Federal Aviation
Administration

FAASI FY22 Final Report

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Executive Summary

The FAA Alaska Aviation Safety Initiative (FAASI) Tiger Team has taken positive action on all 11 safety recommendations from the FAASI FY21 final report. In FY22, three of the recommendations saw completion and will be shown as closed moving into FY23. Those three recommendations are:

- **2.4: T-Route Development**
- **3.1: Mountain Pass Workgroup**
- **3.2: Aeronautical Charting Meetings**

Eight recommendations remain active for FAASI through FY23. FAASI will likely see closure on three of the remaining 8 recommendations in 2023. Those three are:

- **2.1: Evaluate operator authorization requirements**
- **2.2: Establish and chart communications gaps on published routes**
- **2.3: GPS resiliency**

The FAASI Tiger Team will continue to address the remaining recommendations beyond FY23 and evaluate the need to add new safety recommendations. Whereas stakeholder engagement and public outreach is a cornerstone of FAASI, those actions will continue both within FAASI and beyond.

1.0 Introduction

The Federal Aviation Administration (FAA) initiated the FAA Alaska Aviation Safety Initiative (FAASI) in 2021 in response to National Transportation Safety Board (NTSB) recommendations regarding aviation safety in Alaska. The FAASI Tiger Team was formed from organizational leadership across multiple lines of business to carry out the FAASI mission. To date, FAASI has produced an inventory of wide-ranging safety efforts, stakeholder feedback, and 11 recommendations to improve aviation safety in Alaska. The 2022 FAASI Roadmap provided an outline for how the FAA would continue to address the 11 FAASI recommendations through FY22.

The Alaskan Region welcomed a new permanent Regional Administrator (RA) in the last month of FY22. The RA continued the collaborative work with the FAASI Tiger Team to close out the fiscal year, and this report provides the status of the 11 recommendations at the end of FY22. All of the FAASI documents can be found on the FAASI webpage. (https://www.faa.gov/alaska).

The 11 original FAASI recommendations can also be found in Appendix A.

2.0 FY22 Final Report

1.1: Automated Weather Observing System (AWOS)

Recommendation: Enhance weather reporting capability utilizing the Automated Weather Observing System (AWOS) including:

1. Continue installation and transfer of Airport Improvement Program (AIP) funded AWOS.

2. Examine the root cause of "Service A" outages, associated impacts, and identify mitigations.

3. Consider necessary changes to FAA Joint Order 7900.5 *Surface Weather Observing* and FAA Order 7930.2 *Notices to Air Missions (NOTAM)*.

FY22 Closeout:

1. Installation of AWOS: The installation of all eight AWOS units (Akiachak, Coldfoot, Cooked Creek, Kotlik, Nulato, Perryville, Tok Junction, and Tununak) is substantially complete. All eight units are connected to FAA information technology, data, and communications infrastructure. Each is transmitting weather and conditions data in test mode.

   FAA has not yet formally accepted any of the units for ownership or maintenance. FAA is analyzing data integrity and reliability consistent with established testing programs. FAA commissioning of AWOS is expected by summer 2023.

2. Service A Outages: Air Traffic Organization (ATO) Technical Operations, Anchorage District (Tech Ops) continues to monitor the status of all Automated Surface Observing System (ASOS) and AWOS Service A capabilities in Alaska. Tech Ops is working directly with the management entities of the telecommunication provider companies to assure their understanding of the impacts and the priority needed for restoration activities.

   Tech Ops has elevated the response priority for all AWOS and ASOS services in Alaska. Travel to remote sites is being expedited and ordering of all replacement parts is the highest priority. There are still some supply chain challenges in receiving parts. Tech Ops is working directly with management in the FAA Logistic Center on specific issues.

   Tech Ops actions have succeeded in reducing the number and duration of AWOS and ASOS Service A interruptions. In addition, Tech Ops has prioritized AWOS and ASOS telecommunications for conversion to the FAA Telecommunications Infrastructure (FTI). The FTI conversion will modernize some aspects of the circuits and adds real-time monitoring at the circuit level for these sites, which should translate into improved performance.

