

NATCA Safety & Tech Update Week of August 20, 2018

ATO OPERATIONAL CONTINGENCY GROUP (ATOC): Jason Grider (ZFW) is the Article 114 Representative for NATCA. Also, included in Mr. Grider's duties is Article 114 representation for the Business Continuity Plan (BCP). Mr. Grider's report for this month is below.

The CO group has been working for the past couple of months developing the process it will use when going to facilities to help facilitate building new contingency plans. The group has sent teams to ZDV, ZMA, ZSU, and ZFW working with NATCA and support specialist to find out what is needed for each facility to build better plans internally. In every instance the group has identified that these facilities just don't have the resources to do the work necessary to build the plans the way they would like to. The CO group is planning to utilize the resources they have to supplement support specialist in the facilities to write revised plans. Mr. Grider has been spending his time split between traveling to facilities and working at the FAA Command Center and Headquarters.

In a parallel effort the CO group has been putting together an oceanic contingency workgroup. This group will consist of members from ZAN, ZOA, and ZNY as well as Mr. Grider. The group will look at existing infrastructure and build contingency plans to maximize the use of current equipment and techniques to work traffic in the event any of these facilities are unable to provide service. They will also be looking at the needs of the NAS in the future and putting together a wish list of technologies that could greatly improve efficiency in the event of an ATC-0 declaration.

DATAComm: Chad Geyer (ZLA) is the Article 114 Representative for DataComm. Below is his update.

Controller Pilot Data Link Communication (CPDLC) sites are now sending over 51,000 clearances a week. Tower Data Link Services (TDLS) version 12.5 has been deployed to 46 of 76 sites.

Participated in a training review of the DataComm En Route training. AJT was asking for a review to see if training could be reduced to ease some of the burden to facilities of a three day training course. The participants include Bill Holland, ATM from ZID, Kenny Smith, Operations Manager from ZTL, Tom Adcock, NATCA Training Representative, and Chad Geyer, NATCA DataComm Representative. The group observed classroom and TTL training at ZID and ZKC. The group also interviewed local training cadre, national training cadre, controllers and supervisors who have completed the training, controllers and supervisors who have used the system operationally, SGET developers, and also interviewed students who completed the course while we were at the facilities. The findings were that the course was very well presented and that CPDLC for En Route was much more than sending texts. People who were interviewed felt that the class was suitable length for the amount of information that was taught. Some recommendations

did come out of the final report, but nothing that would change the overall content and structure of the class.

Attended DataComm Functional Verification (DFV) at ZID and ZKC. The DFV runs are a check list of functionalities that must be observed prior to declaring Initial Operating Capability (IOC). The check list includes items such as altitude and route uplinks appended with additional information that is sent by different means of input. This could include route menu, full data block and key board entries. This check list validates that messages that are being sent meet requirements and also latency parameters. ZME is also beginning to perform the DFV check list as well. The sites IOC dates are ZID, 11-1-18, ZKC, 11-26-18, and ZME, 12-20-18. Once the sites declare IOC, an independent operational assessment (IOA) will be completed and Terry Bristol will make an in-service decision (ISD) as to whether the program can continue deployment.

ERAM software has been very stable and minimal software bugs have been found. The three major issues on the program have been pilot training, adaptation settings, and communication performance. Pilot training is being addressed by reaching out to operators on the DataComm Implementation Team (DCIT) and having them refresh pilots on issues seen in the field. The second is adaptation of frequencies for held transfer of communication (TOCs) messages. One of the major changes in the ERAM software is to adapt frequencies for every sector combination so that the adapted frequency populates correctly during a track control transfer. Facilities can make these changes in adaptation on the fly, but to make a permanent change, the site must wait for an adaptation update to ERAM. The third issue is communication performance or latency. Most messages are sent and received in a matter of seconds, however, in some cases a message may take up to a minute to send or a failure may occur. This delay is caused from an aircraft not correctly switching to a new radio tower while flying thru the airspace. The program office believes they have determined the cause for this infrequent behavior and are working with ARINC and SITA to address the issue.

FLIGHT DATA INPUT OUTPUT (FDIO): Corey Soignet (LFT) is the FDIO Article 114 Representative. Also included in Mr. Soignet's duties is Article 114 representation for the Electronic Flight Strip Transfer System (EFSTS). Mr. Soignet forwarded the information below for the membFDIO

The first article testing is still on going all facilities are reporting back positive feedback. The controllers have commented on the quality of the font on the new printer along with it being noticeably quieter. The new printer was installed in Puerto Rico (ZSU) but the controllers quickly identified an issue with the reverse shading that is used in their operation. The printer was removed and the FDIO team developed a software fix for the CERAP facilities and ZSU has reported back that the software update corrected the issue.

