



400 Field Update

Flight Technologies and Procedures Division

"Improving Safety and NAS Operations through Flight Technologies and Procedures"

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A Message from Bruce

Welcome to our 2016 Winter Newsletter! I trust each of you had an enjoyable holiday season with your family and friends. 2015 was an exciting, busy and productive year for AFS-400. We ended the year revisiting goals the division set at our all-hands off-site back in June, as previously discussed in our summer newsletter. Last month, the division came back together to continue this effort at another all-hands meeting, this time, connecting our Washington, DC and Oklahoma City branches through VTC capabilities. Over the last six months, branch members have been critically analyzing challenges the division is experiencing and shared their findings and solutions to overcome these challenges with the division.



Also at the December meeting, major accomplishments and significant successes were recognized; many are highlighted in this issue. I encourage you to read about these important and influential AFS-400 projects. You can find previously highlighted stories on the division's 2015 accomplishments in our earlier newsletters archived [here](#).

As always, we ask that you continue to send us your suggestions, ideas and comments to AVSNextgen@faa.gov. We welcome your feedback and look forward to hearing from you.

Bruce DeCleene
 Manager, Flight Technologies and Procedures Division, AFS-400

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Highlighted Stories

“Bridging the Gap”: Interdependence and collaboration with other FAA lines of business (LOBs)

AFS-408 has been leading the way in building the future of the FAA via cooperation of other FAA LOBs.

They have been busy building liaisons and alliances at the working level within the regions and service areas, and finding ways to work together in finding solutions and keeping the national airspace safe.

Our efforts started in order to provide consistent standardizing in the way we operate across all the regional offices and local FSDOs. This is designed to ensure all employees understand the program criteria and are up to date on the latest technologies, which will enable NextGen to accomplish program goals. Outreach is the most important element of this process. Education brings the ability to think independently and critically, to challenge common thinking and bring new perspectives to the evolution of the NAS and its processes.

AFS-408, through its association with the Regional NextGen Branches and the national team of All Weather Operations Inspectors, reaches out to the field through its liaisons with our AFS field offices, as well as the FAA Office of Airports and the Air Traffic Organization headquarters and service areas offices. The regional Airport District Offices, ATO Tech Ops, Air Traffic facilities, other national and local FAA entities and offices, as well as subject matter experts (SMEs) from inside the FAA and outside industry experts and users are all additional and critical partners in the success of our outreach efforts for NextGen investment and implementation.

Success is being measured by the increasing number of operational approvals to authorize use of these technologies and the associated procedures that enhance the NAS. Success is also a measure of the interactivity of the ATO, ARP and AFS in protecting the precious airspace under the Obstruction Evaluation program where collaboration has revisions to guidance to provide better determinations for evaluation of hazards within the NAS. Additionally, reviewing the current criteria for airspace protection is key to ensuring the NAS accurately represents modern aircraft performance capability in order to better optimize airspace use and adequately protect flight operations, persons, and property.

A critical part of the education process is to demonstrate the uniqueness of each line of business, which exemplifies the viewpoint of each perspective. AFS-408 is attempting to share these perspectives with the inspectors who are best suited to use the knowledge and expand both their critical thinking and their interdependence and liaison with other lines of business. The collaboration of multiple lines of business perspectives is the desired outcome.

AFS-408 has evolved the recruiting, hiring, training and guidance for All Weather Operations inspectors in the regional 220 offices. They have rethought their products, processes and procedures for how they operate to obtain cooperation and success. The eight independent offices across the NAS currently interact and cooperate with each. This commingling of independent offices provides more consistency and ensures expertise is shared among the entire workforce regardless of geographic location of that expertise.

Over the past few years, a primary focuses of AFS-408 has been to provide a more active connection between the regional branches. The conduct of regular AWO Aviation Technical Information Sharing (ATIS) sessions and periodic AWO Forums has provided the link between regions to bring forth a more consolidated effort to our work. The ATIS sessions have an educational focus and include topics relating to the specific job function. The AWO forum has served as a venue for AFS-408 and the national AWO group to openly discuss and resolve pertinent issues.

Where tribal knowledge prevailed in the past, standardized written guidance is now available and is constantly reviewed for applicability and acceptability in practical use. As technology and guidance simultaneously evolves, AFS-408 will continue to involve (SMEs) from within our line of business as well as (SMEs) from outside our line of business to ensure we all agree on the processes and outcomes required and desired.

