1980s and that the FAA had issued airworthiness directives (AD). However, the v-band clamp issue was only addressed on an aircraft-specific basis over a span of many years and did not address the global extent of the issue. Feedback from the FAA (for example, the aging aircraft program) and industry have identified the existing weakness in the Malfunctions and Defects (M&D)/Service Difficulty Report (SDR) program including lack of incentive to submit GA reports and the use of outdated technology and limited ability to analyze the data. Additionally, 35 accidents involved inadequate and/or improper maintenance or maintenance operations simply not being performed.

Output 2

The FAA (AFS–600) will examine and track its ability to implement a maintenance data exchange system. Specifically, the FAA will—

1. Perform an internal gap analysis of current programs (such as M&D, SDR, and Monitor Safety/Analyze Data (MSAD)).
2. Request OEM input/feedback.
3. Evaluate consistency of acquiring OEM data between different Aircraft Certification Offices (ACO).
4. Evaluate communication between different ACOs and directorates.

SE 47: A&P EDUCATION/TRAINING (UNDERWAY)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should examine available training and education for maintenance professionals.

Within the SCF−PP dataset, 35 accidents involved inadequate and/or improper maintenance or maintenance operations simply not being performed. Though the human factors behind these maintenance-related errors were rarely investigated, the reoccurrence of the problem throughout the dataset warranted an SE that would help improve a mechanic's understanding of critical maintenance procedures, the consequences of not performing maintenance inspections or procedures, or doing the maintenance improperly. The best way to accomplish this throughout the maintenance community is through improved training and ensuring that best practices and protocols are not only followed, but easily accessible to the Airframe and Powerplant Mechanic (A&P).

Output 2

The FAA (AFS−300/800), along with industry, will—

1. Review current guidance available (to include EAA and type clubs).
2. Publish/Distribute/outreach on guidance.
3. Incorporate in training.
4. Make information easily and readily available (searchable database).

SE 49: SCF–PP Outreach (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should communicate through a previously established procedure (SE 34) to the GA community on the following topics:

Topic #1 – Outreach to A&Ps on the importance of checking critical parts during work that makes these parts accessible, even if parts are not the subject of maintenance.

Topic #2 – Outreach to pilots on emergency situations and survival training.

Topic #3 – Outreach to pilots on engine maintenance and monitoring engine performance.

Topic #4 – Outreach regarding the broader use of FADEC systems.

Topic #5 – Outreach that highlights existing guidance on determining the best glide speed and distance for amateur-built aircraft.

Topic #6 – Smart Cockpit Technology (see SE 39).

Topic #7 – V-Band Clamp Failures and Turbocharger Safety.

Topic #8 – Enhanced Vision Systems.

SE 1: Angle of Attack (AOA) Systems—New & Current Production (Complete)

To reduce the risk of inadvertent stall/departure resulting in LOC accidents, the GA community should install and use AOA-based systems for better awareness of stall margin.

Output 1

The FAA and industry will develop a public education campaign on the safety benefits of AOA systems supplementing existing stall warning systems. Specifically, the FAASTeam and industry will—

1. Determine what communication methods are most appropriate for the different segments of the community.

2. Promote the use of AOA systems by various segments of GA using the methods developed in action 1 of this output.

Output 5

The AFS General Aviation and Commercial Division (AFS–800) and Air Transportation Division (AFS–200) will work with the Flight Standards Service Regulatory Support Division (AFS–600) to establish policy and implement AOA education and training in coordination with the training community through appropriate handbooks, ACs, or policy. Specifically, the FAA and industry will—

1. Determine the training needs of owners and the pilot community for AOA systems.

2. Promote the use of the training materials/programs developed in action 1 of this output.

SE 2: Angle of Attack (AOA) Systems—Existing GA Fleet (Complete)

To reduce the risk of inadvertent stall/departure resulting in LOC accidents, the GA community should install and use AOA-based systems for better awareness of stall margin.

Output 1

The FAA and industry will develop a public education campaign on the safety benefits of AOA systems supplementing existing stall warning systems. Specifically, the FAA Safety Team (FAASTeam) and industry will—

1. Determine what communication methods are most appropriate for the different segments of the community.

2. Promote the use of AOA systems by various segments of GA using the methods developed in action 1 of this output.

Output 3

AFS–800/AFS–200 will work with AFS−600 to establish policy and implement AOA education and training in coordination with the training community through appropriate handbooks, advisory circulars (ACs), or policy. Specifically, the FAA and industry will—

1. Determine the training needs of owners and the pilot community for AOA systems.

2. Promote the use of the training materials/programs developed in action 1 of this output.

SE 3: Aeronautical Decision Making (ADM) (Complete)

To reduce the risk of LOC accidents, the GA community should develop and implement a flight safety program focusing on ADM. The initiative should focus on ADM in preflight planning, professional decision making, flight risk assessment tools (FRAT), stabilized approaches, missed approaches, and go-arounds.

Output 1

The FAA and industry will develop a public education campaign on the safety benefits of ADM in preflight planning, professional decision making, FRATs, stabilized approaches, missed approaches, and go-arounds. Specifically, the FAA and industry will—

1. Determine what communication methods are most appropriate for the different segments of the GA community.
2. Promote the use of ADM by various segments of the GA community, using the methods developed in action 1 of this output.

Output 2

The FAA and industry will develop a public education campaign on the availability and safety benefits of FRATs.

Output 3

The FAA and industry will develop new and improved interactive, scenario-based training encouraging sound ADM. This work will include the development of web-based ADM training tools. Specifically, the GAJSC will—

1. Ask the Aircraft Owners and Pilots Association (AOPA) to emphasize interactive, scenario-based ADM training in existing flight training initiatives.
2. Ask the Society of Aviation and Flight Educators (SAFE), the National Association of Flight Instructors (NAFI), and the flight training community to emphasize the use of interactive, scenario-based training on personal computers and the web.

SE 4: Over-Reliance on Automation (Complete)

To reduce the risk of LOC accidents by improving certain aspects of flight training related to over-reliance on automated flight systems.

