

**Runway Incursion  
Joint Safety Implementation Team  
  
Implementation Plan  
For  
Air Traffic Control Procedures**

**Statement of Work:**

The purposes of this project are:

- To review and develop national Air Traffic Control Procedures that will require tower controllers to maintain a high level of situational awareness
- To review the impact and recommend changes as necessary to “Reduced Separation on Final (FAAH 7110.65 para. 5-5-3f)” and “Land and Hold Short Operations (LAHSO)” as they pertain to surface incidents and runway incursions; and to review phraseology used for terminal operations, recommending changes to unnecessary or confusing phraseology.
- To initiate rule-making to amend FAR 91.129 (i); and to require pilots to read back any clearance to enter a specific runway, hold short of a specific runway, or “taxi into position and hold” instructions.

**Lead Organization for Overall Project Coordination (LOOPC):** FAA, ATS-1

**SAFETY ENHANCEMENT 1: (SE-55)** Runway incursions will be substantially reduced and aviation safety improved through the use of nationally standardized procedures that focus on situational awareness in the control tower.

**Accident Prevention Index:** (To be completed by JIMDAT)

**Total Resource Requirements:** Resources to perform these functions currently exist within the FAA.

- Organizational time of approximately one labor-year.
- Cost for any product development and distribution will be dependent on the projects identified by the LOOPC to accomplish this safety enhancement.

**Completion Date:** 12 Months

**Output 1:** Implement national standardized requirements for tower positions to ensure uniform, effective and sustained situational awareness practices relating to surface operations.

**Resources:** AAT-1 (LOOC), ATP-1

**Timeline:** 12 Months

**Actions:** Review applicable Air Traffic Control Procedures. Develop national standards to ensure tower controllers maintain situational awareness. Eliminate unnecessary distractions in the operating quarters.

**Performance Goals & Indicators for Safety Enhancement/Outputs:**

- Goal: Increased situational awareness of tower controllers with the use of national standardized procedures.
  - Indicator: Reduction in rate/number of runway incursions caused by controller error where loss of situational awareness, such as aircraft landing over another on a runway (“Landovers”), or memory lapses were factors.

**SAFETY ENHANCEMENT 2: (SE-56)** A review of capacity enhancement programs will determine if they are contributory to runway incursions. If found to be causal, these programs will be revised or eliminated.

**Accident Prevention Index:** (To be completed by JIMDAT)

**Total Resource Requirements:** Organizational time of approximately one labor-year.

**Completion Date:** 12 Months

**Output 1:** Determine through review of available runway incursion data, any impact from capacity enhancement procedures as they pertain to surface incidents and runway incursions.

**Resources:** AAT-1 (LOOC), ATP-1

**Timeline:** 12 Months

**Actions:** Examine available runway incursion data, focusing on events, procedures, and phraseologies related to capacity enhancement initiatives or techniques to determine impact on surface movements and runway incursions. If found to be causal or contributory amend or change as needed.

**Performance Goals & Indicators for Safety Enhancement/Outputs:**

- Goal: Elimination of runway incursions generated by capacity enhancement initiatives or techniques.
  - Indicator: Reduction in rate/number of runway incursions caused by pilot or controller error where capacity enhancement initiatives or techniques have been shown to be factors.

**SAFETY ENHANCEMENT 3: (SE-57)** Runway incursions will be substantially reduced and aviation safety improved through the use of clear, unambiguous phraseologies related to surface operations.

**Accident Prevention Index:** (To be completed by JIMDAT)

**Total Resource Requirements:** Organizational time of approximately one labor-year.

**Completion Date:** 12 Months

**Output 1:** Delete or change unnecessary and/or confusing phraseology used for surface movement operations.

**Resources:** AAT-1 (LOOC), ATP-1, AFS-1

**Timeline:** 12 Months

**Actions:** Review phraseology used for surface movement operations and recommend changes.

**Performance Goals & Indicators for Safety Enhancement/Outputs:**

- Goal: Update, and increase efficiency of phraseologies used by pilots and controllers.
  - Indicator: Controllers will have more available time on frequency, reducing the need for repeated clearances, thus reducing the chance of read-back errors; this will lead to a reduction in rate/number of runway incursions caused by misunderstandings or read-back/hear-back errors.