EFSTS

There is nothing to update at this time.

FIDI

There is nothing to update at this time.

INTEGRATED DISPLAY SYSTEM REPLACEMENT (IDS-R): Richie Smith (N90) leads NATCA's efforts on the IDS-R project as the Article 114 Representative. Below is Mr. Smith's report.

Testing for the next release of NIDS software (V3.6.4) is scheduled for the week of September 17. If a key site has been chosen and coordinated with the FAA has not shared that information with NATCA yet. They will hopefully do so during the next national meeting.

The vendor has been awarded a five year sustainability contract to keep a steady stream of software upgrades and Operating System upgrades flowing into the NAS. While software version 3.6.4 is set to be tested 3.6.5 is preliminarily being bundled for the future. As far as the OS is concerned NIDS is far behind with security updates and discussions are taking place as to the best course of action to fix this issue. As of now a way to upgrade the OS without the network taking an outage is being investigated. It has been estimated that a large network (eg I90) could take up to 24 hours to complete an upgrade/rebuild of a new OS. This would mean 24 hours of NIDS being out of service and this is completely unacceptable. "Mixed mode" testing (mixing old and new Operating Systems) is the only acceptable solution and is being thoroughly investigated at this time.

There continue to be issues at facilities that have had SWS installations. I am told that the majority of these issues have to do with incorrect installation or connection into NIDS. There are also a few facilities that have been or are awaiting hardware to finish the SWS connectivity into NIDS. I'm not sure why this burden has been thrust onto the NIDS program when NIDS was there and functioning before the upgrade but the Second Level Engineering section is being stretched thin by having to travel to sites and correctly install connectors and check configurations.

NAS VOICE SWITCH (NVS): Jon Shedden (ZFW) represents the NATCA membership as their Article 114 Representative to the NVS project. His report is below.

The NAS Voice System (NVS) schedule has officially slipped. The FAA and Harris continue to work on a resolution.

Next Generation Air-Ground Communication (NEXCOM) continues deployment of new CM300/350 V2 radios to terminal facilities across the country. Some terminal facilities in the NAS using very old radios hear a pop back or "squelch tail" when they release their transmitters. The new radios being deployed under NEXCOM Segment 2 do not have this "feature" as the squelch tail is generally regarded as undesirable in radio communications. This issue has cropped up twice now during deployment and the program office should brief future affected facilities prior to install.

The NEXCOM program office has kicked off the Emergency Transceiver Replacement. This program is looking to replace aging tunable transceivers at DEN, HNL, PCT, PHX,

SCT, and SLC. The Technical Interchange Meeting (TIM) scheduled in Denver the week of August 6th was postponed until later this year.

NAS Voice Recorder Program (NVRP) is the replacement for existing NAS voice recorders (DALR, DALR2, DVRS, DVR2). The Program Office presented to the JRC and received approval to proceed to Final Investment Analysis, leading up to the Final Investment Decision.

NVRP Operational Capability Demonstrations were in Oklahoma City on July 10th-11th.

Grand Rapids Tower/TRACON (GRR) is reporting multiple issues with their aging voice switch. There's one outstanding issue where a RADAR site is causing interference in the Tower Cab. That issue continues to be worked.

The Tone Mitigation National Workgroup met in September 2017 to discuss potential mitigations to the number and severity of tone/noise events across the NAS. This workgroup kicked off largely because of the number of tone/noise events occurring at PCT. One of the outcomes from these meetings was exploring the use of new headset bases which incorporate an active limiter.

D10/DFW successfully accepted their new IVSR on July 20th.

The FAA will be conducting Time Division Multiplexing (TDM) to Internet Protocol (IP) conversion in the Bangor, ME area in the coming months. This technology will assist the FAA as local telco providers move away from legacy TDM services to IP services.

SURVEILLANCE BROADCAST SERVICES (SBS) OFFICE: Eric Labardini (ZHU) is the Article 114 Representative to the SBS Office. Below is the update for SBS.

