

**Runway Incursion
Joint Safety Implementation Team**

**Implementation Plan
for
Standard Operating Procedures – Runway Incursion Prevention**

Statement of Work:

Many runway incursions and other surface incidents can be linked to a lack of standardized pilot procedures to ensure safe ground operations. Although most airlines have detailed procedures for airborne operations, relatively few airlines have standard procedures for operating in the increasingly complex surface environment. The purpose of this project is to reduce the risk of runway incursions and surface incidents by recommending that all FAR Part 121 operators and Part 135 operators: establish, document, train to, and follow standard operating procedures (SOPs) for ground operations. These operators should train to proficiency on their SOPs and ensure their use. These SOPs should be developed from a survey of industry “best practices”. These “best practices” should also be adapted for use in single-pilot (Part 91) operations and recommended for use. Recommendations for “best practices” for ground vehicle operations in the aircraft movement area should also be developed and incorporated into training programs. **Industry wide, standard operating procedures have been among the highest scoring safety enhancements across Controlled Flight into Terrain JSIT, Approach and Landing JSIT, Loss of Control JSIT, and Runway Incursion JSIT. The implementation of Standard Operating Procedures for surface operations is one of the most powerful near-term interventions in mitigating the risk of runway incursions. This plan builds upon the recent Advisory Circular 120-74, "Flight Crew Procedures During Taxi Operations", to develop templates of SOPs for use by: air carriers, general aviation pilots, mechanics and others who tow or otherwise operate aircraft on the airport surface, and airport vehicle drivers.**

Lead Organization for Overall Project Coordination (LOOPC): FAA AFS and ARP

SAFETY ENHANCEMENT 1: (SE-49)

Template for SOPs for ground operations for use by all FAR Part 121 and Part 135 operators in generating SOPs.

Accident Prevention Index: (to be completed by JIMTDAT)

Total Resource Requirements:

Approximately one-half (.5) labor year for the FAA and per Part 121 and Part 135 operator

Completion Date: 24 months after CAST G-level approval

Output 1: Template for SOPs for ground operations for use by all FAR Part 121 and Part 135 operators in generating SOPs for each participant airline.

Resources: The Lead Organization for Overall Output Coordination (LOOC) is the FAA-AFS. JSIT members are currently collecting examples of industry best practices and SOPs. From this, a SOP template will be developed. The FAA resources required to supplement the current advisory circular (AC) on Standardized Pilot Procedures for Airport Surface Operations with this template is estimated at .25 Labor Years (LY). Airline resources required to implement the recommended procedures into their company SOPs and training will depend upon the degree to which the individual airline has already incorporated the AC.

Timeline: 9 months after CAST G-level approval.

Actions:

- JSIT members are currently collecting examples of industry best practices and SOPs. This effort is expected to be completed by 4th quarter 2001.
- Advisory Circular 120-74, Part 121,125,135 Flight Crew Procedures during Taxi Operations, has been published.
- FAA will insure a representative sample of air carrier SOP's and other appropriate material are available for review.
- Based on these materials, a template for SOPs for ground operations in all meteorological conditions will be developed and submitted to FAA for comment. This material would include recommendations for:
 - Distribution of pilot flying and pilot not flying duties
 - Checklists and procedures to promote effective crew coordination.
 - Procedures for flight crews to review/cross check instructions, clearances, etc and query ATC whenever uncertainty exists.
- This template for SOP's is expected to be completed 9 months after CAST G-level approval.

Output 2: An Advisory Circular that publishes the template for use in establishing each operator's SOP's.

Resources: The LOOC is FAA-AFS; ATA, Operators, and member associations.

Timeline: 9 months after SOP template approval.

Actions: AFS to write AC describing specific subject areas to be addressed by air carrier SOP's. The AC will not contain specific wording for the SOP's, but will only contain guidance to the air carriers.

Output 3: FAA issue a Handbook Bulletin for Air Transportation (HBAT) to provide guidance to the FAA Principal Operations Inspectors (POI's) for ensuring the incorporation of the AC SOP template into the operators' training and operations

manuals.

Resources: The LOOC is FAA-AFS; ATA, operators and member associations.

Timeline: NLT than the date of approval of the SOP Advisory Circular.

Actions: FAA-AFS will write HBAT to provide guidance to all POI's as it relates to oversight of air carrier operations and training programs.

Output 4: Operators incorporate the proposed SOP template items into policy manuals and training programs as appropriate for the scope of the operation.