Output 1

AFS–800/AFS–200 will work with AFS–600 to establish policy and implement training ensuring pilots demonstrate proficiency in manual flying in the event of failure or malfunction of automated systems (where applicable), in coordination with the training community through appropriate handbooks, ACs, or policy. Specifically, the FAA and industry will—

1. Determine which communication methods are most appropriate for different segments of the pilot community to promote existing publications referencing autopilot malfunctions and failures.
2. Work with the flight instruction community, training centers, and flight training providers (such as FlightSafety International or SIMCOM Training Centers) to promote proper training of manual flying in the event of automated systems malfunction or failure during recurrent training, flight review, or transition training.

SE 5: Transition Training (Complete)

To reduce the risk of LOC accidents, the GAJSC recommends the development of web-based tools that will aid in all aspects of transition to unfamiliar aircraft across GA, including ADM (see also SE 3). This will help identify the risk of inadequate training when operating unfamiliar equipment.

Output 2

GAMA, in coordination with the FAA and industry, will review and propose revisions regarding transition training to AC 61–103, Announcement of Availability: Industry-Developed Transition Training Guidelines for High Performance Aircraft.

Output 3

The FAA and industry will develop a public awareness campaign on the benefits of transition training and the related resources available, including promotion of AC 61–103. Specifically, the FAA and industry will—

1. Determine what communication methods are most appropriate for the different segments of the community.

2. Promote the use of transition training by various segments of GA using the methods developed in action 1 of this output.

SE 6: Transition Training (Complete)

The FAA will amend current policies to more easily allow letters of deviation authority (LODA) from 14 CFR § 91.319(a) through (h) for transition training in experimental aircraft.

Output 1

AFS–800 will draft and publish an AC on the LODA process and amend guidance in FAA Order 8900.1, Flight Standards Information Management System, to more easily issue a LODA to conduct transition training in experimental aircraft.

SE 7: Utilization of Type Clubs (Complete)

To reduce LOC accidents, the GAJSC will leverage type clubs to develop and disseminate critical safety-related information.

Output 1

The FAASTeam will ask the Type Club Coalition (TCC) and large GA operators to review their common practices regarding missed approach, go-around, and other approach and landing procedures/checklists to determine if or where pilots are becoming task-saturated/fixated. The TCC will request this information from individual type clubs.

The FAASTeam will ask for feedback from the TCC regarding effectiveness of these common practices for missed approaches, go-arounds, and other procedures/checklists where pilots are becoming task-saturated/fixated.

Specifically—

1. The EAA will request from the TCC and large GA operators their common/best practices.

2. The TCC and large GA operators will review published flight manuals/procedures (if developed) and compare them to common practices, looking for disconnects that could create higher workloads.

3. The TCC and large GA operators will identify possible best practices that will reduce pilot workload for the targeted procedures.

SE 8: Flight Training After Period of Flight Inactivity (Complete)

The purpose of this SE is to reduce the risk of LOC accidents by improving certain aspects of flight training related to the return to flying after periods of flight inactivity.

Output 1

Guidelines and best practices will be developed to assist pilots in regaining proficiency safely after extended periods of flight inactivity. Specifically—

1. Existing programs and best practices will be identified (possible collection via a GA FDM study of pilots returning after an extended period of inactivity).

2. Existing programs and practices will be leveraged to develop guidelines. These guidelines will be published in appropriate documents including the Pilot's Handbook of Aeronautical Knowledge.

3. Once guidelines are published, they will be disseminated through continuous outreach via AOPA, EAA, the National Air Transportation Association (NATA), FAASTeam, NAFI, and SAFE.

4. The insurance industry will be encouraged to promote and incentivize clients to follow guidelines and best practices after periods of flight inactivity.

SE 9: Part 135 Safety Culture (Complete)

The GA community should advocate that part 135 operators conduct mixed operational missions under safety criteria similar to those governing commercial flights. This will reduce LOC accidents by increasing safety margins and promoting professionalism.

Output 1

NATA will develop a public education campaign on the safety benefits of Standard Operating Procedures (SOP) for part 91 positioning legs, the use of FRATs, and positive safety culture. Specifically—

1. NATA and the National Business Aviation Association (NBAA) will promote the development and use of SOPs for part 91 positioning legs, FRATs, and positive safety culture through SMS.

2. NATA and NBAA will encourage third-party audits, which include assessing safety culture among member part 135 companies to review implementation of action 1 of this output.

3. GAJSC will request that the AFS–200 135 Air Carrier Operations Branch (AFS–250) brief the Flight Safety Foundation's Corporate Aviation Safety Seminar on these issues.

4. NATA and NBAA will encourage part 135 member companies to conduct self-assessments of safety culture using existing assessment tools (such as the Transport Canada tool or the International Civil Aviation Organization tool).

SE 10: Stabilized Approach and Landing (Complete)

The FAA and industry will review the adequacy of the existing guidance and advisory material (including PTS) on stabilized approaches and go-arounds. Guidance and advisory material will be updated to include emphasis on stabilized approaches throughout various scenarios, including wind and go-arounds.

Output 1

The FAA and industry will reemphasize criteria pertaining to stabilized approaches. Specifically—

1. The FAA and industry will conduct outreach programs that emphasize stabilized approaches, including go-around maneuvers.

2. The FAA will update the sections of the appropriate handbooks and the PTS to emphasize stabilized approach criteria.

3. The University Aviation Association training committee will develop guidance for establishing personal criteria for a stabilized approach.

4. Training providers will teach and enforce personal criteria for a stabilized approach.

Output 2

The FAA and industry will emphasize the effects of wind on traffic pattern operations during flight review and transition training. Particular emphasis should be placed on turn from base to final. Specifically, the FAA and industry will—

1. Reemphasize guidance available regarding the effects of wind on traffic patterns.

2. Ensure the effects of wind on traffic patterns are included in flight review and during transition training.

SE 13: WEATHER TECHNOLOGY (COMPLETE)

To reduce the risk of accidents due to weather-related factors, the FAA and industry will educate the GA community on and promote the use of available weather information technologies, such as the National Oceanic and Atmospheric Administration (NOAA) Aviation Digital Data Service (ADDS) icing tool.

