NATCA Safety and Tech Update

Week of March 26, 2018

AIRPORT CAPACITY DECISION SUPPORT TOOL (ADEST): Kristen Laubach represents the membership as the Article 114 Representative for ADEST. Her report is below

> It is still uncertain whether the FAA will continue to fund Airport Capacity Decision Support Tool (ADEST). In the meantime, the program remains status quo. There was an issue with the weather data not updating. The developers believe the issue is related to the way the program was archiving information and they are working on the issue.

AIRSPACE: Jim Davis (PCT) is the National Airspace Representative for NATCA. Below are reports from the various airspace team leads and Mr. Davis.

> **SoCal Metroplex**
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> The SoCal Metroplex Core Team, Western Legal and DOJ Legal began the review of the Petioners Brief that was received March 16. The team began drafting responses with information to provide to the DOJ attorneys. The response is due to the Courts May 15.
>
> The Core Team provided the Western Service Center Team a Metroplex 101, provided by MITRE, and the first of 2 SoCal overall briefs to begin the process of transitioning the project to the WSC. The brief also included SoCal Metroplex procedures.
>
> The team continued to work on analysis for a meeting scheduled with a Congressman Rohrabacher March 30, 2018.
>
> Coordinated with Industry reference the implementation of the SNA STAYY SID March 29, 2018.
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> ZLA has begun CADRE training in preparation for BUE training for the week of March 26, 2018 for the Sector 54 and 55 airspace redesigns.
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> ZLA POC provided route information to Industry and Dispatchers regarding SNA STAAY SID. The information also included information regarding amended procedures being published on the March 29th implementation.
>
> SCT is preparing for the meeting with the Coast SMEs to discuss solutions to criteria changes requiring amendments to the PCFIC STAR and BAUBB STAR.
>
> SCT POC is finalizing the draft LOA to address Military SUA usage with procedures that affect ZLA, SCT, LGB and LAX.

Submitted by Jose Gonzalez Article 48 Rep, SoCal Metroplex

Cleveland/Detroit Metroplex Design & Implementation

Flight Check activity will continue next week in both the Cleveland and Detroit areas with multiple aircraft flying. TELCONs will be conducted every morning at 0730 with the pilots and all impacted facilities to discuss the day's activity and reduce the chance of problems. A King Air will fly the close in routes with a Lear 60 doing the outlying routes. The DME/DME problems associated with the SVM VOR outage last week will require some segments already checked to be flown again to get the MEA's down to the needed altitudes.

Approximately 95% of the LOA's and SOP's are complete. We held the SMS panel last week, and still have 1 facility LOA that needs to be addressed due to impasse between ZOB/ZID. Ron and I have made our decision on this issue, and have a telcon set up for 3/21 to render our decision and send it to SMS to be 100% complete.

A meeting was conducted with the Cleveland Center Training and Automation departments, the facility ATM and NATCA FAC Rep, to discuss the ZOB training plan and address some questions concerning the amount of each kind of training each controller would receive. Our ZOB POC's were well organized and validated the plan and the breakdown of each specific requirement along with the refresher just prior to implementation. All present agreed that the plan looks good and will be successful.

The customer briefing planned at Toronto Center and subsequent meetings with Nav Canada are still planned for April 11 and 12. A contact from the US FAA Foreign Service Institute had previously indicated that the team leads should receive information on the needed training required before foreign travel by the end of this week. However, nothing has yet been received by the team leads. Nav Canada participated in our Central Service bi-weekly TELCON this week and indicated that they were set for our briefing and meeting. The team leads will follow-up tomorrow reference the training needed.

Report submitted by Michael Taylor CLE/DTW Article 114 D & I liaison

Florida Metroplex March 2018 Report

Florida Metroplex team had the following activates during the past month:

Met in Orlando with ZJX, ZMA, F11 and TPA to evaluate the re-scoping request from Headquarters

Met at ZMA with ZJX, ZMA, MIA and PBI to evaluate the re-scoping request from Headquarters

Met at ZMA with ZJX, ZMA, FLL, MIA and PBI to evaluate the re-scoping request from Headquarters

Met in Orlando with ZJX, ZMA, F11, MCO and TPA, to evaluate the re-scoping request from Headquarters

Participated in Florida Metroplex, ERAW Telcons

Submitted by Greg Harris Florida Metroplex NATCA Co-Lead and

Caribbean Study NATCA Co-Lead

Western PBN Update – March 2018

Eagle, Colorado (KEGE) Full Work Group (FWG) Meeting

March 13th and 14th, 2018 a PBN FWG meeting convened at ZDV ARTCC to address need to replace outdated Cottonwood FMS Special Departure. Participants included Western Service Area (WSA) PBN Co-Leads, NAVTAC, Flight Standards, OSG Environmental, ZDV, WSA Operations Support Group, WSA Flight Procedures Team, NBAA, NetJets, United, Delta, American and Southwest Airlines.

Flight Standards presented overview of Eagle's existing departure procedures, challenges and the reason's the Cottonwood FMS departure needs replaced; outdated criteria, procedure cannot be coded, unauthorized users flying it, Aspen airspace violations due to engine out portion flown without notification.

Flight Standards developed two RNAV SIDS. APRES and BEVVR. Both SIDS have waivers to the initial climb area (ICA), bank angles greater than 20 degrees and require pilot initiated turn prior to departure end of runway (DER). Initially planned as Specials, PRB agreed equivalent level of safety exists adequate to allow charting for public use. NBAA will primarily use the BEVVR which was designed RNAV-1 after objections to the advanced .03 RNP RNAV SID option. For increased level of comfort, FWG agreed to increase BEVVR take-off minimums to 800-2.

- APRES is RNP .03, take-off minimums 500-2 w/534'/NM to 9,300 (Compared to 815'/NM Public SID & 700'/NM for Cottonwood)
- BEVVR is RNAV-1, take-off minimums 500-2 w/740'/NM to 10,200 (Compared to Cottonwood 700'/NM Climb)

A few industry participants expressed concern with the pilot-initiated turn stating "RNAV off the ground is the only alternative for engagement and managing the aircraft on departure by reducing workload." Remainder of the meeting, new design attempts with VI-CF coded initial leg solutions were proposed. Various climb gradients (CG) up to 918'fpnm discussed. AFS agreed to take an Industry agreed max CG and attempt a VI-CF initial leg with two CG's – first LNAV engagement. Remainder for obstructions. If successful, procedure may need to be a Special because of the number of waivers. Training may be required for equivalent level of

safety. APRES and BEVVR RNAV SIDS currently scheduled for July 19, 2018 publication. The existing Cottonwood FMS Special will NA/cancel concurrently.

