Arrival Alerts Page

Safety Risk Management Document Without Hazards

Version 1.0

March 30, 2021

Safety Risk Management Document Change Page

Date	Change Summary	Version Number
2/3/2021	Initial draft	0.1
2/9/2021	Internal review	0.2
2/16/2021	Facilitation team review	0.3
3/18/2021	Panel/peer review comments adjudicated	0.4
3/29/2021	Final technical edit	0.5
3/30/2021	Final Draft	1.0

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EXECUTIVE SUMMARY

Title: Arrival Alerts Page, Safety Risk Management Document Without Hazards

Initiating Organization: Runway Safety Group, AJI-14

Safety Analysis Type: Operations

The Safety and Technical Training (AJI) Safety Management Group, AJI-31, has been tracking and addressing wrong surface events since 2016. A wrong surface event is defined as an aircraft lining up to, landing on, or departing from the incorrect runway, taxiway, or airport. On average, there are 417 wrong surface events in the National Airspace System (NAS) per fiscal year. In July 2017, Air Canada Flight 759 was cleared to land on Runway 28R at San Francisco International Airport but instead lined up on parallel Taxiway C, where four air carrier airplanes were awaiting takeoff clearance. The aircraft descended to 59 feet above ground level before beginning to climb, narrowly missing the aircraft on the ground. Although this event previously occurred during the nighttime, these wrong surface events largely occur during the daytime and in visual meteorological conditions, and the majority of the time, the pilot has read back the correct landing or departure clearance.

Wrong surface events are an issue currently being addressed by the Air Traffic Organization (ATO) Top 5 Program, the Federal Aviation Administration (FAA) Safety Management System (SMS) Committee, and the Approach and Landing Misalignment Joint Safety Analysis and Implementation Team via the Commercial Aviation Safety Team. For the purpose of this panel, a wrong surface event / misalignment risk was defined as the potential for an aircraft to line up to or land on the wrong runway or a taxiway. In an effort to highlight areas where wrong surface events are likely to occur, the Runway Safety Group, AJI-14, and the Top 5 program have conducted numerous outreach and promotional efforts.

Despite the efforts outlined above, there is still a need to provide a more permanent awareness of wrong surface events, especially to General Aviation pilots, who comprise 83 percent of wrong surface events. To this end, AJI-14 and Mission Support Services (AJV) Aeronautical Information Services, AJV-A, proposed the addition of an arrival alerts page to the Chart Supplement. The proposed arrival alerts page will provide a graphic that will visually depict the approach to a particular airport with a history of misalignment risk as defined in this document. There will also be additional language added to the airport remarks section of the Chart Supplement that will describe the misalignment risk area. These arrival alert pages will be added for areas where the airport diagram has a hotspot identifying the potential for misalignment risk. Runway Safety will then continue to monitor wrong surface events following their implementation to determine whether additional hot spots and arrival alert pages should be created. The FAA defines a hot spot as a “location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.”

In accordance with the ATO SMS Manual, April 2019, a Safety Risk Management panel convened on January 13 and 14, 2021, to examine the potential safety risk of the proposed change associated with the addition of an arrival alerts page to the Chart Supplement. The panel found no hazards associated with the proposed change.

Rationale for a Safety Finding Without Hazards

The panel discussed the potential safety ramifications of implementing the proposed change by completing a Preliminary Hazard List (PHL). After considering each item of the PHL, the panel determined that the addition of an arrival alerts page to the Chart Supplement would not introduce any new hazards into the NAS or worsen any existing hazards. While the panel agreed that pilots might have trouble locating the arrival alerts page, this would not introduce or worsen any hazard because operations would continue as if the change had never existed; in other words, if a pilot was unable to find the information on the arrival alerts page, there would be no increase in safety risk because there would be no change from the current system. In fact, some panel members agreed that the change would be an enhancement to safety. (Note: The panel did not, however, formally assess positive effects of the proposed change on safety risk in the NAS.)

The remainder of this document provides more detail on the information summarized above.