Output 1

The FAA and industry will educate the GA community regarding available weather information technologies and their use. Specifically—

1. The FAASTeam will evaluate current weather information available on the www.FAAsafety.gov website and develop a training module on existing weather information technologies for pilots.

2. AOPA, EAA, NAFI, SAFE, and training providers will develop and distribute information concerning existing weather information technologies for pilots.

SE 14: ENGINE MONITORING TECHNOLOGY (COMPLETE)

To reduce the risk of LOC accidents due to factors related to engine failure, the FAA and industry will review the current technological capabilities available for engine trend monitoring, engine health analysis, fuel management, and fuel indicator systems. Based on the existing available capabilities, the FAA will update guidance to promote their use. The FAA and industry will develop an educational outreach program to expand the installation and use of these systems.

Output 3

AFS–800 and industry will develop and implement a public education campaign on the safety benefits of properly using fuel management software, if equipped, on every flight.

SE 15: Flight After Use of Medications With Sedating Effects (Complete)

To reduce the risk of pilot impairment or incapacitation resulting in LOC accidents, the GA community should implement programs to reduce the likelihood of pilots using over-the-counter and prescription sedating medications that adversely affect the pilot's ability to safely operate aircraft.

Output 2

AAM, AFS–600, and flight training educational content providers will incorporate training on current guidance and best practices to minimize the risk of pilot impairment after the use of over-the-counter and/or prescription medications into their basic and advanced training curriculums. As a part of this initiative, they will incorporate the "I'M SAFE" personal checklist into their training programs and hazard assessment tools. Specifically—

1. The GAJSC requests that AAM communicate with other flight training content providers to encourage them to incorporate into their basic and advanced training curriculums training on current guidance and best practices to minimize the risk of pilot impairment after the use of over-the-counter and/or prescription medications.

2. Flight training organizations will respond by indicating whether they intend to incorporate medication awareness training into their training syllabuses.

SE 23: E–AB/Flight Test (Complete)

To reduce the risk of LOC accidents, the FAA and industry should develop a best practice guide for how to flight test an experimental amateur-built (E–AB) aircraft following a modification. Additionally, testing for center-of-gravity (CG) limits, including lateral, should be added to AC 90–89A, Amateur-Built Aircraft and Ultralight Flight Testing Handbook. The FAA and industry will develop an educational outreach program to expand the awareness and use of AC 90–89A.

Output 2

The AFS Aircraft Maintenance Division General Aviation Branch (AFS–350) will update AC 90–89A to emphasize when flight tests should be conducted following a modification to an amateur-built aircraft.

Output 3

The Experimental Aircraft Association (EAA) and FAA will develop and implement a public education campaign to emphasize the use of the updated AC 90–89A for E–AB aircraft builders regarding when to reenter a flight test phase following a modification to an amateur-built aircraft.

Output 4

The FAA will review and revise AC 90–89A to include advisory material on the lateral CG limits for E–AB aircraft.

Output 5

The EAA and FAA will develop and implement a public education campaign to emphasize the use of the updated AC 90–89A for E–AB builders regarding the importance of CG limits, including lateral.

SE 24: Single-Pilot CRM (Complete)

The FAA and industry will identify best practices regarding single-pilot crew resource management (CRM). The identified best practices should be communicated to the GA community through a public education campaign.

Output 2

The FAA and industry will identify the best practices regarding single-pilot CRM. The GAJSC subteam will ask subject matter experts to identify the best practices regarding single-pilot CRM.

Output 3

The FAA and industry will conduct a public education campaign emphasizing the best practices regarding single-pilot CRM operational techniques.

SE 28: Pilot Response to Unexpected Events (Complete)

This SE will be used to educate flight instructors and pilots on the need for preparing for unexpected events in the cockpit, focusing on: the importance of briefing for emergencies; positive transfer of controls; and recognition and management of "startle response." This work will also better prepare pilots for engine failure after takeoff. Work will include developing best practices, refining the takeoff prebrief to emphasize what action will be taken depending on the current situation (altitude, airspeed, terrain, etc.), and recommending training/practicing the developed best practices on a regular basis.

Output 1

1. AFS–800 will create a Government/industry working group to study and document existing training practices for unexpected, abnormal and emergency events, including a review of military procedures and other existing guidance on the subject.

2. This working group will develop a pilot training aid in brochure/handout format suitable for posting on the web. The training aid shall focus on the following:

    a. Best practices regarding powerplant failures during takeoff or initial climb in a single engine airplane, taking into account LOC working group findings and other relevant accident reports.

    b. A component of the takeoff briefing that presents an appropriate plan in the event of a powerplant failure during takeoff or initial climb in a single engine airplane.

    c. The risks associated with attempting a return to the airport, performance planning, and the benefits of practical experience obtained by landing on non-paved runways to prepare for off airport landings.

3. The working group will develop a set of recommendations to train for recognition and management of startled response to unexpected, abnormal, and emergency events. This set of recommendations may be included in the work product from number 2.

4. The working group will disseminate the work product from numbers 2 and 3 above by—

    a. Developing an outreach guidance document to include products developed in items 2 and 3. This guidance document will be posted on www.GAJSC.org and www.FAASafety.gov for dissemination.

    b. Revising SE 34, Outreach, to include the topics in this output.

Output 2

The FAA will initiate a change to the appropriate practical test standards (PTS), or recommend a change to the appropriate Airman Certification Standards (ACS), to incorporate the following:

1. Certified Flight Instructors shall maintain due diligence by being both mentally and physically prepared for an unexpected event while in the training environment.

2. The pre-takeoff briefing shall incorporate actions to be taken in the event of engine failure on takeoff.

3. Pilots shall have a positive transfer of controls when turning over piloting responsibility to another pilot.

4. Other pertinent discussion points developed in Output 1.

The FAA will initiate changes to testing and training materials to support changes to the PTS/ACS.