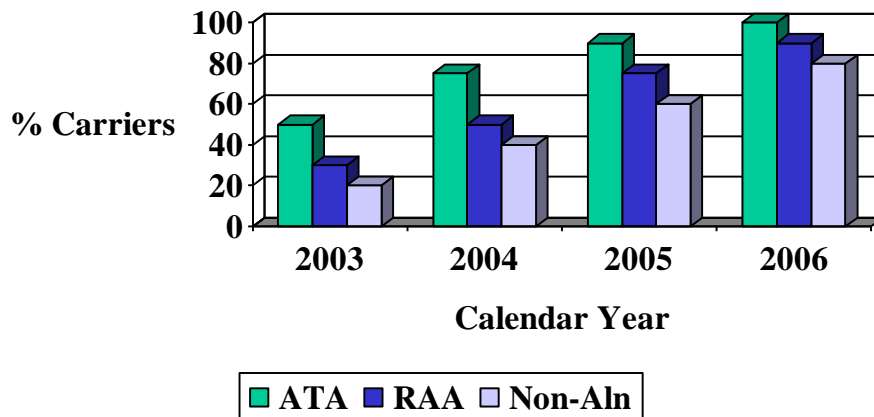
Resources: The LOOC is the ATA; RAA, manufacturers, operators and member associations.

Timeline: 6 months after the SOP AC and HBAT are published.

Actions: Operators should revise their company training programs and policy manuals to incorporate as many SOP-template items as appropriate for the scope of the operation.

The table below shows the anticipated timeline for percentage of air carriers completing the integration of industry "best practices" into their operations. The carriers are categorized as ATA members, RAA members, and non-aligned carriers.

Goals for Integration of Industry "Best Practices" for Ground Operations into Air Carrier Operations



Performance Goals and Indicators for Safety Enhancements/Outputs:

Safety Enhancement 1:

Goal 1: The establishment and documentation of, and training to, standard operating procedures (SOPs) for ground operations for Part 121 and Part 135 Operations.

Indicator 1: All Part 121 and Part 135 Operators have established SOPs for ground operations and have incorporated them into their pilot training.

Goal 2: Reduction of runway incursions and other surface incidents resulting from pilot deviations from Part 121 and Part 135 operations.

Indicator 2: Reduction in the rate of runway incursions and other surface incidents resulting from pilot deviations from Part 121 and Part 135 operations as measured by the Runway Safety Office per 100,000 operations.

Output 1 through 4:

Goal: The incorporation runway incursion prevention SOP's by all FAR Part 121 and Part 135 operators. The operators are in the best position to apply the SOPs to their individual operations, taking the **operating environment, complexity of the operations, mix of skill sets, etc., into account.**

Indicator: A measurable decrease in runway incursions, attributable to pilot deviations, that resulted from operators adopting a common set of SOP's for ground operations.

SAFETY ENHANCEMENT 2: (SE-50)

The establishment and dissemination of recommended practices for general aviation (GA) ground operations will help to reduce the risk of runway incursions.

Accident Prevention Index: (to be completed by JIMTDAT)

Total Resource Requirements:

Approximately one FAA labor year will be required to develop a template of best practices for use by single-pilot GA operations based on the SOPs for Part 121 and Part 135 operators.

Completion Date: 9 months after CAST G-level approval

Output 1: Template for "best practices" for ground operations for use by single-pilot GA operations.

Resources :

The LOOC is the FAA - AFS. Approximately 1 labor year would be required to develop recommended practices for GA ground operations and disseminate the information through FAA distribution channels.

Timeline: 9 months after CAST G-level approval

Actions:

- JSIT members are currently collecting examples of industry best practices and SOPs. This effort is expected to be completed 180 days after CAST G-level approval.
- Based on this material, a document containing recommended best practices for single-pilot ground operations in all meteorological conditions will be developed and submitted to FAA for comment. This material would include recommendations for:
 - Checklists and procedures to promote safe ground operations.
 - Procedures for pilots to review/cross check instructions, clearances, etc. and to query ATC whenever uncertainty exists.
- This document is expected to be completed within 9 months of CAST G-level approval.
- Once approved, this material will be disseminated to the operators for their use in development of SOPs.
- General Aviation organizations (AOPA and others) have committed to disseminate General Aviation SOP's and "best practices" as appropriate.

Performance Goals and Indicators for Safety Enhancements/Outputs

Safety Enhancement 2

Goal 1: To establish and disseminate recommended practices for general aviation (GA) ground operations.

Indicator 1: The establishment and dissemination of recommended practices for general aviation (GA) ground operations.