AFS-408 has completed a top-to-bottom design, publication and review of a new on-the-job-training program, as well as a technical outreach program. We have also undergone a complete revision of inspector guidance in order to ensure we operate as a completely homogeneous organization. We will continue to strive for individual excellence, but remain completely interdependent on all employees with and outside the FAA to ensure we meet all expectations of all aviation participants.

Highlighted Stories (Continued)

Exemption 12555, Accuracy, Integrity and the ADS-B Rule

In August 2015, the FAA issued a time-limited grant of exemption from certain elements of the ADS-B Out rule. The national press was quick to announce the news but paid scant attention to the very narrow impact of the exemption. As a result, some in the aviation community are already talking of a relaxation or delay in implementation of the rule and complications for NextGen. Nothing could be further from the truth; but to understand this is to understand some of the details of ADS-B and the rule.

In 2010, the FAA published the ADS-B Out rule, 1. Requires that beginning January 1, 2020 aircraft operating in ADS-B airspace where a transponder is required be ADS-B equipped and 2. That ADS-B equipment broadcast the required information, called message elements. There are 19 required message elements which include such things as the aircraft's position and velocity. Most of the message elements constitute the information that makes ADS-B useful. But certain of these elements indicate whether the information is reliable. Since ATC uses ADS-B information for air traffic separation, the regulation sets minimum performance requirements for the parameters that indicate that the information is reliable. Only two of these parameters – one for the integrity, or goodness, and one for the accuracy of the broadcast position - are the subject of Exemption 12555.

An ADS-B system's reported accuracy and integrity are provided by the position source, or GPS. These values can vary as the relative positions of the aircraft and the GPS satellite constellation change. Modern GPS receivers can compensate for the reduced accuracy and integrity by using augmentation systems like the Wide Area Augmentation System (WAAS). In certain older GPS receivers, without augmentation the reported accuracy and integrity can drop below the values required by the regulation for up to 5% of the time. During these periods of reduced accuracy and integrity, the broadcast information is unusable by ATC and the aircraft is not in compliance with the regulation. GPS receivers with this characteristic are widely used in large air transport aircraft.

In May 2015, Airlines for America (A4A) petitioned the FAA on behalf of their member airlines, and other similarly situated operators, for a limited exemption from the accuracy and integrity requirements. The proposed exemption would permit operations in ADS-B airspace during periods when installed ADS-B Out equipment does not achieve the required accuracy or integrity performance, and where an alternate means of traffic surveillance can be used by ATC. A4A noted that position sources which would meet the rule requirements closer to 100% of the time and be suitable for air transport aircraft will not be widely available for a few more years. Currently installed GPS receivers can support ADS-B, but may have periods of reduced accuracy and integrity. Since alternate means of surveillance, such as Secondary Surveillance RADAR (SSR) will still be operational in many parts of the NAS for some time, there would be limited impact on air traffic operations.

The FAA agreed with the arguments made in the A4A petition and so Exemption 12555 was granted. Operators whose equipment qualifies for the exemption must comply with certain conditions and limitations stated in the grant of exemption. The exemption will last from January 1, 2020 until December 31, 2024, by which time the equipment must be fully compliant with the accuracy and integrity requirements.

What must be made clear is that the ADS-B Out rule has not changed. Operators, including those covered by Exemption 12555, must be ADS-B Out equipped by January 1, 2020, or risk being denied access to ADS-B airspace. So, rather than being an impediment to NextGen implementation, this exemption is a means to achieve ADS-B compliance by 2020 and ensure the success of the NextGen transformation.

For details regarding the ADS-B Out rule, 14 CFR part 91, §§ 91.225 and 91.227) refer to:

<https://www.federalregister.gov/articles/2010/05/28/2010-12645/automatic-dependent-surveillance-broadcast-ads-b-out-performance-requirements-to-support-air-traffic>

For Exemption 12555 petition and grant of petition refer to: <http://www.regulations.gov/#!docketDetail;D=FAA-2015-0971>

For more information on All Weather Operations (AWO), please contact Paul Von Hoene at Paul.vonhoene@faa.gov

Employee Spotlights

Caitlin Locke



Q: What do you do, how long have you been with FAA, and where are you based?

CL: I've been with the FAA since 2008. Since July 2015; I've been on a detail to AFS-400 as a special assistant for Bruce DeCleene. I'm located in Washington, DC.

Q: How did you begin your career with the FAA?