The NATCA Surveillance and Broadcast Services (SBS) team includes: Eric Labardini (ZHU), National SBS Article 114 Rep, Craig Bielek (A90), Dan Hamilton (SFO), National Airport Surface Surveillance Capability (ASSC) Rep, Andrew Stachowiak (I90), Tom Zarick (ZDV), National Interval Management Rep, and Chris Aymond (MSY), National Terminal Interval Management Rep

ADS-B:

- As of August 1, 2018, the number of Rule Compliant ADS-B Out aircraft in the US reached 54,535. ADS-B In equipped aircraft reached 45,310. The growth in aircraft equipage has been significant, and some areas of the NAS are seeing high percentages of air traffic equipped. There is still significant risk around meeting the January 1, 2020 deadline to equip. The actual NAS fleet numbers needed are somewhat vague.
- By 2020, the Agency estimates that 6000-7000 US registered air carriers will need to be ADS-B Out equipped. Airlines operators have all published their plans

- to meet the deadline and recent trend data indicates significant increase in equipage. Several airlines have significant portions (over 30%) of their fleet equipped including: UPS (97%), JetBlue, Delta, United, American, Alaska, and FedEx. American has also announced a plan to equip 320 Airbus aircraft with ADS-B In. The rate of air carrier ADS-B equipage increased sharply in June perhaps indicating the start of a needed trend.
- For GA, the very rough estimate of avionics installation capacity nationwide is 50,000 aircraft per year and delays are becoming common at multiple avionics installation facilities. Users that wait too close to 2020 may find that the capacity for installation falls short of demand. Agency estimates of the overall GA fleet range widely from 100,000-160,000 aircraft. However, only aircraft that operate in ADS-B Rule airspace (where a transponder is required) will have to equip. This drops the number that need to equip to an uncertain extent. Further, MITRE studies have indicated that another 25,000-40,000 registered aircraft aren't even seen operating in the NAS. Based on all this data, the actual number of GA aircraft needed to equip may actually be closer to the 80,000 range. At the current rate of equipage, 85,000 aircraft will be equipped by the deadline.
 - The military has already indicated they will be unable to meet the 2020 deadline. Several of their older airframes simply cannot accommodate the new avionics. The military does expect to equip newer fighters and all of their larger aircraft, and the effort to do so has begun. To deal with the exception aircraft, the Agency is working on agreements with DOD to ensure specific radar sources remain in place.
 - ADS-B IOCs have been completed at all EnRoute (ERAM and MEARTS) facilities. All ERAM sites have promoted ADS-B to the top of their sort cells. 3 of 4 MEARTS facilities are operating on Fusion with ZSU next to transition.
 - 132 of 155 Terminal sites have reached their ADS-B IOC, and 127 are operating on Fusion. The majority of the remaining Terminal sites are ARTS 2E sites awaiting an upgrade to the ELITE (STARS) build. The Terminal ADS-B/Fusion transition proceeds in this order: Kickoff meeting, ADS-B Flight Inspection, ADS-B IOC, Fusion Operational Suitability Demonstration (OSD) and Fusion Operations. The most recent and upcoming Terminal events:
 - Lake Charles (LCH) Fusion Operational 7/19
 - Erie (ERI) ADS-B/Fusion Kickoff 7/19
 - Charlotte (CLT) WAM N-1 Flight Inspection 7/23-27
 - Rockford (RFD) ADS-B/Fusion Kickoff 8/7
 - Terre Haute (HUF) Flight Inspection 8/8
 - Roanoke (ROA) ADS-B/Fusion Kickoff 8/9
 - Bakersfield (BFL) ADS-B/Fusion Kickoff 8/23
 - Peoria (PIA) ADS-B/Fusion Kickoff 8/28
 - New York Tracon (N90) Fusion Planning Meeting 9/11
 - Terre Haute (HUF) ADS-B IOC 9/12
 - Terre Haute (HUF) Fusion OSD 9/12

ADS-B Avionics Issues:

- An issue not screened by automation systems but an important assumption for future ADS-B dependent applications is the broadcast call sign of the user. ADS-B aircraft reports include this information, and automation systems compare it to the filed call sign. When a mismatch occurs a Call Sign Mismatch (CSMM) alert can be generated. The issue has been highlighted in Equip 2020 meetings since ADS-B dependent applications (CAVS, Advanced Interval Management, etc.) are dependent on this functionality. Monthly tracking continues to show this as a significant problem. The SBS Article 114 work group has recommended disabling CSMM alerts across all automation platforms.
- NATCA SBS continues to work with the Agency toward a more proactive approach to ADS-B avionics issues that result in position error. Though these are infrequent occurrences, the Agency's ability to respond has been hampered by a lack of resources, bureaucracy, and legal constraints. These issues occur when standards for installation or configuration within aircraft or ground systems are not met. ADS-B is a cooperative surveillance source relying on position accuracy determined onboard the aircraft. Multiple ATSAP reports have been filed on the known issues to date. Controllers and facilities are encouraged to report any identified events through ATSAP and any other mechanism.
- In order to reduce the number of safety compromising events in the NAS an effective, efficient response mechanism is needed. The Agency has deployed additional mitigations including enhanced validation (EV) and a No Services Aircraft List (NSAL).
 - The NSAL (aka "blacklist") is effective in dealing with chronic non-compliant aircraft, but it lacks the ability to respond quickly. As such it will likely always be needed as a backstop to compliance or enforcement issues. An issue identified and reported immediately takes a minimum of one day to place the aircraft on the NSAL.
 - Enhanced validation (EV) shows the most promise operationally as it is a real time response to invalid ADS-B targets. The latest update to EV already deployed within 15nm around a Terminal Radar has shown positive results. Additional EV techniques are being analyzed, including expanding the range beyond 15nm and further increasing the responsiveness. SBS Engineering is working diligently with Harris to incorporate these changes with additional EV parameters in 2018. With 2020 approaching rapidly, these changes are needed sooner than later to limit the sporadic effects of non-compliant avionics.
- SBS Article 114 work group discussions resulted in all B787 aircraft being placed on the NSAL. These aircraft had a latent avionics issue that causes false position information to be displayed to the controller. This alarmed several facilities and caused both SCT and NCT to demote ADS-B in their sort cell priorities. Boeing has since released a Service Bulletin to address the problem. Most of the B787 operators in the US have confirmed completing the Service Bulletin allowing them to be removed from the NSAL. Other B787 operators are being removed from the NSAL as verification of the Service Bulletin is received by Flight Standards.

Advanced Interval Management (IM):

- Meeting with American Airlines and ALPA to discuss possible Third Party Flight ID phraseology. ALPA is not yet fully on board with the current proposal. Additional conversations are scheduled.
- Paired Approach Demo still on track for February of 2019 at SFO. Team is still working on the details. SRM Panel to convene in late fall. Participants are being identified. SRM will only center around the Demo itself and NOT the Paired Approach application as a whole.
- AIRS Working Group continues to meet and discuss the draft ConOps and phraseology.

ASDE-X Tech Refresh:

- The agency will be upgrading RU communication lines at 8 airports to ethernet. This will allow for increased bandwidth due to traffic level increases. This has been in the works for some time and should start next year. DTW, LGA, PHL, PHX, ORD, LAX, ATL and SLC are the 8 sites currently running on RF modems and/or copper comm lines that are currently near max capacity.
- Tech refresh training continues amongst ASDE-X sites and the latest build should be fully deployed by the end of this fiscal year. After completion, we will start deployment on the next set of system enhancements.

ASEPS:

- There has been little for the NATCA SBS team to report on this subject for a while. Advanced Surveillance Enhanced Procedural Separation has been focused entirely on ATOP for quite some time with JT Lenhart (NATCA ATOP) as the lead. The Agency recently announced that they have failed to successfully build a business case around ingesting Space Based ADS-B in the ASEPS/ATOP model.
- ASEPS will continue their work on ADS-C improvements to support a reduced oceanic separation standard in ATOP. However, SBA work in ATOP is being put on hold.
- The Agency is now exploring a pivot to other potential areas where Space Based ADS-B could be beneficial. This may include ERAM or MEARTS facilities with limited surveillance. ZMA Caribbean airspace is currently the primary focus to prove this capability. This “pivot” away from ATOP means that Eric Labardini has taken a more prominent role in numerous ongoing discussions.

ASSC:

- PIT CADRE training completed on August 1st. Field Familiarization is scheduled to begin in October.
- MCI field Familiarization started on August 16th.
- MCI will likely have an extended Field fam due to some technical issues that need to be addressed prior to IOC. The team is working collaboratively with the facility to help address the issues.
- ADW, which is now back on the waterfall, is a unique situation due to DOD and Secret service security concerns. The team is in discussion with all parties to determine the best path forward. It is still undetermined which sources will feed ASSC. A recommendation will need to go to the JRC as additional funding will be needed to complete that site.

MEARTS Fusion:

- 3nm Fusion in MEARTS is a complex undertaking requiring multiple Tower, Approach, and Enroute sectors to come online with Fusion at the same time. The lessons learned in this undertaking will help the effort with future MEARTS and ERAM sites.
- ZAN has been on Fusion since August 2015. HCF has been on Fusion since August 1, 2017. ZUA transitioned to Fusion on March 26, 2018.
- A Fusion kickoff meeting, Air Traffic Cadre, and some limited Fusion observations took place the first week of April at San Juan CERAP (ZSU). Analysis of the observations resulted in a need for automation changes. Software changes are now in place and a Fusion Operational Suitability Demonstration is scheduled the week of September 24th.