* March 27, 2018, Flight Standards is hosting post-FWG SIM evaluation of the APRES and BEVVR RNAV SIDs in Boeing and Airbus airframes for Industry and PBN Co-Lead observation.

Josh Haviland, Western PBN Rep

Eastern Service Area (ESA) PBN March 2018

The Notional designs are complete for the Capital Area Project. The design packages for IAD are being readied for environmental review and AIS development. We will attend the BWI and DC Roundtables April 24th and 26th, to present them with our notional designs. Several controllers from PCT and BWI tower to assist with the briefing.

The CVG project remains on hold but the ROCKT SID was handled separately to remove the TVT VORTAC.

PXT VOR MON project has been split into two implementations. The T-routes are mostly complete and should go to environmental and rule-making before the end of April. The STARs will be handled in the ACR project.

Submitted by Bill Wise ESA PBN/NEC Airspace & Procedures Article 114 Rep

NATCA PBN Co-Lead East

In the past month in East, we have worked on the PXT VORMON STARS, Northern ACR project, DataComm Telcons, BOS Massport MIT request and multiple VORMON meetings.

The work on the PXT STARs is almost complete, still need to work with N90 on the end points and lost comm procedures. Once we complete our work with N90 we can complete the procedure review and hand them off to FPT for publication.

The Northern ACR Q and Y routes are really starting to come together. We have scheduled our first meeting the week of April 9th at MITRE. We will be reviewing the Q and Y routes that were left by the ACRP project. Also, to be discussed are the possible implementation dates.

DataComm has concerns about our implementations and how they will affect the DataComm project. With this being known, we have invited someone from the DataComm office to attend our ACR meeting. They will be there to let us know if our routes have DataComm issues and the timetable for the DataComm implementations.

Massport and MIT signed a MOU to look at noise issues around BOS last year. The Block 1 study is complete, we are looking at getting a briefing from MIT, and meeting with the BOS facilities in

early May. At this meeting, we will look at the study and see how much is viable for Air Traffic and Industry.

We have been working with the VORMON people in Eastern to determine the best way at meeting their waterfall decommission dates. There was some good discussion this past week and we are planning bi-weekly meetings to continue working on streamlining the process.

Joey Tinsley NATCA PBN Co-Lead East

CSA PBN 2018-03-22

The CSX decom continues to be an important item to work with T75, KSUS, KSTL, and ZKC. Telcons and email coordination continue. RNAV impacts are being mitigated and the CSX VOR/DME will remain as a stand-alone DME that will retain the CSX RNAV waypoint name. There are still a number of PBN requests that have been submitted by T75 and these are stuck in the budgetary hold that we are currently working through. The project for T75/KSTL/KSUS/ZKC is one that we intended to have kicked-off prior to the end of FY2017.

ZFW is preparing for their first wave of impacts from VORMON. I spent a day at ZFW to help develop strategies and gather data for facility use as they work through the GTH and UIM VORTACs being removed. The Central OSG also held a one-day VORMON meeting at ZFW to bring in the facility contacts to meet the OSG, FPT, and PBN specialists that will be working all of the impacted procedures.

The abbreviated amendments to support KIAH EoR efforts have been approved by AJV-14 and submitted to the Central FPT for development. Very recently, issues have come up between industry expectations and ATC expectations regarding language for simultaneous operations contained in the notes section of the procedures. We are working through those issues currently. As of right now, a 9/13/2018 chart date is expected, with a small possibility of one cycle earlier still being potentially feasible.

A Co-Leads Quarterly meeting has been scheduled for April 24-26 in DC. This will be our first chance to discuss priority projects and we will hopefully come away with a plan for what will be worked first once the funding stream is flowing more predictably. KORD/KMDW, KCMH, and KSAT continue to need priority handling and we want to get the KSTL/T75 work moving as well. We continue to do background work on other requests so we will be able to move them quickly once we are given the go ahead.

Efforts are underway at KDFW and KMSP for development of missed approach procedures that may mitigate some of the impacts from CRO. Each site is different. KDFW workgroups are meeting to develop a workable concept for Rwy 13R Arrivals and Rwy 18L Departures. KMSP has also made a similar request within the last month.

In Central, we have PBN requests on hold for the following airports or facilities: KABQ, KADS, KAUS, KDAL, KDFW, KHOU, KIAH, KJVY, KLUM, KMCI, KMDW, KMKE, KMSY, KOKC, KOMA, KORD, KSTL, ZAU, ZKC, and ZMP.

Submitted by CSA PBN NATCA Art. 114, Brent Luna

PBN/Metroplex Design and Implementation Lead Monthly Report – 3/20/18

Metroplex: Florida Metroplex re-design work has begun on the Florida Metroplex SIDs/STARs in the next few weeks. The re-scoping efforts will focus mostly on procedure design at 10,000ft and above to reduce environmental and community involvement costs. The design teams plan to be complete with the SID/STAR design by the end of April/early May time frame. Post-implementation of SoCal Metroplex amendments is scheduled for March/May 2018. The SoCal project is currently looking at a closeout on May 31, 2018. Detroit/Cleveland Metroplex is now working towards a September 2018 implementation date. The Denver Metroplex team is awaiting the decision from HQ regarding the future re-start of the project after consideration is given to external advocacy of the project. The Las Vegas Metroplex had been on a "slow down" due to budgetary concerns but will begin developing a working schedule to move forward with the project as originally scoped and will re-start design meetings the week of March 19. The next Metroplex Leads meeting is scheduled for a May 1-3, 2018 face to face at Mitre.

Part of the current Florida re-scoping options is to incorporate a portion of the AC Q routes from ZJX and ZMA. The Florida Metroplex team will work to connect the Q routes to the existing SIDs and STARs for a November 8, 2018 implementation. The team will then reconnect the future Metroplex SIDs and STARs to the Q routes at a later date. The northern ACR Q routes (ZDC and north) have been incorporated into the NE Corridor initiative with a dedicated set of Co-Leads.