CL: I started my career with the FAA in the Aircraft Certification Service in the International Policy Office, where worked with the Bilateral Aviation Safety Agreements. I was the U.S. Member to the ICAO Airworthiness Panel. Following my time in AIR, I went to the FAA Office of International Affairs (API) in the ICAO program office in 2013, I moved to the International Programs Division of Flight Standards (AFS-50). In AFS-50, my geographic area of responsibility was Europe and Latin America.

Q: What is your favorite part about working here?

CL: AFS-400 is the first non-international office that I have worked in. This opportunity has given me insight into the domestic programs of the FAA. In my limited time working for AFS-400, my favorite part has been having the chance to interact with many professional people with such varied aviation expertise. I'm excited to have this opportunity to learn about and be a part of this great organization.

Q: Best life lesson?

CL: If Plan A fails, remember you have 25 letters left.

Q: What is your greatest accomplishment?

CL: Professionally, I'm still early in my career; however, I would say the most significant so far would be surviving my first ICAO Assembly in 2010, and a second in 2013. Personally, I'd say the best thing I have accomplished would be marrying my husband Juan.

Jon Denton



Q: What do you do, how long have you been with FAA, and where are you based?

JD: I have recently been assigned to Flight Standards Service - Flight Procedure Standards Branch, AFS-420, as a TERPS Criteria specialist. Basically, I provide input on criteria as it relates to instrument procedure design and development. I have been a federal employee for over 24 years and with the FAA in Oklahoma City since 2005.

Q: How did you begin your career with the FAA?

JD: In 1984, my job in the Air Force was to protect airplanes on a flight line. In 1991, I became an Air Traffic Controller for the DOD. In 2000, I joined the FAA as a Flight Service Station specialist, and in 2005, I began working in OKC evaluating and developing procedures (TERPS). Within the past few months, I was assigned to AFS-420, Flight Procedures Standards Branch.

Q: What is your favorite part about working here?

JD: I'm able to challenge myself to continue to work in an area with knowledgeable professionals and still provide expertise and support through the daily grind.

Q: Best life lesson?

JD: If you work hard for what you want, you may not get exactly what you want, but you will get what you need.

Q: What is your greatest accomplishment?

JD: My wife and I have raised 3 kids, ages 25, 20, and 17. Each of them has excelled academically, in sports, or both. I've been able to remain active with all three of my kids by coaching and eventually playing side by side with them in their respective sports. I ran my first marathon at the age of 50 in about 4 1/2 hours. This summer a co-worker and I rode over 100 miles in an afternoon. I'm still active in mountain bike racing, and I'm a member of a recreation soccer team. By staying active, it helps to keep me focused and be a useful member of whatever team I'm on.

Division Updates

Update on Established on Required Navigation Performance (EOR)

The AFS-400 EOR team at the Mike Monroney Aeronautical Center (MMAC) in Oklahoma City is in the final stages of processing and analyzing data collected from three separate Human-In-The-Loop (HITL) tests conducted over the course of this year.

The Pilot HITL Test was conducted in two phases: Phase 1 occurred in Oklahoma City in the AFS-440 flight simulators using industry pilots flying the Airbus A330 and the Boeing B737; Phase 2 was conducted using industry pilots flying the ERJ145 in a CAE simulator at the Dallas –Fort Worth International Airport in Dallas, Texas. Industry participants included pilots from American, Delta, Envoy, Express Jet, Shuttle America, Southwest, United, and US Air airlines. Prior to conducting phase 1, a pre-test was conducted in the AFS-440 simulators using check airmen to identify parameters that were to be used to facilitate the phase 1 and 2 HITL tests.

A Controller HITL Test utilizing certified Air Traffic Controllers was completed in the AFS-400 ATC Laboratory at MMAC. Twenty controllers from various facilities throughout the United States volunteered to participate. Members of NATCA participated as observers during the test.

Data from the pilot and controller tests were collected for analysis and collision risk estimates associated with the operation. The draft safety report is currently being reviewed by Focus Group participants. The complete data and human factors analysis will be published in a safety study that will be released by year's end.

For more information on Established on Required Navigation Performance (EOR), please contact Gary Foster at Gary.CTR.Foster@faa.gov.