Output 3

1. The FAA will create a module for the Flight Instructor Open Forum (FIOF) series on emergency procedures, highlighting techniques for managing unexpected events/startle response.

2. The FAA will add an FIOF module to the FIOF presentation schedule.

3. The FAA will draft changes to AC 61–83, National Scheduled FAA-Approved, Industry Conducted Flight Instructor Refresher Course, to emphasize this topic in flight instructor refresher courses. The action will be completed when a draft document is submitted for FAA-internal formal coordination.

4. The FAA will draft changes to AC 61–98, Currency Requirements and Guidance for the Flight Review and Instrument Proficiency Check, to emphasize this topic in flight reviews and instrument proficiency checks. The action will be completed when a draft document is submitted for FAA-internal formal coordination.

SE 32: AIRMAN CERTIFICATION STANDARDS (COMPLETE)

Through the data-driven process of building an event sequence; identifying problems that occurred; creating interventions which, once fully implemented, could prevent those problems from occurring in the future; and scoring all parameters for power, confidence, and applicability, the working group recommends the following SE to establish standards for pilot testing and training.

Output 1

The Aviation Rulemaking Advisory Committee (ARAC) will accept the recommendations of the Airman Testing Standards and Training Working Group (ATST WG) that incorporate risk management into both airman testing and training.

Output 2

AFS, along with industry partners on an Airman Certification System Working Group, will finalize the ACS for the Private Pilot Certificate, Instrument Rating, and Authorized Instructor Certificate.

The FAA will publish an ACS for the Private Pilot Certificate in the Federal Register with future effective dates.

Output 3

FAA AFS will begin the transition from the PTS to the integrated ACS for airman testing and training on completed and approved ACS document(s).

The FAA will publish a Federal Register Notice informing the community of the transition.

SE 48: IGNITION SYSTEMS (COMPLETE)

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should research, and if applicable, develop alternative ignition systems with enhanced reliability in reciprocating engines.

Within the SCF−PP dataset, there were five accidents involving ignition system problems that led to loss of engine power events. Four of the five accidents involved magneto-related issues. Magnetos have been certified and in use since the earliest days of aviation. That being said, there are variations to legacy magneto/impulse coupling ignition systems, such as a shower of sparks, solid-state ignition systems (SSIS), and combinations of legacy and SSIS that have had exposure primarily in the experimental segment of GA. This SE is intended to research the use of alternative systems such as SSIS to potentially improve ignition systems and help prevent powerplant failures.

Output 2

GAMA, along with AFS−800 and industry, will encourage the use of Solid State Ignition Systems or a comparable system in new aircraft if data shows the system is an improvement over magnetos.

Output 3

AOPA, along with AFS−300/800 and industry, will encourage the use of SSIS or a comparable system in existing aircraft if data shows the system is an improvement over magnetos.

3. SEs—Aircraft Certification Service (AIR)

SE 25: Reduce Regulatory Roadblocks (R^3)—Streamline Novel Technology (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

The FAA will institute streamlined processes in AVS for certifying and installing novel technology that has a high probability of safety benefits with an accompanying low safety risk.

Output 1 (Complete)

The FAA will develop a core group of FAA personnel charged with finding the most efficient approach to certifying novel aircraft equipment using a balanced risk-management methodology. Specifically—

1. ACE–100 and Aircraft Certification Offices will form a group to certify novel technology in small certified airplanes.

2. The FAA will revise the certification process to allow engineer specialization for small airplanes.

3. The group identified in action 1 of this output will determine the most efficient approach to getting novel equipment into the airplane.

4. The group needs a very good understanding of the products that are being modified and how those products are used operationally so that a risk-based approach to initial approval is incorporated. Consequently, the FAA group should engage with industry in the research and development phase.

5. The Associate Administrator for Aviation Safety (AVS–1) will issue guidance/endorsement of the specialized group process to AIR and AFS.

6. If successful, ACE–100 will market the success of a pilot project to expedite future projects using a balanced risk management methodology.

7. ACE–100 will engage with the National Aeronautics and Space Administration (NASA) and the FAA William J. Hughes Technical Center (WJHTC) to provide a test airplane that can serve as a technology demonstrator for certain key technologies.

8. NASA and/or the WJHTC will demonstrate mature technologies to the FAA (including AVS, AIR, and AFS) as well as AOPA and industry advocates.

SE 1: Angle of Attack (AOA) Systems—New & Current Production (Complete)

Output 4

The FAA will task the appropriate standards organization to review and amend as necessary the appropriate technical standard to include AOA in primary flight display (PFD)/head-up display (HUD) design standards.

SE 7: Utilization of Type Clubs (Complete)

To reduce LOC accidents, the GAJSC will leverage type clubs to develop and disseminate critical safety-related information.

Output 2

The AIR Small Aircraft Directorate (ACE–100) will communicate the findings from SE 7 Output 1 to operators and/or OEMs. Specifically, ACE–100 will—

1. Review information generated by type clubs and large GA operators.

2. Collaborate with the OEMs, type clubs, and large GA operators to identify, evaluate, and synthesize identified procedure changes for potential revision.

3. Determine who is best able to implement the new/revised procedures, if applicable.

SE 14: Engine Monitoring Technology (Complete)

To reduce the risk of LOC accidents due to factors related to engine failure, the FAA and industry will review the current technological capabilities available for engine trend monitoring, engine health analysis, fuel management, and fuel indicator systems. Based on the existing available capabilities, the FAA will update guidance to promote their use. The FAA and industry will develop an educational outreach program to expand the installation and use of these systems.

Output 1

GAMA, with support of the FAA and industry, will review the state of the industry for engine monitoring, engine analysis, fuel management, and fuel indicators including fuel management software. GAMA will generate a report of current capabilities and options.

Output 2

GAMA, with support of the FAA and industry, will review the current capabilities report and develop guidance on the appropriate use of engine monitoring, engine analysis, fuel management, and fuel indicator systems including fuel management software. GAMA will update guidance on the proper use of available technologies.