SAFETY RISK MANAGEMENT DOCUMENT SIGNATURES

Title: Arrival Alerts Page, Safety Risk Management Document Without Hazards

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SECTION 1. CURRENT SYSTEM

1.1 Introduction

The Safety and Technical Training (AJI) Safety Management Group, AJI-31, has been tracking and addressing wrong surface events since 2016. A wrong surface event is defined as an aircraft lining up to, landing on, or departing from the incorrect runway, taxiway, or airport. On average, there are 417 wrong surface events in the National Airspace System (NAS) per fiscal year. In July 2017, Air Canada Flight 759 was cleared to land on Runway 28R at San Francisco International Airport but instead lined up on parallel Taxiway C, where four air carrier airplanes were awaiting takeoff clearance. The aircraft descended to 59 feet above ground level before beginning to climb, narrowly missing the aircraft on the ground. Although this event occurred during the nighttime, these wrong surface events largely occur during the daytime and in visual meteorological conditions, and the majority of the time, the pilot has read back the correct landing or departure clearance.

Wrong surface events are an issue that is currently being addressed by the Air Traffic Organization (ATO) Top 5 Program, the Federal Aviation Administration (FAA) Safety Management System (SMS) Committee, and the Approach and Landing Misalignment Joint Safety Analysis and Implementation Team via the Commercial Aviation Safety Team. For the purpose of this panel, a wrong surface event / misalignment risk was defined as the potential for an aircraft to line up to or land on the wrong runway or a taxiway. In an effort to highlight areas where wrong surface events are likely to occur, the Runway Safety Group, AJI-14, and the Top 5 program have conducted numerous outreach and promotional efforts.

1.2 Need for a Safety Risk Management Panel

There has been a need to provide a more permanent awareness of wrong surface events, especially to General Aviation (GA) pilots, who comprise 83 percent of wrong surface events. To this end, AJI-14 and Mission Support Services (AJV) Aeronautical Information Services, AJV-A, proposed the addition of an arrival alerts page to Chart Supplements in an effort to alert pilots to areas where misalignment risk events are prone to occur.

1.3 Scope of the Safety Risk Management Panel

In accordance with the ATO SMS Manual, April 2019, a Safety Risk Management (SRM) panel convened on January 13 and 14, 2021, to examine the potential safety risk of the proposed changes associated with the addition of an arrival alerts page to the Chart Supplement. Bounding the system is essential to ensuring a thorough SRM panel is conducted, and a 5M Model is a useful tool for identifying all of the factors involved in a system prior to searching for potential hazards and analyzing/assessing risk. For the safety risk analysis and assessment described in this SRM document, the 5M Model in Table 1.1 was applied.

Table 1.1: 5M Model

Mission: The clearly defined and detailed purpose of the NAS change proposal or system/operation being assessed	Incorporate arrival alert pages into the Chart Supplement to inform pilots of arrival misalignment risk.
(hu)Man: Operators, maintainers, and affected stakeholders	• Air traffic controllers • Pilots • Airport operations • AJI-14 • Third-party charting services • AJV-A
Machine: Equipment used in the system	• Airport diagrams • Chart Supplement
Management: Procedures and policies that govern the system's behavior	• Pilot operating procedures • Chart Supplement • Aeronautical Information Manual • Aeronautical Information Publication (international) • Title 14 of the Code of Federal Regulations (CFR) Part 61, CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND GROUND INSTRUCTORS • Airmen Certification Standards
Media: The environment in which the system is operated/maintained	• NAS • Public access / Internet

SECTION 2. DESCRIPTION OF CHANGE

As described in Section 1, AJI-14 and AJV-A have proposed the addition of an arrival alerts page to Chart Supplements in an effort to alert pilots to areas where wrong surface events are prone to occur. The arrival alert page will also contain a graphic depicting the approach to a particular airport with a potential for misalignment risk. This graphic provides pilots with a cockpit view of the misalignment risk area for use in pre-flight planning. There will also be a written explanation of the hot spot area in the "airport remarks" section of the Chart Supplement.