The PBN office is currently working with Flight Standards (AFS), Aeronautical Information Services (AIS), Service Center Operational Support Groups (OSGs), Flight Inspection, and PASS on a workgroup to look at ways to streamline the Instrument Flight Procedures (IFP) development processes to improve the way we validate incoming IFP requests. This workgroup will also look at ways to better prioritize valid requests that aligns better with safety needs and the PBN NAS Nav Strategy. This workgroup kicked off on March 28, 2017 with a week-long meeting in Seattle. NATCA was briefed on the progress of the workgroup on February 20 and a sub-workgroup has been established to review existing orders for alignment with the new IFP strategy and direction. The timeline for completion of the draft implementation plan is June 2018. The next PBN Co-Leads meeting is scheduled for April 24-26, 2018.

AIR TRAFFIC PROCEDURES (AJV-8): Andy Marosvari (BOI) is the Article 114 Representative in the AJV-8 Office. Mr. Marosvari forwarded the summary below for this update.

NATCA participates in nearly every meeting regarding every change that the FAA is working on. Additionally, most clarifications and interpretations, previously done without collaboration, are now written with NATCA involvement.

Change 1 of the 7110.65 X will become effective March 29,2018. Below are the changed paragraphs and the a brief description of each change.

2–1–4. OPERATIONAL PRIORITY

This change adds the term **FALLEN HERO** and provides guidance on priority handling of these flights, when able.

2−6−4. ISSUING WEATHER AND CHAFF AREAS

This change adds the correlation of the six STARS weather levels into four precipitation intensity levels.

3−3−7. FAR FIELD MONITOR (FFM) REMOTE STATUS UNIT

This change aligns its content with FAA Order 6750.24, Appendix A, requiring that the remote sensor unit must be operational when the weather is below CAT II ILS minimums.

3−4−10. RUNWAY EDGE LIGHTS 3−4−15. SIMULTANEOUS APPROACH

AND RUNWAY EDGE LIGHT OPERATION

This change updates the requirements for runway edge lights usage.

3−7−2. TAXI AND GROUND MOVE- MENT OPERATIONS

This change requires controllers, when a runway hold short instruction is required, to issue only the portion of the taxi/route instruction up to the runway hold short point. This change also adds instructions to issue a hold short of a departure hold area and adds a when required component.

3−9−4. LINE UP AND WAIT (LUAW)

This change adds guidance on LUAW clearance and clarifies the meaning of the phrase "imminent departure."

5−2−18. VALIDATION OF MODE C READOUT

This change removes the requirement to validate Mode C readouts between En Route Automation Modernization (ERAM) facilities, except in certain circumstances.

5−4−7. POINT OUT 13−1−8. RECORDING OF CONTROL

DATA

After initiating a point out, this change will allow controllers using ERAM to receive non−verbal approval via a coordination portal of the full data block. Automated approval is also reflected on the En Route Decision Support Tool (EDST) display.

5−4−8. AUTOMATED INFORMATION TRANSFER (AIT)

5−4−9. INTERFACILITY AUTOMATED INFORMATION TRANSFER

This change adds language into paragraph 5–4–8 to delete the same facility limitation and include letters of agreement (LOA), adds a clarifying note as to the purpose of Automated Information Transfer (AIT), deletes paragraph 5–4–9 entirely, renumbers two subsequent paragraphs, and corrects several references.

5–9–7. SIMULTANEOUS INDEPENDENT APPOACHES– DUAL & TRIPLE

This change removes the prohibition to the use of Fused Display Mode (FUSION) on Final Monitor Aid (FMA) displays when conducting final monitor activities.

7–4–3. CLEARANCE FOR VISUAL AP- PROACH

This change provides clarity and assists controllers in understanding that pilot–applied visual separation must only be used at airports with an operating control tower. It adds a reference to paragraph 7–2–1 to support the requirement that approved separation must exist after the application of pilot–applied visual separation.

9–2–20. WEATHER RECONNAISSANCE FLIGHTS

This change adds guidance on handling aircraft operations associated with Weather Reconnaissance Area (WRA) and provides a reference to the National Hurricane Operations Plan (NHOP) Memorandum of Agreement (MOA).

9–2–23. OPEN SKIES TREATY AIR- CRAFT

This change updates and clarifies: (1) that Open Skies Treaty (F and D) aircraft are nonparticipating aircraft, (2) modifies the time requirement for coordination and the using agency to deactivate/re- lease SUA/ATCAA to the controlling agency, (3) identifies differences between SUA/ATCAA with or without an associated ATC facility, and (4) an LOA/LOP is not required to transit deactivated/re- leased SUA/ATCAA airspace.

Additionally, due to a change in Air Traffic position classification, the term “front–line manager” has been replaced with “operations supervisor.”

I am currently working with AJV-8 on Document Change Proposals (DCPs) that address separation from Special Use Airspace, Anticipating Separation and Approaches to Multiple Runways.

AIRSPACE TECHNICAL DEMONSTRATION 2 (ATD-2): Pete Slattery (CLT) represents the membership as the Article 114 Representative for ATD-2. His report for is below **ATD-2 NASA/FAA Integrated Departure, Arrival, and Surface System:**

Charlotte Tower/TRACON continues to use ATD-2 equipment to manage traffic on a daily basis. ATD-2 is designed to help the FAA and industry prove the concept of increased efficiency and throughput by combining several existing data sources into one integrated system. This research is focused on helping the FAA reduce risk for TFDM and to inform TFDM's design and functionality as it undergoes development.

Departure metering at CLT now occurs during two banks of flights, the second and 3rd banks, each day. Also, as of the latest build, we are now able to meter each runway individually rather than the whole airport. This is a very valuable new feature since it allows us to better manage each runway and make decisions such as increasing arrivals on a runway that may not have as many departures scheduled to use the pavement.

Metering only begins once a selected target has been reached and terminates when traffic falls below that level. A new web-based departure metering interface makes it much easier for TMCs and ramp/airline operators to collaborate on the targets and thresholds that will be used to initiate metering when a demand/capacity imbalance is projected to occur. Due to the banked nature of the hub operation at CLT, there is a capacity/demand imbalance several times a day. Every day.

NASA recently began releasing the results of the data they have collected since the start of departure metering at CLT. According to their calculations, many hours of departure delay have been saved and many tons of CO2 and other harmful emissions have been eliminated through the use of metering and more efficient scheduling into overhead streams. This data has been presented to several groups over the last month including the NextGen Advisory Committee Subcommittee (NACSC), as well as industry groups. Reception has been positive and each group has asked NASA to continue to keep them informed as progress is made.