**SAFETY ENHANCEMENT 4: (SE-58)** The majority of runway incursions are caused by pilot deviations. Aviation safety will be improved by:

- Amending the last two sentences of FAR 91.129 (i). This will eliminate any confusion as to whether an aircraft has approval to cross a runway on their way to their departure runway, while repositioning from point to point on the airport, or crossing a runway after landing to reach their destination on the airport.
- Creating a shared responsibility for clear understanding of instructions between the users and controllers. It is currently the sole responsibility of the controller to seek and receive acknowledgement for these instructions.

**Accident Prevention Index:** (To be completed by JIMDAT)

**Total Resource Requirements:** Organizational time of approximately two labor-years.

**Completion Date:** 36 Months

**Output 1:** Amend the last two sentences of FAR 91.129 (i).

**Resources:** ATA-1 (LOOC), AAT-1

**Timeline:** 36 Months

**Actions:** Conduct a study to model the impact of any amendments to the last two sentences of FAR 91.129(i). If expected safety enhancements are realized, initiate the regulatory and procedural process to implement change.

*NOTE: Runway incursion data used to support these interventions indicated that the incidents linked with FAR 91.129 were not associated with instructions to 'taxi to' a departure runway, but with instructions for taxiing point-to-point on the airport or taxiing to parking after landing. This focuses the need for change on the very last sentence in FAR 91.129 (i).*

**Performance Goals & Indicators for Safety Enhancement/Outputs:**

- Goal: Eliminate runway incursions generated by crossing runways in error; either while enroute to a departure runway, taxiing "point to point" on the airport, or taxiing to a point on the airport after landing.
  - Indicator: Elimination of these types of incursions through positive control of runway access in these situations.

**SAFETY ENHANCEMENT 5: (SE-59)** Aviation safety will be improved by creating a shared responsibility to ensure clear understanding of specific control instructions through the use of mandatory read-backs of any clearance to enter a specific runway, hold short of a specific runway, or "taxi into position and hold" instructions. It is currently the sole responsibility of the controller to seek and receive acknowledgement for these instructions.

**Accident Prevention Index:** (To be completed by JIMDAT)

**Total Resource Requirements:** Organizational time of approximately two labor-years.

**Completion Date:** 36 Months

**Output 1:** Regulators should require a read-back for control instructions to enter a specific runway, holding short of specific runway, and all taxi-into-position and hold instructions.

**Resources:** ATS-1 (LOOC), AFS-1, AVR-1

**Timeline:** 36 Months

**Actions:** Initiate the regulatory and procedural process to require pilots to read back any clearance to enter a specific runway, hold short of a specific runway, or “taxi into position and hold” instructions.

**Performance Goals & Indicators for Safety Enhancement/Outputs:**

- Goal: Ensured clear understanding of specific control instructions through the use of mandatory read-backs.
  - Indicator: Reduction in rate/number of runway incursions caused by pilot or controller error where confusion or ambiguous communications is a factor.

**Relationship to Current Aviation Community Initiatives:**

- ARI/ATP to model the impact of changing FAR 91.129 (i) in first qtr CY02
- FAA Order 7110.118 (LAHSO)
- FAA Order 7110.65 (Air Traffic Procedures)
- FAA Order 7210.58 (Runway Safety Program)
- Runway Safety Program’s ‘10 Near Term Initiatives for Reducing Runway Incursions’
  - NATCA-FAA workgroups established to address:
    - Enhanced Operational Tower Controller Training.
    - Memory Enhancement Techniques Training for Tower Controllers.
    - Pilot/Controller Phraseology Review
- Advisory circulars and bulletins ie;
  - Runway incursion prevention ‘best practices’
  - Letter to pilots and examiners dated Sept. 18<sup>th</sup> ‘00
- AOPA and FAA - Flight instructor refresher training and workshops
- AOPA and ALPA magazine articles and safety bulletins
- FAA and Industry regional runway safety workshops
- NTSB recommendation (A-00-67) that the FAA amend FAR 91.129 (i)

**Programmatic Approach:**

*Organizational Strategy*

The Runway Incursion JSIT identified Karen Pontius, ATP-120.10 as the JSIT project lead for Air Traffic Control Procedures. The project lead will act as a point of contact to assist with the implementation of the activities outlined in this plan.. Implementation of this project is viewed as a shared responsibility and tasks will be divided between the FAA and organizations/persons in industry. The Lead Organization for Overall project Coordination (LOOPC) is ATS-1. The Lead Organizations for Output Coordination (LOOC) are identified in each Output of this Implementation Plan. The roles and responsibilities of the LOOPC and LOOC are described in the CAST approved JSIT Process Document.