SE 26: Reduce Regulatory Roadblocks (R^3)—Part 23 ARC (Complete)

The 14 CFR Part 23 Reorganization Aviation Rulemaking Committee (Part 23 ARC) will develop the top-level industry standard, as well as a lower tier standard, for the existing fleet of small airplanes. The objective of this part 23 tier is to provide standards appropriate for alterations and modifications of older part 23, Civil Air Regulations (CAR) 3, CAR 4a, and Aeronautics Bulletin No. 7 airplanes. The criteria should include standards for safety-enhancing, nonrequired equipment as well as for general alterations. The burden of proof for low-risk, safety-enhancing modifications would be that the equipment does not interfere with existing certified hardware. By providing current standards, FAA approval of safety-enhancing updates should be more efficient and less costly.

Output 1

ACE–100 will revise the part 23 top-level industry standard to include standards appropriate for alterations and modifications of older part 23, CAR 3, CAR 4a, and Aeronautics Bulletin No. 7 airplanes.

SE 48: Ignition Systems (Complete)

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should research, and if applicable, develop alternative ignition systems with enhanced reliability in reciprocating engines.

Within the SCF−PP dataset, there were five accidents involving ignition system problems which led to loss of engine power events. Four of the five accidents involved magneto-related issues. Magnetos have been certified and in use since the earliest days of aviation. That being said, there are variations to legacy magneto/impulse coupling ignition systems, such as shower of sparks, solid-state ignition systems (SSIS), and combinations of legacy and SSIS that have had exposure primarily in the experimental segment of GA. This SE is intended to research the use of alternative systems such as SSIS to potentially improve ignition systems and help prevent powerplant failures.

Output 1

FAA AVP, along with support from FAA ANE, will compile and analyze existing data that ANE has researched and compiled.

1. FAA AVP will conduct research and accident analysis to determine reliability of ignition systems for reciprocating engines

2. ANE will pursue further research if deemed necessary.

4. SEs—Aerospace Medicine (AAM)

SE 30: Medications List for Pilots (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To reduce the risk of pilot impairment or incapacitation from medications resulting in LOC accidents, the FAA should implement programs to reduce the likelihood of the use, while flying, of prescription and over-the-counter medications that adversely affect the pilot's ability to safely operate aircraft.

Output 1

The FAA will develop a comprehensive and robust list of medications using existing guidance to AMEs.

Once developed, the FAA will publish a database online for the pilot community to use as an educational tool to better self-assess medical fitness to fly. Online portals, such as MedXpress, could be used.

Once published, the FAA will communicate through SE 34, Outreach.

SE 15: Flight After Use of Medications With Sedating Effects (Complete)

To reduce the risk of pilot impairment or incapacitation resulting in LOC accidents, the GA community should implement programs to reduce the likelihood of pilots using over-the-counter and prescription sedating medications that adversely affect the pilot's ability to safely operate aircraft.

Output 1

The FAA and industry will develop improved public education campaigns that provide information on best practices to minimize the risk of subtle or serious impairment after the use of over-the-counter and/or prescription medications. Specifically, the FAA and industry will—

1. Determine what communication methods are most appropriate for the different segments of the community.

2. Promote the use of current guidance found in the FAA Aeronautical Information Manual (AIM), the "I'M SAFE" personal checklist (within the AIM), the FAA Medications and Flying brochure, and the Aviation Medical Examiners guide.

Output 2

AAM, AFS–600, and flight training educational content providers will incorporate training on current guidance and best practices to minimize the risk of pilot impairment after the use of over-the-counter and/or prescription medications into their basic and advanced training curriculum. As part of this initiative, they will incorporate the "I'M SAFE" personal checklist into their training programs and hazard assessment tools. Specifically,

1. The GAJSC requests that AAM communicate with other flight training content providers to encourage them to incorporate training on current guidance and best practices to minimize the risk of pilot impairment after the use of over-the-counter and/or prescription medications into their basic and advanced training curriculums.

2. Flight training organizations will respond by indicating whether they intend to incorporate medication awareness training into their training syllabuses.

Output 3

The GA community (that is, the FAA, pilot and owner associations, manufacturers, and other interested segments of the industry) will write an "open letter" to GA pilots and physicians who treat pilots, urging them to consider the effects that over-the-counter and prescribed medication may have on one's piloting ability. This letter is to be written and approved by those entities listed below under "Resources," and will end with a letter signed by leaders in the GA community (from this group and any other parties the group feels should be added, and who agree to participate). The final signed letter will be available for use in print and electronic publications for a joint public outreach campaign that will precede a major GA event (such as EAA AirVenture). Specifically—

1. The GA community (that is, AAM, and organizations such as AOPA, EAA, GAMA, SAFE, NAFI, and the National Transportation Safety Board (NTSB)) will draft "an open letter" to GA pilots and physicians who treat pilots, urging them to consider the effects that over-the-counter and prescription medications can have on a pilot's flying ability.

2. After the groups have drafted the letter, it will go to each group for final approval and signing.

3. The final signed copy of this letter will be made available to the GA community to use in a coordinated public outreach campaign before a major GA event. This letter will be used in print and electronic publications to reach the GA community and physicians.

Output 4

AAM will develop and deploy an online resource designed to provide guidance on wait times associated with specific sedating medications (such as diphenhydramine). Specifically—

1. The AAM, the Civil Aerospace Medical Institute (CAMI), and industry will identify specific sedating medications that have been found as possible contributing factors in past GA accidents.

2. AAM will inform the GAJSC on which medications were identified and what guidance will be given to the pilot community.

3. AAM will produce an online resource with this information and the URL will be made available to all GAJSC member organizations for communication to their members.

SE 16: Flight With Impairing or Incapacitating Medical Conditions (Complete)

To reduce the risk of medical conditions known to the pilot causing in-flight impairment or incapacitation resulting in LOC accidents, the GA community should implement programs to reduce the likelihood of airmen failing to disclose known medical conditions and/or flying with known medical conditions that could adversely affect their ability to safely operate aircraft.