3. <u>Review of FAA Order 7930.2 NOTAM:</u> The AWOS and ASOS technical team met in May and August of 2022 in order to better understand the issues and discuss possible mitigations for Service A outages. Some of the topics being discussed were back-up procedures, infrastructure updates, and training. The group plans to meet with subject matter experts (SMEs) to determine a final action plan by February 28, 2023. Any changes will be incorporated to Order 7930.2 with change 3, scheduled for April of 2023.

1.2: Visual Weather Observation System (VWOS)

<u>Recommendation</u>: Enhance weather reporting capability utilizing the Visual Weather Observation System (VWOS) including:

1. Test and evaluate VWOS capabilities at four Alaskan airports and document the findings in a final report.

2. Develop standards for non-sensor visual-based weather information.

3. Upon successful completion of the evaluation, seek funding for VWOS unit acquisition and installation at airports where AWOS or ASOS units do not exist.

4. Modify FAA-issued Operations Specifications to allow for use of VWOS as requested by aircraft operators.

<u>FY22 Closeout</u>:

1. <u>Test and Evaluate VWOS:</u> The VWOS test and evaluation period started in May 2021 and ended in June 2022.

   System Operations (AJR) and Flight Service (AFS) conducted analysis and comparison of the VWOS system at four Alaska locations (Eek, Tatitlek, Healy River, and Palmer). Palmer is the key site since a direct comparison to the Palmer ASOS allows for close scrutiny.

   The technical performance of the VWOS system was evaluated against success criteria/thresholds in five categories:

   1) Meteorological accuracy against comparison data sources
   2) System reliability and availability
   3) Useful error reporting and self-checks
   4) Supporting and benefiting operations
   5) System security

   Overall, the VWOS showed strong agreement with comparison sources in close proximity to the VWOS platform at all sites. Data fields analyzed included temperature, dew point, surface pressure, visibility, wind speed and direction, cloud height, and present weather. The VWOS predictably had only moderate agreement with observations from comparison

data sources located at a significant distance or across large terrain discontinuities from the VWOS platform.

The VWOS test data was available to multiple engaged operators through a test website in early May 2021, and all survey responses indicate positive usefulness of VWOS components. All respondents indicated moderate ease of use for the website and moderate to high confidence in their decision-making when referring to VWOS. They also expressed that the 360-degree camera images, surface wind, visibility, and ceiling information were most useful to them. The test users overwhelmingly indicated that surface observation trend information displayed on the test website provided high value and benefit to them, with one user calling the trend information "priceless."

Most of the website navigation responses were rated a three out of five, which indicates slight potential for improvement in website navigation.

2. <u>Develop Standards for Analyzed Weather Information</u>: The American Society for Testing and Materials (ASTM) is considering adoption of new standards regarding analyzed weather information. They are planning to put this standard up for a vote within their organization sometime early 2023. Additionally, Flight Standards (AFS) is working to host a Safety Risk Management Panel (SRMP) on these same standards. The AFS SRMP is in the early stages of development and expected to begin in 2023.

3. <u>Seek funding for additional VWOS:</u> VWOS funding must go through the FAA Acquisition Management System (AMS) process. Using AMS, FAA will conduct an investment analysis to determine whether a business case exists for the FAA to deploy VWOS. Funding for VWOS deployment is dependent on the approval of the business case.

4. <u>Modify Operations Specifications</u>: AFS has drafted some initial Operations Specification language. Based on the VWOS report and successful implementation of appropriate mitigations identified by safety risk management discussions, authorization framework will continue to be formalized for the use of VWOS.

Recommendation 2.1: Evaluate Operator Authorization Requirements

Recommendation: Evaluate and clarify aircraft operator authorization and eligibility requirements for commercial aircraft operations under IFR. Update the policy and guidance related to equipment requirements for commercial operators when using GPS for navigation.