On March 6 through 8th, the TBFM Ops team visited CLT to conduct a Site-Survey for the upcoming IDAC installation. The IDAC Ops team was given an overview of ATD-2 and how it is already integrated with ZDC's IDAC/IDST and how we believe it can be used with both ZDC and ZTL in the future. There were concerns about the use of ATD-2 once IDAC is in use at ZTL and CLT. Those concerns are being handled at the Tech Center and FAA HQ, not at CLT.

ATD-2's integration with the Advanced Electronic Flight Strip System (AEFS) is making progress. AEFS engineers have met with NASA and CLT and identified what data elements should be transferable between systems to allow controllers to be active participants in departure metering. Work has begun on making that happen. There are still security concerns that have not been resolved and may delay the integration of the two systems. This may push the start of Phase 2 of ATD-2 back by a few months. A decision on this is expected within the next few months.

On Feb. 26-27, a meeting was held at the Dallas/Fort Worth TRACON (D10) to kickoff ATD-2 Phase 3 activities that will occur in the Dallas Metroplex area. There were representatives from each facility as well as regional and FAA HQ personnel at the event. Dallas was chosen for this part of the research since there are two hub airports (DFW and DAL) within the D10 Metroplex airspace that compete for the same departure resources (Departure Fixes at the TRACON/Center boundary). Charlotte does not have another major airport within its airspace so the concept of multiple busy airports competing for the same resource could not be tested at CLT. The FAA's future TFDM system is expected to have the ability for multiple airports to exchange data and coordinate departure activity to achieve the highest possible throughput at each airport. Departure metering activities at CLT will continue during Phase 3.

The NASA ATD-2 team plans to begin meeting regularly with North Texas Field Demo Partners (DFW, DAL, D10, and ZFW) over the next year and a half in order to refine the IADS terminal departure scheduling concept for use with multiple airports.

As always, I will continue to keep the best interests of NATCA members at the forefront of every decision made and every action taken related to ATD-2.

And that is all I have on ATD-2 for now Matt. Let me know if you need more and when you're coming down to CLT to take a look at it.

RNAV and PERFORMANCE BASED NAVIGATION (PBN): Bennie Hutto (PCT) is the Article 114 Representative for RNAV and PBN criteria work. Mr. Hutto's report for the membership is below**.**

PBN Criteria Update:

Standard Terminal Arrival (STAR) Criteria WG

Participated via telcon with the STAR WG where John Lindsey (AFS-420) did a recap of the last meeting and status update of on-going issues. He also provided a recap of the discussions for Minimum Safe Altitudes (MSA's) being added to Standard Terminal Arrivals (STAR) charts from the US-IFPP (Jan 2018) meeting. He also introduced a new method of submitting and tracking criteria change requests as well as criteria intent verification requests using a system known as JIRA. By the end of the meeting, his plan was to have a shared understanding of the Aeronautical Charting Forum (ACF) MSA topic, issues recommended thus far and the status of each, followed by an introduction to new items of interest. Our next meeting will be on March 27th and be is scheduled for every two weeks in order to get through all the issues and reach a resolution.

Departure Criteria Working Group (DWG)

We have been meeting via telcons over the last several weeks discussing the issue raised by AJT on their nonconcurrence with FAA 8260.3D, specially Chapter 14 regarding SID Criteria. The purpose of these meetings has been to determine if there is a need for SID specific criteria. Our last meeting occurred on March 20th and 21st in Oklahoma City where we discussed design

needs regarding Radar Vectors SIDS and Diverse Vector Areas (DVA). AJT's goal is have the SID protect the aircraft instead of the controller who is using FAAO 7110.65, section 5-6-3 provided the rules and requirements are met. There will further meetings, but we did discuss the disconnect with what ATC needs on the SID and how that is communicated to designers, the disconnect between how the SID is designed and how it is used by ATC as well as how pilots interpret the SID, training/document changes is/are needed to address the ATC/pilot disconnect, possibly placing the take-off minimums in different place such as in the departure route description along with the possibility of adding sector range headings to the chart. when the aircraft is above the MVA/MIA and ATC is Radar Vectoring (RV), ATC has responsibility for obstacle protection and the aircraft is considered on the SID, developing new criteria for vectoring below MVA/MIA that is not called a DVA but is part of the SID using the departure criteria, under the departure route description of RV SID, it may be necessary to remove "for assigned heading and or as assigned by ATC" and change it to "fly assigned heading for RV to waypoint/fix", is the aircraft protected from all 40:1 obstacles using 5-6-3a today, and with any change an SMS Panel is needed.

Pilot Controller Procedures & Systems Integration (PCPSI)

No meetings have occurred since our last meeting from February 6th-8th and below is what was discussed at that meeting.

1. STAR Runway Transitions FAA 7110.65 4-7-1 DCP SRMP - The WG was reminded about the DCP SRMP being held at the FAA from December 5th-7th. The background on this change is for Standard Terminal Arrival Routes (STARS) that provide course guidance to multiple runway transitions, pilots must be provided with runway transition information along with the descend via clearance. This allows pilots to program the Flight Management System (FMS) and fly the proper decent profile associated with the runway transition that was issued. On March 1, 2013, a memorandum was issued clarifying FAA JO 7110.65, Paragraph 4-7-1. The memorandum stated that Air Route Traffic Control Centers (ARTCC) should issue a landing direction and Terminal facilities should issue the runway transition to be flown. In limited situations when the procedures are covered in a letter of agreement, ARTCCs may issue the runway transition in lieu of Terminal. Once the aircraft is established on the runway transition, due to the behavior of some FMSs, runway changes and certain route changes become problematic for pilots. Prior to this change, controllers were required to vector aircraft to the final approach course when any runway change was issued once the aircraft past the point ten miles prior to the runway transition waypoint. This change provides limited relief from that requirement.

The change requires controllers utilizing descend via clearances on STARs with multiple runway transitions to issue the runway transition or landing direction in conjunction with the descend via clearance. After the aircraft, has passed the point 10nm prior to the runway transition waypoint, an additional change relieves controllers from the requirement to vector aircraft to the final approach course if a change in runways is made but does contain strict qualifiers.

This issue has not been resolved and will are meeting with AJV on March 26th.