Goal 2: Reduction of runway incursions and other surface incidents resulting from GA pilot deviations.

Indicator 2: Reduction in the rate of runway incursions and other surface incidents resulting from GA pilot deviations as measured by the Runway Safety Office per 100,000 operations.

Output 1:

Goal: To develop a template for "best practices" for ground operations for use by single-pilot GA operations.

Indicator: Completion of a template for "best practices" for ground operations for use by single-pilot GA operations.

SAFETY ENHANCEMENT 3: (SE-51)

The development and use of recommended “best practices”, for ground operations for use by mechanics and others who tow or otherwise move aircraft within the airport movement area, will improve aviation safety by reducing the frequency and severity of runway incursions.

Accident Prevention Index: (to be completed by JIMTDAT)

Total Resource Requirements:

Approximately .5 (one-half) labor year per operator.

Completion Date: 9 months after CAST G-level approval

Output 1: Template for “best practices” for mechanics and others who tow or otherwise move aircraft within the airport movement area.

Resources :

The LOOC is the FAA-AFS. Since Bill O’Brien, FAA AFS-800, is currently developing recommended practices for mechanics and others who tow aircraft, no additional resources would be required for this phase of the work. Airline resources would be required to incorporate these practices into the training of mechanics and others who tow or otherwise move aircraft within the airport movement area.

Timeline: 9 months after G-level approval.

Actions: Bill O’Brien, FAA AFS-800 is developing recommended practices for mechanics and others who tow aircraft. This is scheduled to be completed by September 2001.

Performance Goals and Indicators for Safety Enhancements/Outputs:

Safety Enhancement 3

Goal: To develop, and train mechanics and others who tow or otherwise move aircraft within the airport movement area to, recommended “best practices” developed to prevent runway incursions and other surface incidents.

Indicator: Mechanics, and others who tow or otherwise move aircraft within the airport movement area, of all Part 121 and 135 operators are trained on recommended best practices aimed at preventing runway incursions.

Output 1:

Goal: To develop a template for “best practices” for mechanics and others who tow or otherwise move aircraft within the airport movement area.

.Indicator: Completion of a template for “best practices” for mechanics and others who tow or otherwise move aircraft within the airport movement area.

SAFETY ENHANCEMENT 4: (SE-52)

Development of recommended best practices for vehicle operations in the aircraft movement area and use of these best practices in driver training will help prevent runway incursions/surface incidents.

Accident Prevention Index: (to be completed by JIMTDAT)

Total Resource Requirements:

Approximately .5 (one-half) labor year per airport operator.

Completion Date: 9 months after CAST G-level approval

Output 1: Development of recommended best practices for vehicle operations in the aircraft movement area aimed at the prevention of runway incursions/surface incidents and use of these best practices in driver training.

Resources :

The LOOC is the American Association of Airport Executives (AAAE). FAA/AVR will assist AAAE and others in developing “best practices”. Limited resources would be required since AAAE (contact: Jim Johnson) has developed a training program for vehicle drivers aimed at preventing runway incursions. Additional airport resources would be required to implement the driver training. A safety audit of airports with such training programs in place would need to be conducted by an organization such as AAAE. FAA-ARP would conduct or oversee this safety audit.

Timeline: 9 months after CAST G-level approval.

Actions:

- Recommended best practices will need to be developed for vehicle operations in the aircraft movement area to prevent runway incursions and other surface incidents.
- All airport vehicle drivers who operate in the aircraft movement area will need to be trained on these recommended practices.
- Airport organizations (AAAE and others) have committed to disseminate vehicle SOP’s and “best practices” as appropriate.

Performance Goals and Indicators for Safety Enhancements/Outputs:

Safety Enhancement 4

Goal 1: To develop and train to recommended “best practices” for ground operations for use by airport vehicle drivers in the aircraft movement area.

Indicator 1: All FAA Part 139 airports have incorporated the recommended “best practices” for ground operations into their training for use by airport vehicle drivers in the aircraft movement area.

Goal 2: Reduction of runway incursions and other surface incidents resulting from vehicle deviations.

Indicator 2: Reduction of rate of runway incursions and other surface operations resulting from vehicle deviations as measured by the Runway Safety Office per 100,000 operations.

Output 1:

Goal: To develop recommended best practices for vehicle operations in the aircraft movement area aimed at the prevention of runway incursions/surface incidents and use of these best practices in driver training.