FY22 Closeout:

The Alaska GPS Navigation Policy Group has been formed and is comprised of internal FAA subject matter experts. The team is currently examining how GPS-only navigation systems are treated with respect to regulatory requirements for independent navigation systems. Applicable policy areas have been identified with respect to operational and equipage requirements.

Recommendation 2.2: Establish and Chart Communications Gaps on Published Routes

Recommendation: Evaluate potential policy change permitting communication gaps on routes where communication capability is the determining factor for the minimum enroute altitude.

FY22 Closeout:

A working group of Subject Matter Experts (SMEs) from AFS and ATO have collaborated and identified 5 potential segments for consideration along T-Routes where a lowered Minimum En-Route Altitude (MEA) may be possible and advantageous to operators for icing and/or oxygen requirements. Additionally, the SMEs began discussions pertaining to regulatory requirements for Air Traffic Control (ATC) communication along routes. Specifically, the team focused on ATC communication requirements while operating under instrument flight rules (IFR).

Recommendation 2.3: GPS Resiliency

Recommendation: Develop strategies to address GPS backup resiliency in Alaska.

FY22 Closeout:

Coverage charts of approaches and navigation aids have been developed to assist in GPS resiliency development in Alaska.

The FAA has been implementing a GPS resiliency plan in the Contiguous United States (CONUS) for the last several years. The CONUS plan involves:
- The Very-high-frequency Omnidirectional Range (VOR) Minimum Operational Network (MON), where existing navigational aids are retained to allow a landing at a "MON airport" within 100 nautical miles (nm) of almost anywhere in CONUS using VORs and ILS during a GPS outage. VORs are also maintained to allow navigation at 5000 ft. Above Ground Level (AGL) to the MON airports or through the GPS outage.
- The Next Generation Distance Measuring Equipment (NextGEN DME) Program, where DMEs are retained or installed to allow Area Navigation (RNAV) coverage in CONUS and at the largest airports during a GPS outage.
- The DME/VOR/TACAN (DVT) Program, which will provide long-term support for navigation aids that are being retained in the VOR MON and NextGEN DME Programs.

Using the CONUS programs as a starting point, some equivalent ideas have been investigated for Alaska. This is not to promise that GPS resiliency in Alaska will use the same plans as CONUS, but rather to provide a starting point for discussions with Alaskan stakeholders. Figure 1 shows airports with VOR, ILS and NDB instrument approaches in Alaska with a 100 nm circle around the airport. These airports could potentially serve for safely landing aircraft in case of a GPS outage in Alaska.
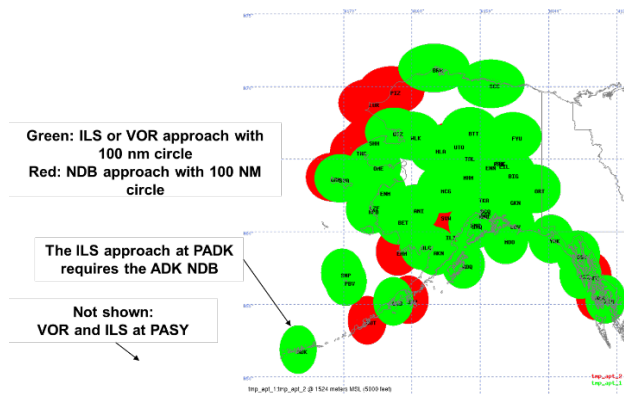
Figure 1. Airports with ILS, VOR, and NDB Instrument Approaches in Alaska

Figure 2 shows VOR coverage in Alaska at 5000 AGL with a 70 nm service volume around the VOR and accounting for terrain blockage of the VOR signal.
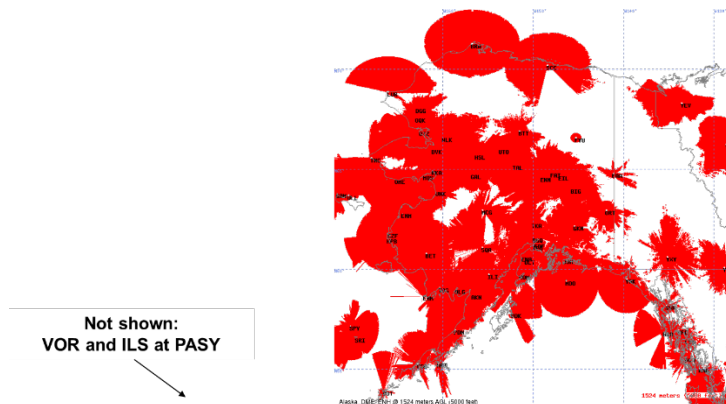