Output 1

The FAA is continuing to improve the electronic airman medical record system and MedXpress to provide the airman and Aviation Medical Examiner (AME) with a comprehensive history, including relevant information from all prior exams, to help the AME and airman work together to ensure an accurate evaluation of the airman's fitness to fly. The FAA will determine the methods that are most appropriate to improve collecting and sharing of the airman's medical history from exam to exam in the electronic medical record between different AMEs and provide the airman with information that they have entered on prior examination.

5. SEs—Aeronautical Navigation Products (AJV)

SE 14: Engine Monitoring Technology (Complete)

To reduce the risk of LOC accidents due to factors related to engine failure, the FAA and industry will review the current technological capabilities available for engine trend monitoring, engine health analysis, fuel management, and fuel indicator systems. Based on the existing available capabilities, the FAA will update guidance to promote their use. The FAA and industry will develop an educational outreach program to expand the installation and use of these systems.

Output 2

GAMA, with support of the FAA and industry, will review the current capabilities report and develop guidance on the appropriate use of engine monitoring, engine analysis, fuel management, and fuel indicator systems including fuel management software. GAMA will update guidance on the proper use of available technologies.

6. SEs—Accident Investigation and Prevention (AVP)

SE 22: Flight Data Monitoring (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To reduce the risk of LOC accidents by using FDM as a source of data support in overall industry-wide safety initiatives.

Output 1 (Complete)

The FAA and industry should develop a public education campaign on the safety benefits of FDM programs. Specifically, the FAA and industry will—

1. Determine what communication methods are most appropriate for the different segments of the community.

2. Promote the use of FDM programs by various segments of GA.

Output 5 (Complete)

National (and international) operators are invited to attend an InfoShare-like conference. AVP−200, with the Center of Excellence for General Aviation Research (CGAR) and GAMA, will plan, communicate to operators, and host the conference.

SE 25: Reduce Regulatory Roadblocks (R^3)—Streamline Novel Technology (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

The FAA will institute streamlined processes in AVS for certifying and installing novel technology that has a high probability of safety benefits with an accompanying low safety risk.

Outputs 2 and 3

If and when new systems have been developed using the new standards, the GAJSC Safety Analysis Team (SAT) will incorporate communication to the GA community into SE 34, Outreach, regarding safety technology availability.

SE 33: SAFETY CULTURE (UNDERWAY)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

This SEs goal, once fully implemented, is to establish an improved safety culture for GA.

Output 1

1. The GAJSC SAT should determine the expertise required to research methods of identification and communication with pilots who do not adopt a safety culture. Research should also include determining the basic underlying motivators of safe flying practices. Backgrounds should include, but are not limited to, individuals with expertise in psychology, human factors, and communication and social marketing.

2. Based on the above action, the GAJSC SAT should establish a group of subject matter experts responsible for researching and deriving findings on the following topics (at a minimum):

    a. Identification and Characteristics of Target Audience

        i. Develop standard definition of an effective safety culture that includes objective, measurable criteria and is applicable to GA (such as pilot attitudes toward violations and errors).

        ii. Who is not participating in the effective safety culture (as defined above)? Develop a method of identifying these pilots (for example, but not limited to, pilots not being reached by or engaging in GA groups that have an effective safety culture).

            1. Service provider and community perspective on who is "hard to reach" and why.

            2. Service provider and community statistics on who they reach.

        iii. Determine best methods to gather behavioral information on pilots who are not accessible through standard outreach methods. This may include survey methods or in-person interviews.

    b. Characteristics of Target Audience

        i. What commonalities exist among pilots identified above as "hard to reach"?

            1. Behavior and training records. Are there differences in safety behavior/training these pilots receive?

            2. Why don't these pilots have a safety culture?

                a. Marginalized? / Forgotten? / Disadvantaged?

                b. Nonassociative? / Refusers? / Unengaged?

ii. Review safety behaviors of accident prone pilots. What commonalities exist among these pilots?

c. Methods to Change Behavior

i. Review methods of effecting behavioral change (for example, from public health, psychology, marketing, and other modes of transportation).

ii. What types of promotions and incentives affect participation rates in methods to change behavior?

iii. Determine best practices to reach target pilots based on the range of methods assessed (subsection (c)(i)) and the characteristics of the target audience (subsection (b)).

1. Consider reaching pilots in different stages of training/flying. Can we affect change if we start at the beginning with new pilots? How can we affect change for established pilots?

2. What incentives are available that can be feasibly incorporated?

d. Assessment and Modification

i. Develop strategies to assess the success of outreach efforts devised under subsection (c).

ii. Analyze assessment data and revise methods, outreach, and training in accordance with assessment.

3. The GAJSC SAT will continue to develop and implement outreach strategies based on the research results from Action 2. New outreach strategies should consider and answer the following in the course of development:

a. What are the barriers to moving a person into safer behavior? How can we overcome them?

b. What are the facilitators to reaching the target audience?

i. Inclusion/Participation

ii. Retention

c. How should we refine our outreach goal based on barriers and facilitators? (For example, should we focus on promotion, prevention, or another strategy?)

d. Where are the best venues to perform this outreach?

4. The GAJSC SAT will disseminate findings to the GAJSC SAT communications team members. The SAT communications team should incorporate these findings into their outreach and coordinate their messages for maximum impact via Outputs 2 and 3 of this SE, as well as any outreach SEs or outputs adopted by the GAJSC.

Output 2

1. The GAJSC SAT will achieve the goal of improving mentoring in the aviation community. The FAA will expand and update its publication Best Practices for Mentoring in Aviation Education to include all levels of flight activity.

2. The GAJSC SAT will establish a framework of existing aviation networks and efforts that can be used to establish a mentor program.

3. The GAJSC SAT will use an established framework to facilitate mentoring and sharing of best practices through an established mentor program that increases safety by promoting best practices, shared aeronautical knowledge, and better airmanship as detailed in "Best Practices for Mentoring in Aviation Education."

Output 3

1. The GAJSC SAT will establish a group under it that would be responsible for communicating the safety culture message. It will leverage the Outreach and Communications Group.