Indicator: Completion of recommended best practices for vehicle operations in the aircraft movement area aimed at the prevention of runway incursions/surface incidents and use of these best practices in driver training

Relationship to Current Aviation Initiatives

- Advisory Circular 120-74, Part 121,125,135 Flight Crew Procedures during Taxi Operations, has been published.
- American Association of Airport Executives (AAAE) is in the process of developing a training program for vehicle drivers who operate in the aircraft movement area.
- Bill O'Brien, FAA AFS-800 is developing recommended practices for mechanics and others who tow aircraft. This is scheduled to be completed by September, 2001.

Programmatic Approach

Organizational Strategy

- The Runway Incursion JSIT identified Rich Cunningham as the JSIT project lead for SOPs.
- The project lead is coordinating a meeting of airline safety representatives to survey best practices for surface operations. This effort will lead to the development of recommended best practices and the other activities outlined in the Implementation Plan. The intent is to incorporate recommended best practices/SOPs into existing Advisory Circular 120-74 in its next review update.
- Implementation is viewed as a shared responsibility and tasks will be divided between the FAA and organizations in industry.
- The FAA offices of primary responsibility (OPR) are AFS and ARP.
- The office of primary responsibility for industry should be ATA.

Implementation Activities

In collaboration with Industry, the FAA will monitor FAR Part 121 air carrier integration of standard operating procedures and industry "Best Practices" for ground operations. A

bi-annual update to the advisory circular will include feedback from industry partners and will continue to refine SOP s for ground operations. In assessing the impact of industry “Best Practices” and SOPs in Runway Incursion risk reduction, an aggressive reporting process will be an essential part. Periodic reports will provide meaningful measures against project goals.

Key Products and Milestones

- Template for SOPs for ground operation for use by Part 121 and Part 135 operators – 18 months after CAST G-level approval
- Template for “best practices” for ground operations for use by single-pilot GA operations. - 9 months after CAST G-level approval
- Template for “best practices” for mechanics and others who tow or otherwise move aircraft. - 9 months after CAST G-level approval
- Template for “best practices” for vehicle operators in the aircraft movement area - 9 months after CAST G-level approval

Plan and Execution Requirements

The four Safety Enhancements as described would help to address errors that result in runway incursions by providing recommendations for procedures for pilots (Part 121, 135, and GA), mechanics (and others who tow aircraft) and airport vehicle drivers. Safety Enhancements 2 and 3 (geared toward GA pilots and those who tow aircraft, respectively) will be able to be based on Safety Enhancement 1. Safety Enhancement 4, recommended best practices for vehicle operations, will be geared to vehicle drivers.

A draft of safety Enhancement 1, a template for SOPs and recommended practices for ground operations for use by FAR Part 121 operators, has already been developed. This draft was based on input of 60 recommendations from nine air carriers. It consists of nine SOPs and 14 recommended practices. This work provides the foundation for Outputs 2 and 3. The development and implementation of Safety Enhancement 4 will be managed by AAAE.

Implementation of Safety Enhancement 1 will require Part 121 carriers to tailor the template of SOPs and recommended practices and incorporate them into the airline’s training and procedures. This material will also need to be provided to Part 135 carriers so that they can tailor these SOPs and recommended practices for the scope their operations and incorporate them into their training and procedures. Implementation of Safety Enhancement 2 will require development of SOPs and recommended practices GA operations. The material will need to be made available to GA pilots; this will require funding and a plan for distribution. The development and implementation of Safety Enhancement 4 will be managed by AAAE, and will require adequate resources to ensure that a training program is available to all major airports

Risk Description

- Part 121 and Part 135 carriers fail to use the recommended template for SOPs for surface operations.
- Guidance for airport vehicle drivers may exist only in airport-specific formats.
- Guidance for mechanics and others who tow or otherwise move aircraft may not exist.
- Not all airlines and airport operators have training programs in place for vehicle drivers and/or people who tow (or otherwise move) aircraft.

Risk Mitigation Plan

- Group will seek consensus from air carriers on the template.
- Generic guidance, suitable for all for airport vehicle drivers, may need to be developed.
- Guidance for mechanics and others who tow or otherwise move aircraft may need to be developed.
- FAA may need to develop training materials for vehicle drivers and/or people who tow (or otherwise move) aircraft.
- FAA may need to develop guidance for airlines and airport operators for developing and implementing training programs for vehicle drivers and/or people who tow (or otherwise move) aircraft.

Impact on Non-Part 121 or International Applications

International operators will also benefit from the availability of SOPs template, the SOPs AC, and the recommended best practices for single pilot GA operations and operators of vehicles on the aircraft movement area.