Figure 2. Existing VOR Coverage at 5000 ft. AGL in Alaska (70 nm Service Volume)

Recommendation 2.4: T-Route Development

Recommendation: Continue the development of T-routes as a replacement for Low Frequency/Medium Frequency (LF/MF) and other conventional airways.

FY22 Closeout:

All planned T-Route replacement airways have completed the design, environmental and development phases. 13 T-Routes were published in FY22, with the remaining 41 T-Routes scheduled for publication in FY23.

Recommendation 3.1: Mountain Pass Working Group Initiative

Recommendation: Continue the Mountain Pass Working Group initiative and partnership with the Aircraft Owners and Pilots Association (AOPA) aimed at verifying existing mountain pass information and adding additional mountain passes to the Alaska Visual Flight Rules (VFR) sectional charts.

FY22 Closeout:

The Alaskan Mountain Pass Working Group met throughout FY22 and successfully completed all identified updates.

Carter and Naqsralugiaq Passes were added to VFR charts effective March 24, 2022. Holmes Pass was deleted from Fairbanks Sectional effective May 19, 2022.

The *Aeronautical Information Manual (AIM)* now contains complimentary updated guidance for Mountain Flying and GPS (*AIM 7-6-7*). This will expand the use of VFR checkpoints and VFR waypoints for better planning and pilot orientation in the vicinity of mountain passes.

Recommendation 3.2: Aeronautical Charting Meetings

Recommendation: Aeronautical Charting Meetings (ACM) will ensure adequate focus is placed on Alaska specific charting needs that may be different than the contiguous United States.

FY22 Closeout:

The ACM continued to occur in FY22. The last ACM was held October 25-27, 2022. Meeting minutes for the ACM can be found at this address: Aeronautical Charting Meeting (faa.gov)

Aeronautic Information Services (AJV) will continue to hold biannual ACM meetings and address Alaska charting issues. The meeting times are adjusted to more optimally match west coast and Alaskan time zones. The next ACM will be held April 24-27, 2023.

Recommendation 4.1: Education and Outreach of ADS-B Out Equipage

Recommendation: Continue education and outreach related to the benefits of ADS-B Out equipage within certain airspace in Alaska. Outreach will focus on the safety enhancing benefits of aircraft position notification and display for users within all airspace.

FY22 Closeout:

The FAA continued the safety programs already underway and sought to maximize stakeholder outreach. FAA held discussions with stakeholders during numerous events regarding the benefits of ADS-B Out equipage. Those events included: Runway Safety Action Team (RSAT) meetings, Pre-Season Air Tour Meetings, Alaska Aviation Coordination Council, Alaska Civil-Military Aviation Council, Palmer Airport Safety Seminar, and Alaska Floats and Skis outreach.

Recommendation 4.2: ADS-B Services

Recommendation: Continue to deploy ADS-B services for non-implemented service volumes in a manner that will provide coverage along major air routes in Alaska.

FY22 Closeout:

FAA worked diligently with Alaska aviation stakeholders and the service provider to assess the current surveillance capabilities and construct an expansion plan that successfully fills the five remaining Alaska service volumes that did not receive ADS-B services during the Capstone rollout. Detailed business case analyses and corresponding airspace surveys were conducted, culminating in the successful Joint Resources Council (JRC) decision. The JRC decision gave formal approval for FAA to expand ADS-B services in Alaska. Immediately after JRC approval, site-specific infrastructure surveys began to assess physical infrastructure requirements for ground-based transceiver (GBT) installations.