2. The GAJSC SAT will establish guidelines for the frequency, format, and content of the communications.

3. The GAJSC SAT will draft periodic communications that meet the established guidelines.

4. The GAJSC SAT will disseminate the targeted communications to the pre-identified groups for distribution.

SE 34: OUTREACH (LOC) (UNDERWAY)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

This SE goal is for AVP to design separate educational outreach campaign for specific topics.

Output 1

1. AVP will conduct a literature review of current materials on this topic. AVP will research individual topics by an entity selected by the FAA (such as an educational institution or the Center of Excellence).

2. The entity identified in Topic No. 1 will generate and deliver to the GAJSC SAT a resource list of currently available materials on each topic.

3. The SAT will develop an "Outreach Guidance" document that includes:

    a. Why the topic is important and how it relates to LOC,

    b. Specific teaching points that should be included in any outreach on this topic,

c. A tracking tool outreach organizations can use to log completed outreach, and

d. Recommendations on how frequently outreach on this topic should be accomplished.

4. The SAT will recommend changes to:

   a. PTS/ACS,

   b. Flight review,

   c. FAA Order 8900.1, and

   d. Flying handbooks.

5. The SAT will recommend new materials to be developed, if any.

6. The SAT will document the procedures and process to do this work.

7. The entity identified in Topic No. 1 will develop a metric to measure the effectiveness of outreach on each topic.

8. Material and recommendations will be distributed to the SAT for review, 60 days prior to release for use in Output 2.

Output 2

1. GA JSC member organizations will develop an outreach program based on the outreach guidance document from Output 1.

   a. Initial outreach—possible channels:

      i. Magazines,

      ii. Websites,

      iii. Emails, and

      iv. Newsletters.

   b. Develop a calendar for ongoing outreach—possible outreach options:

      i. Flight Review Special Emphasis List,

      ii. Include in the WINGS required course,

      iii. Include in Safety Stand Down (SSD) for the year, and

      iv. Develop Safety Stream.

Output 3

1. AVP will report on metrics for how effective the outreach on each topic has been, and—

    a. Determine if changes in the system necessitate changes to the outreach.

    b. Review and recommend changes to intervals when training needs to be reemphasized on each topic.

SE 2: Angle of Attack (AOA) Systems—Existing GA Fleet (Complete)

To reduce the risk of inadvertent stall/departure resulting in LOC accidents, the GA community should install and use AOA-based systems for better awareness of stall margin.

Output 4

The GAJSC will inform the insurance industry of studies and results (see below) relating to the reduction of LOC risk by the installation of an AOA indicator. This will incentivize installations by means of enhanced coverages or discounts. Specifically—

1. AVP will annually update the GAJSC Pareto chart. As part of this activity, AVP will update the LOC accident rate. The number of installed AOA units in the GA fleet will also be reported.

2. The GAJSC will report to the insurance industry on the metrics established in action 1 of this output.

3. If research is conducted to correlate unstabilized approach rates of aircraft with and without AOA installations on aircraft participating in the GA FDM program, results of this research will be reported to the GAJSC. The results of this study will be provided to the insurance community (if the research is completed).

SE 9: Part 135 Safety Culture (Complete)

To reduce LOC accidents, the GA community should advocate that part 135 operators conduct mixed operational missions under safety criteria similar to those governing commercial flights to increase safety margins and promote professionalism.

Output 2

The GAJSC will request that the AVP Accident Investigation Division (AVP–100) and the NTSB collect information on accident reports indicating the entity with operational control of the accident flight. Specifically—

1. AVP–100 will revise FAA Form 8020–23, Accident/Incident Report, to reflect combined parts 91 and 135 operations to clearly indicate which entity has operational control of the accident flight.

2. The NTSB will include a field in NTSB Form 6120.1, Pilot/Operator Aircraft Accident Report, that indicates the entity with operational control of the accident flight.

SE 21: Risk-Based Flight Review (Complete)

To reduce LOC accidents due to reoccurring causal factors, the GAJSC will provide to the training and instructor community an annual report of issues and risks found by the risk-based working groups (such as the Loss of Control Working Group). These issues and risks can be used to develop a risk-based flight review special emphasis initiative.

Output 1

The GAJSC will identify and compile data on safety risks that were identified in the risk studies completed during the previous 12 months. This data will be disseminated to the flight training and instructor community for use in training and flight reviews. This program is intended to cover national trends, but region-specific risks will be included if identified in the accident data. This reporting will continue until the GAJSC has completed its fatal accident studies. Specifically—

1. The GAJSC will compile risks found by the working groups during the study of fatal accident data. The AVP Safety Analytical Services Division (AVP–200) will draft a letter identifying the top three risks discovered in the previous year's study. This letter will be forwarded to the GAJSC for approval and eventual dissemination.

2. The GAJSC will distribute the data to the flight training and instructor community as special emphasis items for the flight review and training.

3. The flight training and instructor community will provide feedback on the results and provide recommendations back to the GAJSC on the data's usefulness during flight reviews.

SE 48: Ignition Systems (Complete)

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should research, and if applicable, develop alternative ignition systems with enhanced reliability in reciprocating engines.

Within the SCF−PP dataset, there were five accidents involving ignition system problems that led to loss of engine power events. Four of the five accidents involved magneto-related issues. Magnetos have been certified and in use since the earliest days of aviation. That being said, there are variations to legacy magneto/impulse coupling ignition systems, such as shower of sparks, solid-state ignition systems (SSIS), and combinations of legacy and SSIS that have had exposure primarily in the experimental segment of GA. This SE is intended to research the use of alternative systems such as SSIS to potentially improve ignition systems and help prevent powerplant failures.

Output 1

FAA AVP, with support from FAA ANE, will compile and analyze existing data that ANE has researched and compiled.

1. FAA AVP will conduct research and accident analysis to determine reliability of ignition systems for reciprocating engines

2. ANE will pursue further research if deemed necessary.

7. SEs—Office of Airports (ARP)

SE 12: Weather Technology (Underway)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To reduce the risk of accidents due to weather-related factors, pilots should rely upon accurate real-time weather reporting. While ground-based weather reporting systems (such as Automated Weather Observing Systems and Automated Surface Observing Systems) have proliferated, remote installation of weather cameras can help provide additional and real-time weather information to pilots.