2. PBN to ILS Update – In order to provide information, you first must understand what occurred. On March 27,2017 ALPA national voiced concern over the removal of VNAV as a minimum requirement for future RNAV approach procedures. Specific issues noted included Flight Crew workload increases during Closely Spaced Parallel Operations (CSPO), the risk of unstabilized approaches will increase, contradiction to the premise that all runways will have a vertical guidance to every runway end. (Recent reference to this paradigm is noted in the PARC produced PBN NAS Strategy 2016.), increased probability of Class B incursions due to lack of vertical guidance, previous studies that addressed operations using localizer only or LNAV only did not address the risk of Controlled Flight into Terrain (CFIT), and aforementioned studies were in a "simulator setting" and did not accurately reflect what a pilot would experience in actual, real world operations.

Mitigations were suggested (inferred) such as; consider further proliferation of ATC Minimum Safe Altitude Warning Systems (MSAW) to include altitudes normally inhibited today due to nuisance alerts, terrain avoidance warning systems are not available during non-precision approaches (Specifically glideslope deviation alerts, ATC monitoring only provides lateral guidance for collision),flight crews operating non VNAV equipped aircraft prefer vertically guided procedures over non-vertically guided procedures, and majority of mainline airlines have VNAV capability (RJ aircraft are LNAV only).

So, what happens now? In response to the concerns, NextGen Integration Performance Based Navigation Working Group (NIWG PBN WG) is looking into the issues, developing a data driven dialogue to address concerns, which includes asking for objective basis for challenges noted. While this activity is going on, the desire is to keep moving forward and not bring the evolution of PBN to a halt. Are there other means to provide vertical guidance while flying RNAV EoR style procedures? Of course, RNP to ILS…

On 17 October AVS-1 requested PARC look into RNP to ILS procedures and operations in order to leverage RNAV procedures to an ILS approach. This was given to the PARC Navigation Working Group (PARC NAV WG) through a letter, which basically stated, "*based on recent concerns raised by industry regarding pilot workload and the availability of vertical guidance when conducting simultaneous approaches, we request that the PARC Navigation Working Group review operational considerations that mitigate operational risk to ensure aircraft can safely transition from RNP to xLS guidance. Factors that may be elevated include, but are not limited to, the availability and necessity of vertical guidance, pilot workload required to transfer between guidance modes, potential benefits of a longer straight final approach segment, and risks associated with dual/parallel operations.*" Moving forward, the PARC NAV WG will review and provide a ToR for PARC SG which led to an Action Team and we just met for the first time on February 21st in Atlanta, GA.

3. Speed Cancellation Guidance - Recent concerns have been raised by controllers pertaining to current guidance in the 7110.65 regarding the issue of speed termination when a Descend Via (DV) clearance is issued and the STAR has no speed restrictions and pilots whose guidance is

different within the Airmen's Information Manual (AIM). Based on the guidance contained within the FAA 7110.65, Paragraph 5-7-4 Speed Termination states: "Advise aircraft to "resume normal speed" when ATC-assigned speed adjustments are no longer required and no published speed restrictions apply." The AIM, Paragraph 5-5-9 Speed Adjustments, subparagraph 5(a) also has language that is similar to the language in the FAA 7110.65, which states how a controller will terminate ATC-assigned speed adjustments when no longer required; "Instructs pilots to "resume normal speed" when the aircraft is on a heading, random routing, charted procedure, or route without published speed restrictions." However, new language was recently added to the AIM under paragraph 4-4-12 f5, which states; "A climb via or descend via clearance cancels any previously issued speed restrictions and, once established on the depicted departure or arrival, to climb or descend, and to meet all published or assigned altitude and/or speed restrictions." This language is not found in the 7110.65 and is what has created some recent issues/concerns. The FAA 7110.65, Paragraph 4-5-7 h Note states: when cleared for STARs **that contain published speed restrictions**, the **pilot must comply with those speed restrictions independent of any descend via clearance**. Where STARS contain no published speed restrictions, the DV clearance doesn't cancel previously issued speed restrictions.

One solution mentioned by Industry was to treat DV and Climb Via (CV) the same as those requirements pertain to Instrument Approach Procedures, which is covered under FAA 7110.65, 5-7-1 c and d, which states; ***c.*** *At the time approach clearance is issued previously issued speed adjustments must be restated if required*, and ***d.*** *Approach clearances cancel any previously assigned speed adjustment. Pilots are expected to make their own speed adjustments to complete the approach unless the adjustments are restated.* Industry believes this will standardize the situation because it meets what all their pilots have been trained to performed, but would require all controllers to receive training because it completely different than how we have been trained. This issue was not resolved during our November 2017 or February 2018 meeting and we will continue to discuss it at our next meeting.

4. Approach Clearance Confusion – Received a briefing from Airline Pilots Association (ALPA,), Allied Pilots Association (APA), National Business Aircraft Association (NBAA), and NATCA on recent events that have generated a great deal of interest and concern with certain approach clearances where altitudes below the procedure and Minimum Vectoring Altitude (MVA).

5. En Route Transition Assignments – Received a briefing from AJV-8 about developing guidance for assigning changes to En Route Transitions on STARS (Not to be confused with Runway Transitions).

6. KSNA SID and A-RNP Issues – Received a briefing from Gary McMullin (SWA) about the new procedures, which led to many pilots within the room being confused regarding the PBN requirements needed to fly the procedure. The big difference with A-RNP is the requirement to use RNP-1 instead of RNAV-1, however the requirements for both are the same, but many pilots have been led to believe RNP is only Authorization Required (AR) procedures, which is not true. I believe many more discussion will continue on this topic.

7. PARC Tasking- Visual Separation While Established on Published Procedures –

8. Phraseology Harmonization in North America – Received a briefing from Brian Townsend (AAL) along with an update on the implementation of Climb Via and descend VIA in Australia. This led to a discussion about coming up with a plan to harmonize the phraseology within North America and use that plan to reopen the issue with ICAO for global changes. Many more meetings and discussions will be required.

Our face to face meeting scheduled for April 30th and May 1st has been canceled, so our next meeting will occur June 28th and 29th at MITRE in McLean, VA.

VNAV & Guidance Mode Transfer Action Team

Background

The PARC Navigation Workgroup formed the VNAV Action Team (VNAV AT) which met on February 21, 2018 to discuss and address specific requests by FAA AVS-1, which were provided to the PARC via letter on 16 October 2018. The PARC Steering Group produced a Terms of Reference (ToR) to frame the VNAV AT tasking. Highlights of the ToR are as follows:

1. Review operational considerations that mitigate operational risk to ensure aircraft can safely transition from RNAV to xLS guidance.
2. Examples of factors that may be evaluated, but not limited to, are:
    a. Pilot workload to transfer between guidance modes
    b. Potential benefits of longer final approach segments
    c. Effect of temperature adjusted intermediate segment
    d. Risks associated with dual/parallel operations

Meeting invitees included representatives from Major Operators and Regional Operators, FAA Flight Standards, MITRE, NATCA, ALPA, NBAA, Honeywell and MITRE.