*Implementation Activities*

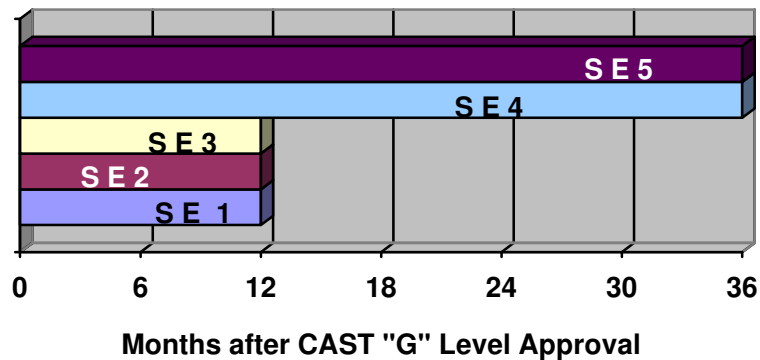
- The FAA, in addressing several NTSB Safety Recommendations and the interventions later identified by the Runway Incursion JSAT established the Office of Runway Safety (ARI).

Jan 02

- ARI, in concert with industry partners, launched an awareness campaign using Letters to Airmen, Examiner Updates, Safety Bulletins, Websites, GENOTS, and other means of communication.
- ARI has already initiated workgroups to address elements of this project as follows:
  - Enhanced Operational Tower Controller Training workgroup addresses Safety Enhancement 1 through emphasis on maintaining situational awareness
  - Memory Enhancement Techniques Training for Tower Controllers workgroup will also address Safety Enhancement 1 through recommendations for use of nationally standardized procedures to help maintain situational awareness
  - Pilot/Controller Phraseology Review will address Safety Enhancement 3
- FAA will develop plans to study the following:
  - Impact of implementing changes to FAR 91.129 (i) as called for in Safety Enhancement 4
  - Impact of instituting mandatory read-backs of clearances mentioned in Safety Enhancement 5
  - Review capacity enhancement programs to determine if they are contributory to runway incursions. If found to be causal, these programs will be revised or eliminated.
- If NPRM actions are required for Safety Enhancements 4 & 5, ARI will work to initiate them

### **Key Products and Milestones:**

#### **Safety Enhancement Timeline**



### **Risk Description:**

- General opposition to change. This applies to both the controllers and system users.
- Cost associated with studies and research of issues called for in this plan.
- Possibility of reduced capacity if capacity enhancement programs are revised or eliminated.
- Resistance by users to institution of mandatory readbacks
- If enhancement 4 (mandatory readbacks of clearances onto or holding short of a runway) or 5 (amending FAR 91.129 (i) to require separate clearances to cross each runway) become regulations, the initial transition period could increase controller workload and frequency congestion. Confusion over runway crossing clearances or readbacks could contribute to more incursions.
- NPRM process could prove lengthy and controversial
- Difficulty in creating standardized procedures to enhance situational awareness that can be mandated nationwide; currently these procedures are developed at the facility level to better address specific needs

### **Risk Mitigation Plan:**

- Memory Enhancement Techniques Training for Tower Controllers workgroup is currently compiling information from the field on methods of enhancing situational awareness. They plan to use the information to recommend 'best practices'; as well as recommend that some methods be nationally standardized.
- ARI plans to underwrite costs associated with studies.
- If safety benefits can be gained by revising or eliminating capacity enhancement programs, they will outweigh any losses in airport capacity.
- NPRM process can be completed in 24 months; we have estimated 36 months for the two enhancements (4 & 5) that would require the process.
- Assuming enhancements 4 (mandatory readbacks of clearances onto or holding short of a runway) and 5 (amending FAR 91.129 (i) to require separate clearances to cross each runway) become regulations, possible frequency congestion and increased controller workloads can be mitigated by special emphasis on tower supervision or staffing of extra 'monitor' positions.
- ARI will continue its runway safety awareness campaign: educating controllers and pilots through bulletins, websites, mailings, and notices of change to the FARs.

### **Impact on Non - Part 121 or International Applications:**

These Safety Enhancements will affect **all** system users. Any changes to phraseology or FARs may require procedural changes, training and compliance for all system users.

Coordination with ICAO is continuous. While ICAO has its own safety agendas, it stays in touch with FAA and routinely exchanges information. FAA is also a member of MAPCOG (the Multi-agency Air Traffic Services Procedures Coordination Group formed with NAVCANADA and EUROCONTROL); this group polls all countries for their input on changes to the ICAO handbook (PANRAC, Procedures for Air Navigation Services, Rules of the Air and Air Traffic Service, Doc. 4444-RAC/501).