These arrival alert pages will be added for areas where the airport diagram has a hotspot identifying the potential for misalignment risk. Runway Safety will then continue to monitor wrong surface events following their implementation to determine whether additional hot spots and arrival alert pages should be created. The FAA defines a hot spot as a "location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary." The airports where misalignment risk is currently identified as a hot spot and that will utilize the arrival alerts page are listed below:

- Lincoln Airport; Lincoln, Nebraska
- Flying Cloud Airport; Flying Cloud, Minnesota
- Tucson International Airport; Tucson, Arizona
- Reno-Tahoe International Airport; Reno, Nevada
- Palm Springs International Airport; Palm Springs, California

- Reid-Hillview Airport; Reid-Hillview, San Jose, California
- Daniel K. Inouye International Airport; Honolulu, Hawaii
- Idaho Falls Regional Airport; Idaho Falls, Idaho
- McKinney National Airport; McKinney, Texas
- Greater Rochester International Airport; Rochester, New York
- DeKalb-Peachtree Airport; Chamblee, Georgia

Figure 2.1 below shows the presentation of Lincoln Airport. Figure 2.2 shows where the note will be added in the airport chart supplement.

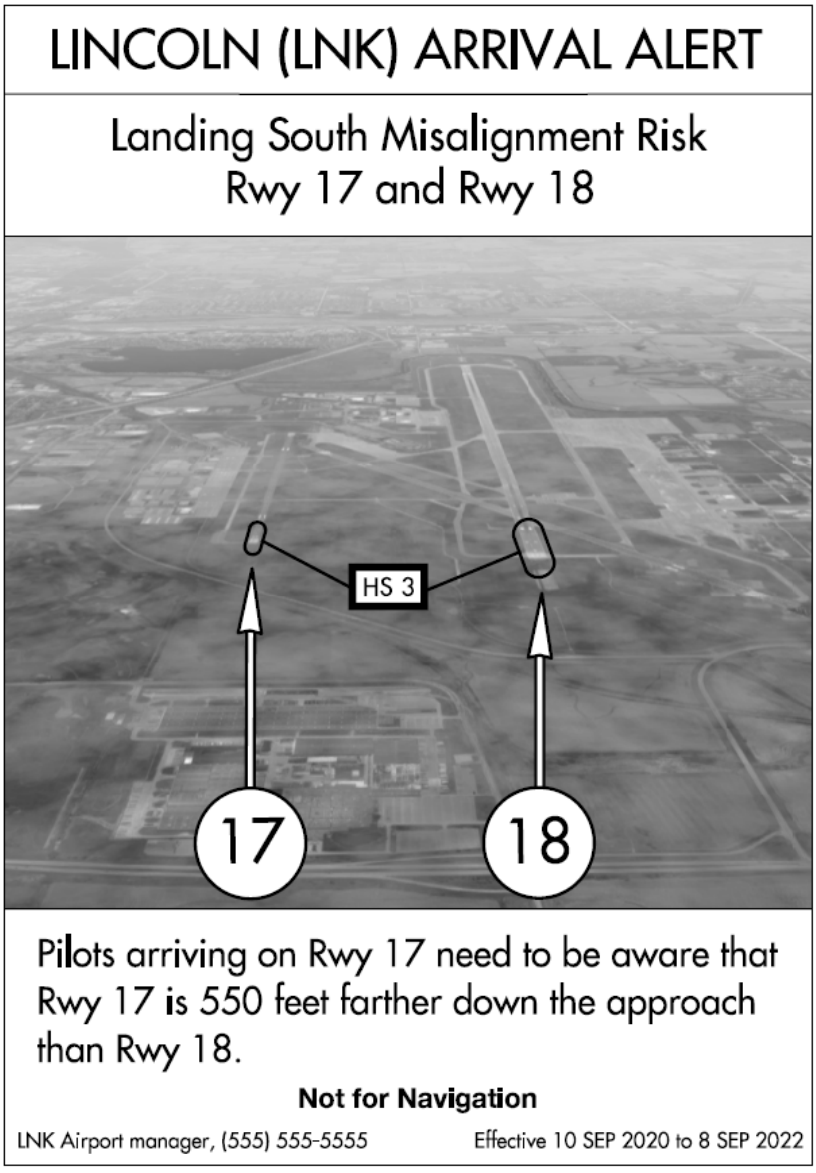
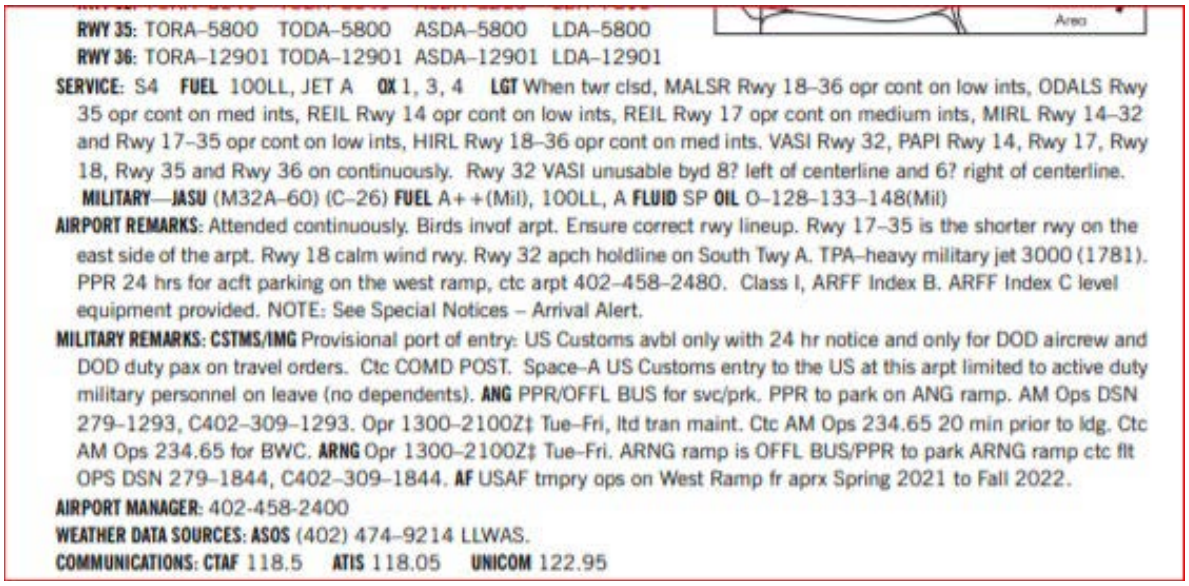