CONCLUSIONS

The PARC stands by all previous recommendations.

The technical analysis is sound and the analysis and recommendations related to aircraft performance, (e.g., lateral and vertical capture variability, TF/RF turn performance, altitude and speed constraints), as well as the design and operational considerations (e.g., minimum length of final, minimum offset of downwind to final, length of temperature compensating segment, guidance mode transition location) remain valid. The methodologies and detailed processes that led to all recommendations are fully captured in their respective reports, located on the PARC Website, the links are given next to each of the reference documents in the list above.

In forming the action team, leadership intentionally invited experts who were not part of the initial analyses. They were therefore unfamiliar with the recommendations and had no specific bias but brought more business and regional operational experience to the discussions. All invitees were provided with each of the above listed documents as a pre-read approximately one month prior to the meeting.

In addition to discussions specifically about the previous Nav WG recommendations, there were numerous comments made regarding issues that were not specifically technical but were relevant to the implementation of instrument approach procedures, whether RNAV to join and ILS procedure or any other form of instrument approach procedure. These are noted below:

Operational Benefit

Benefits are the foundational driver for implementation of new procedures or procedural concepts. All NextGen programs are predicated on this paradigm. Benefits will vary by stakeholder. There will be tradeoffs in order to facilitate implementation as well as near term and longer-term benefit returns. Traditional benefits such as reduction of block time, distance flown, predictable paths, fuel savings, and airport access, among others, play a role in the implementation of new procedural concepts. The Action Team discussed benefits that could drive the implementation of RNP to ILS procedures as well as RNAV procedures. Path construction using Radius to Fix (RF) legs and Track to Fix (TF) legs were discussed at length.

The tasking to the VNAV AT requested the group discuss the potential benefits of an "extended final". Within the context of the Nav WG RNP to xLS operational and design recommendation there were two significant findings. First, the recommendation for design or these procedures includes an intermediate segment which is shallower than the final segment and long enough to assure glideslope capture from below on above ISA temperature days. When aligned with the final segment, this can increase track miles by one to two miles. In designs where an RF is used for the turn to final this intermediate can be wrapped along the RF, allowing the RF to end at the FAF and not extending the ground track. In TF overlay designs meant to accommodate earlier RJs the intermediate shallow segment cannot follow the TF turns because they are variable depending on system flying them. Second, in earlier RJ (ERJ-145 HW, CRJ-200 Rockwell) systems transitioning from RNAV guidance to ILS (or LPV) guidance is a manual four step process. The Nav WG testing found that aligning the shallow intermediate with the final combined with no less than a 5 NM final allowed this transition to happen smoothly with no undue cockpit workload being added; hence those two limits are recommended when both RF and TF only aircraft are to use the procedures. The team also recommended that the intermediate be allowed to follow the RF for RF only procedures, and that finals as shorter than 5 NM not be precluded by the design criteria. The Regional operators in the meeting concurred with these recommendations, stating that their current training would support such a transition to final since they currently train to establish on the final approach course prior to making the mode transitions (this is also a limitation of some systems which require "winds level" to make the mode transition).

The alignment of the temperature compensating segment with the final approach course taken alone implies longer track miles, hence a non-benefit. But taken in proper context, if the procedure enables the proper level of aircraft participation with the addition of "TF only" capable aircraft, then there may be a greater benefit that would supersede the track mile increase, such as predictable flight paths, connectivity directly from a STAR all the way to the runway, etc. Variables such as mix of aircraft capabilities, individual airport characteristics, and benefit analysis will determine the most advantageous procedure designs. It is not within the purview of the PARC to stipulate when and where procedures are implemented, and with what design type, but the PARC stands by the design recommendations from a technical perspective.

Training

It was acknowledged by the Action Team that there will be a training component for new procedures or procedural concepts. The content of training will logically vary, depending on operation, aircraft, and mission requirements. For example, a fully equipped RNP (AR) aircraft and trained crew will have a different training scope than a general aviation pilot who flies predominantly for recreational purposes in VMC. This has been the case for many years and will not change. Flying an RNP to ILS or RNAV procedure will have a training component. Operators will determine the scope of their training in the same manner that they do today.

Data access

Part and parcel to a benefit analysis is the collection of data that is informative and essential to a benefit case. The Action Team unanimously agreed that the collection of appropriate flight trajectory and performance data in a timely manner is essential to decision making relative to certain procedural concept implementations. As such, the recommendation is that PARC work with FAA & appropriate stakeholders to facilitate access to data that will provide credible information for benefit and safety analysis. An example of the importance of streamlining data follows:

During the meeting, there were comments regarding fly-ability of procedures that were based on anecdotal comments or based on data that could not be shared due to sensitivity of aircraft data. It proved difficult to make conclusions based on no factual data. The recent letter from ALPA included numerous concerns regarding advisory VNAV-only capable aircraft. The Action Team discussed the concerns with attendees that fly aircraft using advisory VNAV on a routine basis. Their comments are summarized below:

- Many operators have used advisory VNAV for years, and fly procedures today in that manner.
- There is a training component today that varies between operators, and new evolutions of procedures requiring advisory VNAV could necessitate additional training.

- Depending on the fleet type and variant, some pilots would need to understand the operational crew procedural differences. This would serve as an example of training that must evolve relative to procedural concept evolution.
- Workload issues vary from fleet to fleet and should be handled within the scope of training.

These and other comments noted issues, which as whole were not exceptional. Any new concept should include these types of considerations.

Virtually all the safety related concerns noted in the ALPA letter could be better addressed if there were availability of ample supporting data. PARC believes an appropriate process for obtaining data from organizations such as MITRE and ASIAS to validate any flight trajectory, crew workload, or risk assumptions is both necessary and warranted.