Recommendation 5.1: Safety Outreach Collaboration

Recommendation: Continue safety programs already underway and seek to maximize opportunities for program integration.

FY22 Closeout:

1. Expanded Participation in Existing Programs: The office of the Alaskan Regional Administrator ensured that at least one representative attended the Alaskan Region Runway Safety Action Team (RSAT) meetings at Anchorage, Lake Hood, Fairbanks, Kenai, Kodiak, King Salmon, Merrill Field, Juneau, and Bethel. We also resumed in-person participation at the FAA Alaska Industry Council, a co-sponsored monthly meeting with external stakeholders that was held during the absence of a permanent RA and was impacted by the COVID-19 pandemic. Our office also included aviation events gathered through the Regional Management Team (RMT) and external engagements on the Alaskan Region aviation events list. It was posted monthly to the FAASI website.

2. Increase External Stakeholder Collaboration: The office of the Alaskan Regional Administrator attended and encouraged stakeholder participation in existing FAA safety programs. This included the Bethel Stakeholders Group, the FAA Alaska Industry Council, and the Soldotna Area CTAF Workgroup. We increased communication of upcoming events at the FAA Alaska Industry Council and Alaska Aviation Coordination Council meetings. We also used the Alaskan Region aviation event list to identify opportunities to combine existing safety efforts to make them more efficient and meaningful for stakeholders. An example of this is utilizing the FAA Alaska Industry Council as a conduit for multiple stakeholder engagements under FAASI. The regular meetings of the Bethel Stakeholders Group will continue quarterly with an expanded scope.

Appendix A: The original 2021 FAASI Recommendations

Recommendation 1.1: Automated Weather Observing System (AWOS)

Continue FAA focus on new-installation AWOS units at airports for which the airport sponsor requests unit acquisition, installation, and FAA certification with funding under the Airport Improvement Program. Consistent with Section 147 of the FAA Reauthorization Act of 2018, complete each of the initial eight AWOS unit transfers at Alaskan airports (Kotlik, Tok Junction, Coldfoot, Nulato, Perryville, Crooked Creek, Tununak, and Akiachak) to the FAA by October 2022. Optimize the process to transfer AWOS units from airport sponsor ownership to the FAA, enabling seamless completion of the same in a timelier manner.

Stakeholder feedback also expressed concern about the FAA's timely acknowledgment and repair of existing FAA-owned AWOS/ASOS units which experience frequent service outages, including associated surface communication outages. FAA should conduct a study to examine the root cause of "Service A" outages and associated impacts and identify alternative mitigations which could include infrastructure improvement recommendations, alternate notification procedures, and/or the issuance of NOTAMs advising of outages. FAA should consider any necessary changes to FAA Joint Order 7900.5 Surface Weather Observing and FAA Order 7930.2 Notices to Air Missions (NOTAM).

Recommendation 1.2: Visual Weather Observation System (VWOS)

Continue testing and evaluating VWOS systems at four Alaskan airports (Palmer, Healy River, Tatitlek, and Eek) with the goal of completion by August 2022. FAA has developed standards for air carrier use during testing and validation of the VWOS units and will develop standards for non-sensor visual-based weather information to support gridded weather analysis information currently available from the National Weather Service.

Upon successful completion of the evaluation, the FAA seek funding for VWOS unit acquisition and installation at airports throughout the state of Alaska where AWOS and/or ASOS units do not exist. Aircraft operators intending to utilize VWOS technology to support IFR operations are required to submit a program for acceptance to their FAA Principal Operations Inspector to grant modification of FAA-issued Operations Specifications.

Recommendation 2: Navigation Strategy Development

Collaboration with Stakeholders prompted a significant amount of discussion related to development of an Alaska airspace navigation strategy, associated policy for lower-altitude operations, and plans for GPS resiliency. Specific points of reference centered on equipment requirements when using GPS for navigation and optimizing/enabling lower-altitude direct flight paths.