Figure 2.1: Proposed Arrival Alert Special Notice Depiction



RWY 35: TORA–5800 TODA–5800 ASDA–5800 LDA–5800
RWY 36: TORA–12901 TODA–12901 ASDA–12901 LDA–12901
SERVICE: S4 FUEL 100LL, JET A OX 1, 3, 4 LGT When twr clsd, MALSR Rwy 18–36 opr cont on low ints, ODALS Rwy 35 opr cont on med ints, REIL Rwy 14 opr cont on low ints, REIL Rwy 17 opr cont on medium ints, MIRL Rwy 14–32 and Rwy 17–35 opr cont on low ints, HIRL Rwy 18–36 opr cont on med ints. VASI Rwy 32, PAPI Rwy 14, Rwy 17, Rwy 18, Rwy 35 and Rwy 36 on continuously. Rwy 32 VASI unusable byd 8? left of centerline and 6? right of centerline.
MILITARY—JASU (M32A–60) (C–26) FUEL A++(Mil), 100LL, A FLUID SP OIL O–128–133–148(Mil)
AIRPORT REMARKS: Attended continuously. Birds invof arpt. Ensure correct rwy lineup. Rwy 17–35 is the shorter rwy on the east side of the arpt. Rwy 18 calm wind rwy. Rwy 32 apch holdline on South Twy A. TPA–heavy military jet 3000 (1781). PPR 24 hrs for acft parking on the west ramp, ctc arpt 402–458–2480. Class I, ARFF Index B. ARFF Index C level equipment provided. NOTE: See Special Notices – Arrival Alert.
MILITARY REMARKS: CSTMS/IMG Provisional port of entry: US Customs avbl only with 24 hr notice and only for DOD aircrew and DOD duty pax on travel orders. Ctc COMD POST. Space–A US Customs entry to the US at this arpt limited to active duty military personnel on leave (no dependents). ANG PPR/OFFL BUS for svc/prk. PPR to park on ANG ramp. AM Ops DSN 279–1293, C402–309–1293. Opr 1300–2100Z‡ Tue–Fri, ltd tran maint. Ctc AM Ops 234.65 20 min prior to ldg. Ctc AM Ops 234.65 for BWC. ARNG Opr 1300–2100Z‡ Tue–Fri. ARNG ramp is OFFL BUS/PPR to park ARNG ramp ctc flt OPS DSN 279–1844, C402–309–1844. AF USAF tmpry ops on West Ramp fr aprx Spring 2021 to Fall 2022.
AIRPORT MANAGER: 402-458-2400
WEATHER DATA SOURCES: ASOS (402) 474–9214 LLWAS.
COMMUNICATIONS: CTAF 118.5 ATIS 118.05 UNICOM 122.95