Recommendations

1. The technical work relative to RNP to ILS remains valid and should be retained as a basis for further design and implementation considerations.
2. A more robust and streamlined process should be established to obtain relevant aircraft performance data to validate aircraft performance from resources such as MITRE and ASIAS. This information would serve to clear up issues that continually arise regarding aircraft 'real world' performance as well as help substantiate ongoing and future operational implementations.
3. A concept of use for the RNP to xLS designs should be developed by the Nav WG combined with further work on specific design methods for TF overlays where needed.

PARC NAV WG

1. RNP AR 50 second Rule Action Review - Mike Cramer (MITRE) reviewed the status of this action after the January virtual meeting, noting that there was concern about allowing reduction of the 50 seconds to zero as part of standard criteria and the concern as if the 500' above Landing Threshold Point (LTP) minimum Final Rollout Point (FROP) still is needed. There was extensive discussion about both topics, with a briefing from AFS showing comparison between the 15 second prior to Decision Altitude (DA) and the 500' above LTP requirements. Basically, the 500' will come into play in low elevation airports and when the Height Above Touchdown (HAT) approaches 250', so it was decided to leave that requirement as is. Further discussion of possibly allowing times shorter than 15 seconds as standard was decided against primarily because in the limited times that might be advantageous the 15 seconds could be waived by AFS after review. In addition, Barry Miller (FAA AIR) pointed out that ICAO was moving toward the 15 second standard, and Jeff Kerr (FAA AFS) pointed out that in the draft Advisory Circular (AC) they had adopted the 15 in anticipation of the Nav WG recommendation.

The final version of the recommendation was agreed upon, recommending simply that a standard minimum of 15 seconds prior to DA for the FROP be applied, and the 50-second time removed from criteria

2. RNP AR Departures - As a follow-on to the previous briefing, Barry Miller briefed the group on the work being done on RNP departures at ICAO. His briefing is posted to the Nav WG PARC site in the meeting folder.

3. FAA Briefing on AC90-101A Update Progress - Jeff Kerr (AFS-470) had previously asked for a time on the agenda to brief the group on what changes are upcoming in AC90-101A. Greg Spann gave the briefing which will be included on the website as part of the meeting records. The general reaction was positive from the group. They also shared a draft RNP AR compliance guide which will be being replaced by online guidance soon (this will also be available on the PARC website for the Nav WG). Jeff asked for volunteers to join in a working review of the AC to help FAA refine the document and better coordinate it with industry prior to the public comment period. The group of volunteers were Mike Cramer (MITRE), Al Herndon (MITRE), Larry Hills (FDX), Brian Swain (DAL), Ron Renk (UAL), Andrew Benich (Envoy), Chris Shehi, Barry Miller (FAA AIR) and Gang Feng.

4. A-RNP Issues Work Session - Mike summarized the three A-RNP issues that had been agreed as high priority for 2018. Each was discussed individually.

a. OEA Harmonization: The harmonization of the OEAs was discussed first, and as review, Mike asked Barry to walk through his white paper on justification for moving to 2xRNP for the OEA in A-RNP to match RNP AR. The main basis for proposing the same OEA for A-RNP rests on the fact that both A-RNP and RNP AR have identical hazard classifications and required design assurance for RNP 0.3 or greater. The more stringent requirements for RNP AR come into play when the RNP value for the operations is less than 0.3. After this second review of the paper, the group agreed that they thought the paper provided sufficient justification for a recommendation that the A-RNP OEA be reduced to 2xRNP from 3xRNP. Mike was asked to draft the recommendation and forward it to the SG for review and approval.

b. Maximum Design Bank = 25 Degrees: Discussion of raising the minimum design bank angle for A-RNP to 25 degrees involved a review of the MITRE aircraft / avionics capability table. This table includes for each system the maximum available command bank angle which can be used. Some systems have a maximum of 25 degrees, but many have 27 and up to 30. It was noted that if we allow design up to 25 to set the minimum RF radius in a procedure, there is no margin in some systems for remaining on the RF path except for the margin built in by designing to the maximum wind speed / direction expected. This is probably sufficient, however the group felt that we should perform analysis to support this assertion. Mike agreed to take the action to work with analysts at MITRE to do this analysis, Wes Combs volunteered to help. There will be no recommendation on this until after the analysis is complete and it supports the limit change.

It should be noted that RNP AR already allows up to 25, and some systems that qualify for RNP AR are the same ones which are limited to 25 degrees maximum control bank for path keeping.

c. Multiple Intermediate Segments: Multiple intermediate segments (and fixes) are a principle part of RNP AR designs in places with multiple runways and approaches (e.g., KDEN). Early in the implementation of RNP AR a PARC working group was assembled to look at the issue of chart clutter associated with multiple IFs and the profile view of the procedure. We reviewed that recommendations that were made there and at the ACF in this meeting to understand if there were any differences between RNP AR and A-RNP that would invalidate use of multiple IFs for A-RNP since it would be advantageous to replace RNP AR procedures with RFs and minima 0.3 or above with A-RNP procedures to improve participation. Review of the preceding work for AR and discussion found no reasons that the multiple IFs should not be allowed for A-RNP as well as for RNP AR. Mike has the action to draft a recommendation for review in our next telecon.

Recommendation - Problem Statement Current criteria does not allow the use of multiple intermediate fixes (segments) for procedures other than RNP AR, such as A-RNP instrument approach procedures see Order 8260.19H paragraph 8-2-2. c. Multiple fixes (segments) are allowed in RNP AR procedures per Order 8260-58A based in part on the PARC RNP Charting WG recommendation (12 March 2010) which was responding to ACF 09-02-220. The PARC work was taken to the Aeronautical Charting Forum at ACF 10-02. It specifically recommended limiting multiple IFs to RNP AR, but raised the question of allowing them for other procedure types, recommending that the issue should be revisited after more experience had been gained. While discussing the possibility of replacing some RNP AR procedures where A-RNP should suffice, the Navigation WG realized that this would be an issue. Using A-RNP instead of RNP AR for procedures only needing the RF and RNP values down to 0.3 NM to expand participation to more aircraft lead the WG to an examination of the Denver RNP AR procedures that meet these criteria. The Denver procedures, however, make extensive use of multiple intermediate fixes and segments for implementation, which is not allowed except for RNP AR. In 2017, the WG added this issue to the work plan for 2018. After review of the original ACF material and subsequent discussion the WG could find no differences between RNP AR and A-RNP operations that would drive a restriction on use of multiple IFs in A-RNP procedures. Given that current criteria don't mention use of multiple IFs outside of RNP AR, and that operations and equipment are very similar between AR and ARNP, the WG concluded that multiple IFs for A-RNP is both feasible and practical to gain the benefit of expanding fleet use through A-RNP in many cases.