Recommendation 2.1: Evaluate Operator Authorization Requirements

The FAA should evaluate and clarify aircraft operator authorization and eligibility requirements for commercial aircraft operations under Instrument Flight Rules. Specifically, FAA should update the policy and guidance related to equipment requirements for commercial operators when using GPS for navigation.

Recommendation 2.2: Establish and Chart Communications Gaps on Published Routes

The FAA should evaluate a potential policy change permitting communication gaps on routes where communication capability is the determining factor for the minimum enroute altitude. This would allow flexibility for aircraft operators with performance limitations or icing concerns while still maintaining acceptable terrain and obstacle clearance.

Recommendation 2.3: GPS Backup Resiliency

The FAA should develop strategies to address GPS backup resiliency in Alaska. These strategies may include plans for retention and long-term support for conventional navigation aids.

Recommendation 2.4: T-Route Development

The FAA should continue the development of T-routes as a replacement for Low Frequency/Medium Frequency (LF/MF) and other conventional airways by 2025.

Recommendation 3: Aeronautical Charting

The importance of accurate and relevant aeronautical charting, given the extent of topographical and geographical challenges in Alaska, was discussed intently during the FAASI process.

Recommendation 3.1: Mountain Pass Working Group Initiative

The FAA should continue the Mountain Pass Working Group initiative and partnership with the Aircraft Owners and Pilots Association aimed at verifying existing mountain pass information and adding additional mountain passes to the Alaska VFR sectional charts as coordinated through the Service Center and as information becomes available.

Recommendation 3.2: Aeronautical Charting Meetings

Aeronautical Charting Meetings (ACM) are held bi-annually to identify issues concerning safety and usefulness of aeronautical charts and flight information products/services. To ensure adequate focus is placed on this initiative, FAA should ensure time is reserved at every future meeting to specifically address Alaska-specific charting needs that may be different than the continental United States.

Recommendation 4: Surveillance

Stakeholder discussions and FAASI internal conversations often revolved around the need for additional air traffic surveillance capability, particularly given the number of recent aircraft incidents, accidents, and near mid-air collisions in Alaska. ADS-B equipage and coverage was a frequent topic.

Recommendation 4.1: Education and Outreach of ADS-B Out Equipage

The FAA should continue education and outreach with Stakeholders related to the requirement for equipage of ADS-B Out within certain airspace in Alaska, with a focus on the safety-enhancing benefits of aircraft position notification/display for users within all airspace. Indeed, a large number of Alaska operators have independently equipped with ADS-B Out and In or were participants in the FAA Capstone upgrade program which replaced first-generation equipment on approximately 400 aircraft with rule-compliant equipment. And, the extensive usage of it demonstrates the positive safety impact not only in airspace for which ADS-B is required, but also where the system is not required.

Recommendation 4.2: ADS-B Services

The FAA should continue its efforts to deploy ADS-B services for the five non-implemented service volumes in a manner that will provide coverage along major air routes in Alaska.

Recommendation 5: Safety Outreach

The FAASI team and Stakeholders both repeatedly recognized the value of safety programs and, importantly, the opportunity to conduct them jointly while realizing the resultant synergistic value.

Recommendation 5.1: Safety Outreach Collaboration

The FAA should continue the various safety programs already underway and seek to maximize adjacent opportunities for program integration. For example, FAA sponsors and/or participates in numerous programs such as Runway Safety Action Team meetings, the Aviation Safety Action Program, and Alaska-specific working groups including the Bethel Work Group and the AOPA-sponsored Mountain Pass Working Group. There are opportunities for FAA LOBs to conduct safety outreach efforts jointly among each other and via these program initiatives to address an entire realm of operational and environmental safety requirements and best practices. One such opportunity may exist at the Bethel Airport (BET). The FAA should explore combining efforts between AVS, ATO, and ARP utilizing the BET as a pilot program that addresses runway safety, local air traffic and traffic pattern safety, Class D airspace requirements, and accident/incident analysis and discussion utilizing a shared set of safety data. FAA-derived data and subject matter expert presentation material would become even more meaningful and would be more apt to be cohesively delivered in prospective multi-meeting settings.