Surveillance Portfolio Analysis Work Group

- Eric Labardini and James Keith (NATCA AJV-7) have been working closely with the Agency's multifaceted analysis of post 2020 radar infrastructure needs. The ADS-B business case was built on an assumption that today's robust radar infrastructure could be reduced once ADS-B becomes the predominant surveillance source.
- The Agency built their business case on an assumption that 100+ secondary radar sources could be removed throughout the NAS. This causes concern in airspace that does not require ADS-B (many Class D or other Approach Controls). NATCA has been pointing toward another option, removing overlapping radar sources completely rather than harming operational capabilities nationwide.
- The SPA WG has developed a draft list of 18 candidate sites for full removal. However, there are several that require more discussion and analysis. NATCA is working closely with the Agency on potential candidate sites. Another concern is the reliance on military radar sites to provide replacement coverage; these sites have historically had issue with availability and clutter.
- NATCA and Ops Support SMEs from SBS have reviewed these 18 sites identified by the SPA WG. With assumptions made about military radar availability, ADS-B availability, overlapping radar coverage and more the team found 7 to be potential candidates. A quick look of the NAS based on these same assumptions identified an additional 15 potential candidates for removal. This is only a high level review and any actual decisions would occur post 2020 with local facility engagement.
- An SRM Panel concluded that partial removal (only secondary or primary radar) actually resulted in higher risks than complete removal. This assumes that complete removal would only occur where the effects were minimized by other overlapping radar sources nearby. A subsequent Panel meeting concluded that ATC services would need to remain identical from a high level perspective. Only at the local level can determinations be made to compromise on today's coverage.

Terminal Fusion:

- The Fusion Focus Group continues to track and resolve facility reported issues with Fusion. These are largely issues with the underlying surveillance infrastructure, and experts from all fields are available to assist. Please report any

issues to your OSF and our NATCA SBS group for assistance. It is critical that actual data is recorded for evaluation and resolution.

- SCT issues continue to be a large focus. NATCA SBS is heavily involved in the Surveillance Automation Analysis Team (SAAT) which is examining long term alternatives to help improve overall surveillance in the SCT airspace. The result is a multi-faceted approach including WAM, raising LGB radar, introducing other nearby radar feeds, STARS software changes, and radar software changes. In addition, SAAT is focused on mitigating tracking issues in the LA Basin due to the construction of a new NFL stadium on final approach to LAX.
 - The LGB radar site is now back online and in use at SCT. The radar site was raised from 37 feet to 67 feet. Feedback from SCT has been positive.
 - Agreements are being worked with the military to ensure availability and performance of the North Island radar. Adding this additional surveillance source shows promise for tracking issues around SAN airport.
 - WAM has been plagued by numerous fits and starts harming the confidence of the facility. SBS Engineering has conducted a two month Technical Eval of the offline WAM system to combat reliability and tracking issues seen. Analysis indicates a significant reduction in false track probability. An Op Eval took place June 27-28 and WAM was returned to operational service on June 29. Yet another false target issue has prompted a stand down of SCT WAM service pending additional mitigations.
- SAAT has been analyzing Potomac (PCT) Fusion issues for potential solutions. The facility has been struggling with a number of issues related to problem radar sites or a lack of coverage. Radar analysis has confirmed the benefit of adding Quantico (NYG) radar to PCT as well as reducing obstructions near Dulles. However, the funding for the additional NYG feed has been difficult to obtain.
- Raleigh-Durham (RDU) has suffered for far too long with tracking issues. A thorough analysis of the situation was provided in late 2017 showing that the RDU ASR itself is screened by tree growth. Efforts to reduce this screening are underway and the airport authority is awaiting a contractor. SBS has agreed to fund additional radar sensors to help with the Fusion presentation, but if the tree screening is not resolved their tracking issues will continue.
- Systemwide changes to CLT WAM are being worked to boost availability. These include multiple redundant communication links from Radios, network architecture improvements, and a closer examination of which Radios are Critical. This last step could move CLT WAM away from having eight Critical Radios to only three. A Critical Radio failure means the entire WAM system is out of service so a reduction in Critical Radios would likely mean greater availability. Whether this surveillance coverage is operationally acceptable is to be examined during a flight inspection July 23-27.
- NATCA and Ops Support SMEs from SBS have completed a review of numerous requests for additional radar feeds across the NAS. Our team focused on those that benefit Fusion tracking. Issues such as service expansion were outside of SBS scope and should be worked through other channels.

Vehicle ADS-B:

- 1416 vehicles equipped at 21 airports.
- LAS started installation of 49 transponders on August 6th.
- MIA transmit map has been approved and installation will begin soon.
- This program continues to gain momentum as interest increases and existing sites expand usage.