The Navigation WG recommends that the FAA revise criteria to allow the use of multiple intermediate fixes (segments) in IAPs requiring the A-RNP NavSpec in the same manner as implemented for RNP AR (down to RNP 0.3).

5. Intermediate Segment Length Work Session - The WG had reached consensus in the last virtual meeting that the current requirement text does not really capture the necessary intent It limits the length of the intermediate segment to 15 NM, when in fact what is desired is that operation on the intermediate should remain within 15 NM of the altimetry source to avoid

temperature driven altimeter errors that might come too close to the 500' ROC that is applied in the intermediate. The group all agreed that limiting the length of the segment would accomplish this for segments aligning with the final, however in many applications the intermediate needs to be much longer to avoid terrain or traffic, but it is all still close to the airport. The group drafted a recommendation during the meeting which Mike will formalize and prepare for SG review.

6. New Business - There were two items brought to the meeting for discussion.

a. Gary McMullin (SWA) briefed the group on inconsistency issues between MVAs and procedure altitudes driven by obstacles and/or precipitous terrain. Gary Petty (AFS) was going to investigate further before the group takes any action.

b. Andrew Riedel briefed the group on the Jeppesen / Garmin partnership which has allowed Garmin to deliver navigation databases that are built to high enough integrity that the operators who use them do not have to do the RNP AR Appendix 3 process each cycle. Andrew recommended that operators approach GE and Honeywell to urge them to pursue a relationship and proper qualification of their tools to allow their customers to also not need to do the Appendix 3 checks every cycle.

Our next meeting is teleconference is scheduled for March 28th and our face to face meeting will be May 9th and 10th in Denver.

RESILIENCY TEAM: Tim Travis (ZID) is the Resiliency Article 114 Representative for NATCA. His update for the membership is below.

Resiliency had one meeting which I could not attend because I needed 45 days' notice to travel and only got 5 day's notice. This has happened several times. The group is developing several models that will assess the Resiliency level of Tier 1 Facilities and the next step will be Tracons

COI has not had any TELCONS or meetings

TACTICAL ACTION NOTIFICATION RESPONSE (TANR): Shannon Jenkins (ZME) is the Article 114 Representative for Tactical Action Notification Response (TANR). Her report to the membership is below.

-Miami TANR LOA was signed 9Mar2018 and will go into effect 30Mar2018. LOA includes CONR160/AOC, EADS, WADS, ZMA, MIA, PBI, FLL, HST and the 125th FW.

-19 March through 21 March briefed TANR to ZBW. Live fly exercise was scheduled for 21 March but cancelled due to inclement weather. Exercise rescheduled for 27 March.

-Established contact with FACREPs from other facilities to better educate and prepare them for upcoming briefings and exercises and to answer any questions they may have.

-Socialized through contact with FACREPs from other facilities for gaining more Real Time knowledge of events in which TANR was used.

UNMANNED AIRCRAFT SYSTEMS (UAS): Steve Weidner (ZMP) is the NATCA Article 114 Representative for UAS. Jeff Richards (ZAU) is assisting Mr. Weidner on this project due to the workload and activity associated with it. Below is the update for the membership.

LOW ALTITUDE AUTHORIZATION AND NOTIFICATION CAPABILITY (LAANC)

NATCA and the FAA recently signed the MOU for the nationwide rollout of the LAANC beta version. The rollout will occur in six different waves between April and September. Training for the first wave begins the week of March 26th.

As a reminder, the initial version of LAANC will simply replace the manual process in which authorizations are approved. The tool itself will be used solely by staff support/management during the initial phase and will automate the current UAS authorization process for Part 107 proponents.

The Agency is working with several industry partners who will provide this service to the various UAS proponents. The Agency will provide UAS facility map data to the industry partners. The partners will, in turn, develop tools that will provide authorization and notification services to the proponents, on a real-time basis, based on the UAS facility map data. The authorizations and notifications will be instantly transmitted back to the facility for which the authorization/notification was made.

Should you be asked for a list of the industry partners who are authorized UAS Service Suppliers for LAANC, refer those inquiries to:

https://www.faa.gov/uas/programs_partnerships/uas_data_exchange/

On that page, you will a section titled, Approved LAANC UAS Service Supplies. In that section, there are hyperlinks to the approved UAS Service Suppliers. There are currently two approved suppliers, but more are expected to be added once they've completed the MOU process with the FAA and demonstrate that their system meets the LAANC requirements.

NASA NO-CHASE FLIGHT

The NASA Ikhana UAS aircraft (https://www.nasa.gov/centers/armstrong/news/FactSheets/FS-097-DFRC.html) will be making the first flight in unrestricted NAS airspace next month, using on-board Detect and Avoid (DAA) equipment. The use of on-board DAA will allow the Ikhana to comply with the requirement to "see and avoid" (FAR 91.113) other aircraft. This flight will be conducted in California (JCF, ZLA and ZOA airspace).

As background, all aircraft are required by FAR 91.113 to "see and avoid" other aircraft. On manned aircraft, this is accomplished by the pilot looking out the cockpit window. There isn't a pilot onboard an unmanned aircraft, so UAS operators are required to provide an alternate

means of complying with FAR 91.113. This can be accomplished by using visual observers, chase planes, ground-based detect and avoid systems, or a combination of these alternatives. Each of these alternate means of compliance has complications and limitations.

This is an historic flight and a large step forward towards full UAS integration into the NAS.

PRESIDENTIAL UAS INTEGRATION PILOT PROGRAM

The DOT and FAA are very close to announcing at least ten municipalities that will be a part of the Presidential UAS Integration Pilot Program. The selected municipalities and the ideas proposed will dictate how these pilot programs may affect air traffic. Mr. Richards and Mr. Weidner will be working closely with the agency as these efforts progress.

UAS SAFETY TEAM (UAST)

NATCA is an active participant in the UAST. The UAST is modeled after the Commercial Aviation Safety Team (CAST) and the General Aviation Joint Steering Committee (GAJST). The UAST recently launched a website as a resource for UAS safety. The website can be found here (www.unmannedaircraftsafetyteam.org). Mr. Weidner represents NATCA on the UAST.

UAS QUESTIONS

As a reminder, any UAS related questions can be addressed to Mr. Weidner and Mr. Richards at UAS@natca.net.