Output 1 (Complete)

The FAA and industry will determine the most effective remote real-time weather systems (including actual conditions as viewed through a remote camera) currently available. Specifically—

1. The FAA will meet with appropriate FAA and industry organizations to determine what systems exist for remote weather monitoring and develop recommendations for participation.

2. The FAA will report the team's recommendations to the GAJSC.

3. The GAJSC will recommend the most suitable and cost-effective remote real-time weather systems (including actual conditions as viewed through a remote camera) to the American Association of Airport Executives (AAAE), AOPA, EAA, and other industry members to promote their installation.

8. SEs—FAA (WITH NO OFFICE OF LINE OF BUSINESS SPECIFIED)

SE 47: A&P EDUCATION/TRAINING (UNDERWAY)

This SE is underway. Aspects of this SE are currently being worked on and may be altered from this version once they are complete.

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should examine available training and education for maintenance professionals.

Within the SCF−PP dataset, 35 accidents involved inadequate and/or improper maintenance or maintenance operations simply not being performed. Though the human factors behind these maintenance-related errors were rarely investigated, the reoccurrence of the problem throughout the dataset warranted an SE that would help improve a mechanic's understanding of critical maintenance procedures and the consequences of not performing maintenance inspections or procedures, or doing the maintenance improperly. The best way to accomplish this throughout the maintenance community is through improved training and ensuring that best practices and protocols are not only followed, but easily accessible to the A&P.

Output 1

The FAA, along with the industry, will recommend and incentivize recurrent training for A&Ps based on available training and current IA training. Specifically, they will—

1. Incentivize recurrent training for A&Ps.
2. Consider program structures such as Flight Instruction Refresher Course (FIRC) and online FIRC.
3. Examine and encourage use of aviation maintenance technician (AMT) Awards Program.
4. Consider interactive aircraft and engine-specific online training courses to tailor fit a mechanic's current operations or background.
5. Examine feasibility of accredited training/training programs that equate to college credit.
6. Recommend A&Ps attend inspection authorization (IA) training.
7. Improve WINGS program for A&Ps.
8. Develop "Gold Seal" A&P program.
9. Develop interactive aircraft and engine specific online training courses to tailor fit a mechanic's current operations and background.

Output 3

The FAA, along with the industry, will compile and review existing research to—

1. Review existing human factors in maintenance research and determine if additional research is required.

2. Review SCF−PP accident dataset with human factors experts.

3. Determine “Top Ten Mistakes” for use in outreach and training.

9. SEs—Industry Only, with no FAA Action

SE 17: Flights With Impairing or Incapacitating Medical Conditions—Barriers to Communication (Complete)

To reduce the risk of medical conditions known to the pilot causing in-flight impairment or incapacitation resulting in loss of control accidents, the GA community should implement programs to reduce the likelihood of airmen failing to disclose known medical conditions and/or flying with known medical conditions that could adversely affect their ability to safely operate aircraft.

Barriers to open/honest communication between airmen and AMEs have resulted in airmen failing to disclose possibly impairing medical conditions and subsequently flying with conditions that have contributed to in-flight impairment and/or incapacitation. AAM and the Aerospace Medical Association in conjunction with the Aircraft Owners and Pilots Association (AOPA) should develop methods or techniques and perform a study (or studies) that will help determine then mitigate barriers to an open and honest communication between pilots and their AMEs and develop methods to improve professionalism of pilots and their ability to conduct accurate medical self assessment before each flight.

Output 1

AOPA/EAA will work with pilot community to determine additional methods to overcome barriers to open and honest communication of potentially hazardous medical issues and improve pilot professionalism and the ability to conduct accurate medical self-assessment before each flight. AOPA/EAA will—

1. Develop anonymous surveys to evaluate barriers to honest, open, professional communication between AMEs and airmen.

2. Develop anonymous surveys to evaluate pilot understanding of the implication of flight with potentially impairing medical conditions and what motivates a pilot to fly with a condition that endangers himself/herself or others.

3. Use the results of these surveys to help develop strategies to encourage airmen to use professional risk assessment when confronted with potentially impairing medical conditions.

SE 27: Reduce Regulatory Roadblocks (R^3) – Review of 14 CFR 21.8 and 21.9 (Complete)

Industry will review 14 CFR §§ 21.8 and 21.9, and ensure these rules are not unintentionally producing roadblocks to the installation of nonrequired, safety-enhancing equipment. If these rules are creating an unintended roadblock, new paths that are more cost effective will need to be created, up to and including using the existing exemption process.

Output 1

Memo outlining the part 21 process review and recommendations. The memo needs to include the comparison of safety value added against the cost of compliance. It should identify rules where their compliance costs far exceed the safety value provided, and recommendations should be made for changing these requirements.

SE 31: Test Pilot Utilization and Experimental Amateur Built (EAB) Proficiency (Complete)

Industry will improve amateur built flight testing safety through greater understanding of test pilot qualifications and listing of test pilots willing to work with homebuilders.

Output 1

1. EAA will publish a Sport Aviation article on what type of test pilot is appropriate for a given testing scenario.

2. EAA will revise and increase guidance in Tech Counselor/Flight Advisor program manuals on differences between test pilots.

Output 2

1. EAA will establish and publish suggested standards for a qualified test pilot.

2. EAA will create an online listing of test pilots and invite interested candidates to self-refer for inclusion on the list.

3. EAA will conduct follow-up outreach to homebuilders on test pilot utilization following the publication of the list.

SE 45: Maintenance Placard (Complete)

To help prevent fatal GA accidents due to failure of the powerplant system, the GA community should develop, distribute and promote a device to be displayed in the windscreen of aircraft undergoing maintenance.

Output 1

Industry will develop a highly visible device that will alert pilots when an aircraft is undergoing maintenance and/or is not airworthy.

Output 2

The device will be distributed at various tradeshows and made available to pilots and mechanics.