Figure 2.2: Proposed Chart Supplement Airport Information

2.1 Communication Outreach Efforts

AJI-14 will work with the Office of Communications to develop materials for outreach and awareness to all users of FAA charts (e.g., GA pilots, commercial pilots, and airport managers) on the proposed change. Existing training videos will also be updated with arrival alerts verbiage. AJI-14 will also continue to gather data on wrong surface events at the affected airports listed above.

SECTION 3. RATIONALE FOR A SAFETY FINDING WITHOUT HAZARDS

3.1 Assumptions

To frame its analysis and assessment, the SRM panel agreed that the following guidelines will govern future misalignment risk hotspots:

1. Communications about and promotion of the change will take place with all users prior to publication.
2. The process of identifying a hot spot will not change.
3. New hot spots will be coordinated with AJI-14 in the normal manner.

3.2 Hazard Identification

3.2.1 Preliminary Hazard List

To explore the possible safety ramifications of the proposed changes, the panel developed a Preliminary Hazard List (PHL) per the SMS Manual. The panel captured the following PHL items, which are further detailed below:

1. Awareness of the change
    a. Locating information within the Chart Supplement
    b. Concerns of effectiveness in the community in which the majority of events take place
    c. Insufficient/ineffective outreach to make pilots aware of new safety tool
2. Chart clutter adding additional detail to chart
3. Similarity of arrival alert page to third-party products may cause pilot confusion; lacking uniqueness
4. Distraction during high-workload environments
    a. Reviewing information within Chart Supplement
5. Pilot information overload
6. Non-standard phraseology (with regard to terms “wrong surface,” “misalignment,” and “runway confusion”)
7. Lack of standardization of descriptive text on arrival alert page

3.2.2 PHL Validation

Item 1: The panel identified awareness of the change as a PHL item and discussed whether the lack of awareness could lead to a hazard or qualify as a hazard itself. The panel specifically drew attention to difficulty locating information within the Chart Supplement, the effectiveness of the change for those pilots involved in the majority of events, and insufficient/ineffective outreach. Further, pilot Subject Matter Experts (SMEs) noted that a pilot operating under Visual Flight Rule (VFR) may merely have a sectional chart for the necessary navigational information, which in most circumstances fully complies with the charting and information regulations for VFR operations. In such a scenario, the pilot may have not access to the arrival alert page, or any other materials found in instrument flight procedure publications. During the discussion, several panel members agreed that if a pilot were not aware of the proposed change there would be no increase in safety risk because there would be no change from the current system; therefore, no new risk would be introduced to the NAS. The panel also agreed, based on their expertise with implementing runway safety related changes, that it could be assumed that the proposed outreach efforts would be effective in alerting pilots to the change. Based on this, the panel agreed that awareness of the change, or

lack thereof, would not qualify as a hazard or contribute to introducing or worsening any hazards in the NAS.

Item 2: The panel identified chart clutter adding additional detail to the chart as a PHL item. During the discussion involving this PHL item, the panel agreed that the proposed change does not actually introduce any new chart clutter. While the change does introduce new information for the airport diagram, it will direct the pilot to a separate page. Based on this information, the panel agreed that there was not potential for chart clutter because of the proposed change.

Item 3: The panel identified similarity of the proposed arrival alerts page to third-party products (e.g., Jeppesen and Foreflight charts) leading to pilot confusion as a PHL item. During this discussion, the panel agreed third-party vendors independently publish their charts and therefore this issue is outside the scope of the change. The panel also agreed that the FAA will be publishing accurate information on the arrival alerts page in an effort to mitigate potential hazards. Based on this information, all but one panel member agreed that similarity to third-party products would not qualify as a hazard or contribute to introducing or worsening any hazards in the NAS.