Update on Preparation for an Operational Demonstration of Capabilities in Seattle & Protected Low Visibility Taxi Routes”

In the summer 2014 AFS400 Newsletter, the highlighted story was “Preparing for an Operational Demonstration of Capabilities in Seattle & Protected Low Visibility Taxi Routes”. Much has been going on behind the scenes in preparation for the ODC to take place in the coming year. The need for improved taxi in low visibility continues to increase as technology improves. Multi Spectral cameras are becoming available that use Enhanced Flight Vision Systems (EFVS) in the infrared, visual, synthetic, and millimeter wave length to improve the image available to the pilot. We saw a demonstration with a Heads Up Display (HUD) display of a gate parking system that is currently under development and is capable of guiding an aircraft to a precise parking position with the crew using a HUD that needed no further capability enhancements

Several airports have recently adopted LVO/SMGCS programs including San Francisco, CA and Boise, ID. Previous low visibility taxi research at NASA-Langley and SMS analysis of low visibility operations at Boston has enabled Level 1 LVO/SMGCS operations down to 500 feet RVR (previous limit was 600). Fourteen airports to date have enabled Level 1 operations. Simulator research is testing takeoffs in low visibility using localizer and HUD which will also increase NAS efficiency and the need for low visibility taxi operations.

The regulatory foundation completed by AFS-410 that permits the ODC is FAA Order 8000.94. The FAA Administrator signed the order in August 2012. Today 8000.94 is currently being updated to incorporate regional 220 branch and airport district offices updates. We are working implementation of improved LVO/SMGCS charting symbols and harmonization of marking and signage for the International Civil Aviation Organization (ICAO). AFS-410 is currently working with several industry participants that have a keen interest in taxi operations below 300ft RVR. Together we are identifying airports that do not have the LVO/SMGCS infrastructure that exists at CAT III airports such as Seattle (KSEA) or Memphis (KMEM), and where operators can safely mitigate the lack of infrastructure by utilizing aircraft centric equipment during low visibility taxi operations.

The next step is to conduct simulator evaluation runs in both industry and FAA research simulators and develop scenarios for the ODC. Our goal for the simulator is currently scheduled for the first part of 2016 with the help of leading FAA and industry experts.

For more information on Preparation for an Operational Demonstration of Capabilities in Seattle & Protected Low Visibility Taxi Routes, please contact Andrew Burns at Andrew.CTR.Burns@faa.gov

System Safety

What is the number one Strategic Initiative?

The Risk-Based Decision Making Strategic Initiative is one of the FAA Administrator's four strategic initiatives. The goal of this initiative is to ensure that safety risk is systematically included as part of the equation when decisions are made. It is not a coincidence that this goal is one and the same as that of the FAA SMS. The initiative contains activities that are helping to further the FAA SMS.

ASF-400 meets and exceeds this initiative via the implementation of our Operational Safety Assessment/Analysis (OSA), conducting Operational Safety Reviews, and by conducting specific Safety Studies.

Outcomes

Through this initiative, safety data is shared among FAA organizations, industry, and international peers, leading to a broader spectrum of available data. The data is analyzed using safety management principles to identify hazards and predict the associated safety risk.

Instituting a Risk-Based Approach

Using a risk-based approach allows us to better identify and mitigate possible causes of accidents to manage safety – and, it increases transparency for system users. It emphasizes the review of safety data before an accident or incident might occur. It is a more proactive way of doing business from years past. Once we complete the activities that make up the Risk-Based Decision Making Initiative, we have instituted a risk-based decision making approach within our SMS that improves how we make decisions based on safety risk.

Current Outcome

The LED Safety Team has recently conducted an extensive OSA which addresses the integration of LED light sources within the NAS. The draft OSA has been distributed within the LED Symposium participant's for review. The OSA is extensive in identifying 41 system risks and 72 recommendations; which mostly address R&D and flight test objectives.

If you are involved in work that affects change in the NAS please consider our RBDM processes.

Staffing Changes

New Additions:

[James Kenney](#) – Aviation Safety Inspector, AFS-470

[Gordon Rother](#) – Dispatch Safety Inspector, on detail with AFS-430

[Tom Ryan](#) – Project Manager, on detail with AFS-430

[Tiffani Blexrud](#) – Technical Special Assistant, AFS-405 has returned from her detail with AVS-1

Departures:

Bryant Welch – AFS-410, retired, October 30

Joe Smith – AFS-402, moved to AFS-700, effective November 1

Shannon Rogers – AFS-405A, took a position with AGENCY, last day December 12

Caitlin Locke – AFS-400, on detail with AVS-1, January 11

Danielle Severance – AFS-405, Moved to California, last day December 26

Dean Alexander – AFS-440, retired, December 31

Henry Townsend – AFS-460, retired, December 31

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