Item 4: The panel identified distraction during high-workload environments as a PHL item. The panel began this discussion by reiterating that while 14 CFR Part 91.61 dictates "each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight," not all pilots are realistically able to review all available information and this change will add an additional page that pilot will need to review. The panel further discussed what a "high-workload" environment could mean for a pilot, ultimately deciding that a pilot is typically under a high degree of workload at any given time during flight. In this instance, the "high-workload" would refer to the moments directly before landing. Several pilot SMEs stated that this would increase workload and pilot confusion on the identification of the hot spot, creating a hazardous situation. Based on this information, it would not be realistic for a pilot to check through the Chart Supplement directly before landing. However, some panel members pointed out that the risk of pilot confusion/distraction directly before landing would not be worse than the risk associated with a wrong surface landing. Ultimately, four panel members (majority) agreed that this item would not qualify as a hazard or contribute to introducing or worsening any hazards in the NAS.

Item 5: The panel identified pilot information overload as a PHL item. First, the panel agreed that more information regarding a potential safety issue is always helpful. In addition, the panel set an assumption that the outreach and education planned by AJI-14 will be sufficient in training pilots to understand the new information being presented. Based on this information, five panel members (majority) agreed that pilot information overload would not qualify as a hazard or contribute to introducing or worsening any hazards in the NAS.

Item 6: The panel identified non-standard phraseology concerning the terms "wrong surface," "misalignment," and "runway confusion" as a PHL item. Several panel members agreed that while these terms could be made more specific, they do not

introduce any confusion that might result in a hazard. One panel member also pointed out that the picture used as part of the arrival alerts page would assist in alleviating any confusion that a pilot might have regarding phraseology. Ultimately, five panel members (majority) agreed that this item would not qualify as a hazard or contribute to introducing or worsening any hazards in the NAS.

Item 7: The panel identified lack of standardization of descriptive text on the arrival alert page as a PHL item. AJI-14 reminded panel members that each airport operates air traffic differently, and there must be room for flexibility as hot spot areas may require different descriptors at different airports. Based on this, four panel members (majority) agreed that a lack of standardization of descriptive text would not qualify as a hazard or contribute to introducing or worsening any hazards in the NAS.

3.3 Rationale for a Safety Finding Without Hazards

As described in Section 3.2.2, the panel agreed that while there may be difficulty for a pilot to locate the arrival alerts page, this would not introduce or worsen any hazard because it would be as if the change had never existed. Ultimately, a majority of panel members agreed that the addition of an arrival alerts page will improve safety through easier identification of potential issues in the airport environment (Note: The panel did not, however, formally assess positive effects of the proposed change on safety risk in the NAS.)

SECTION 4. SRM PANEL ATTENDEES

The SRM panel convened on January 13 and 14, 2021, to perform a thorough safety risk analysis and assessment. SMEs from across and outside of the agency were invited to leverage their operational experience, and experts in the SRM process were present to maintain its integrity. Below, Table 4.1 lists the panel attendees.

Table 4.1: SRM Panel Members, SMEs, Observers, and Facilitation Team

Name	Organization	Email	Phone	SRM	
				Yes	No
Change Proponents					
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APPENDIX A. ARRIVAL ALERTS SAFETY BRIEFING

APPENDIX B. ACRONYMS

A4A	Airlines for America
AAS	Office of Airports Safety and Standards
ACI-NA	Airports Council International – North America
AFFSA	Air Force Flight Standards Agency
AFS	Safety Standards
AJI	Safety and Technical Training
AJT	Air Traffic Services
AJV	Mission Support Services
ALPA	Air Line Pilots Association, International
AOPA	Aircraft Owners and Pilots Association
AOV	Air Traffic Safety Oversight Service
ARP	Office of Airports
ATC	Air Traffic Control
ATO	Air Traffic Organization
CFR	Code of Federal Regulations
Col	Colonel
EAA	Experimental Aircraft Association
FAA	Federal Aviation Administration
GA	General Aviation
GGTI	Guzman and Griffin Technologies, Inc.
HAF	Headquarters Air Force
HQDA	Headquarters, Department of the Army
LTC	Lieutenant Colonel
NAFI	National Association of Flight Instructors
NAS	National Airspace System
NATCA	National Air Traffic Controllers Association
NBAA	National Business Aviation Association
PASS	Professional Aviation Safety Specialists
PHL	Preliminary Hazard List
RAA	Regional Airline Association
SME	Subject Matter Expert
SMS	Safety Management System
SMSGT	Senior Master Sergeant
SRM	Safety Risk Management

USAF	United States Air Force
VFR	Visual Flight Rules