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## **SAFETY AND TECHNOLOGY DEPARTMENT UPDATE**

**Week ending December 18, 2015**

**COLLABORATIVE DECISION MAKING (CDM):** Ronald Foley (ZOB) is the NATCA Article 48 Representative for CDM. Mr. Foley provided the information below for the membership.

- Collaborative Decision Making (CDM) is a joint government/industry initiative aimed at improving air traffic flow management through increased information exchange among NATCA, FAA, representatives from government, general aviation, airlines, private industry and academia. There are four main facets that underlay the CDM umbrella. FCT (Future Concept Team), FET (Flight Evaluation Team), SCT (Surface Concept Team), WET (Weather Evaluation Team). Most of the teams meet once a month from September to May to develop projects and or ideas for NEXGEN.
- **FCT Update:**
  - AAts - Aircraft Access to SWIM (System Wide information Management)
  - AAtS Capabilities can increase the number of participants in TMIs (Traffic Management Initiatives)
  - Additional route options will allow traffic managers more flexibility to assign less delay and potentially reduce workload
  - Flight crews without AOC support are advised that their flight is subject to TMIs
  - AAtS allows non scheduled flight operators to express their route/time preferences via User Route Preference submission, optimizing their flight and the NAS
  - Greater operator participation in TMIs reduces delays for all aircraft that must remain on routings through the constrained airspace
  - Traffic Management and controllers will experience reduced workload as traffic is dispersed
  - Enhancements to TMU's Traffic Flight Management Systems
    - With this shortfall in mind, it is proposed that CATMT WP5 provide traffic managers with a Consolidated System View of the NAS to include the following enhancements and new capabilities:
    - Integrate User Interface Components. This will consolidate and integrate existing traffic management functions and displays to provide a more unified set of interfaces and reduce the need for traffic managers to access multiple data sources.
    - Single Source for Issued TMIs. This will provide a single display source for all issued TMIs, including those currently entered in the Traffic Situation Display (TSD), Flight Schedule Monitor (FSM), National Traffic Management Log (NTML), and Time-based Flow

Management (TBFM). Displays are expected to be both graphical and list-oriented, and will include the ability to analyze the interaction of TMIs; for example, by viewing all the TMIs that are impacting selected flights.

- High-level Alerts Manager. To ensure that the data integration achieved with the first two capabilities above is presented in a comprehensible and useful way, this capability will provide high-level and user-customizable alerting capabilities to help focus a traffic manager's attention on significant problems areas.
  - These Consolidated System View capabilities will provide the foundation for a number of additional enhancements to existing monitoring and alerting capabilities described in this CONOPS:
  - External Event Alerts will provide a user-customizable mechanism to notify traffic managers about events of interest to them, such as runway reconfigurations.
  - TMI Impact Monitoring and Alerting will identify issued TMIs that are not performing as intended, based on user-specified metrics and alert thresholds.
  - Delay-based Alerts will assess system performance and identify possible traffic management problems by calculating and monitoring actual and predicted delays and displaying alerts when user-specified thresholds are exceeded.
  - Enhanced Sector Alerting Metric will provide an enhanced sector alerting mechanism based on patterns of minute-by-minute traffic demand, rather than on a single peak minute.
  - Status of TFMS Execution will indicate TFMS execution status by providing traffic managers with the up-to-date status of newly modeled events
- **WET Update:**
    - The WET team is working on developing new guidance for the CAWS (Collaborative Aviation Weather Statement) and CCFP (Collaborative Convective Forecast Product)
    - The CAWS will only be issued when its either correcting the CCFP and the issue has an impact on operations that would or could result in TMI<sup>1</sup>s. A flowchart is being developed to help the Aviation Weather Center forecasters in issuing the CAWS. In addition CAWS are meant to be more focused and not broad brushed areas. The goal is to have them issued in the 2-4 hour window so that decisions on TMI<sup>1</sup>s can be made timely. Training for CAWS is being revamped and will be more in-depth. The plan is to finalize training toward the end of January.
  - **FET Update:**
    - Enhanced wind models being developed to help with concepts of RTA for TBFM.
    - Background on "Integrated Descent Management" (IDM) Concept for NASA/FET
    - Introduction: For the past several years, researchers at NASA Ames have been investigating specific problems affecting traffic flows travelling to and

from New York. This research effort, called “New York Trajectory Based Operations” (NY TBO), leverages new NextGen trajectory management technologies developed by the FAA, NASA and others to provide a toolkit of integrated solutions to these problems. A current focus of NY TBO, called “Integrated Demand Management” (IDM), operationally integrates the Collaborative Trajectory Options Program (CTOP) with Time-Based Flow Management (TBFM) and required-time-of-arrival (RTA) clearances to address equal, throughput and delay issues associated with NY arrival operations.

- Problem: Newark Liberty International Airport (EWR) was chosen as the test case for IDM development. EWR routinely has arrival demand at or near capacity with a varying mix of short-haul and long-haul flights. Arrival demand is reasonably well managed with miles-in-trail (MIT) and TBFM metering; however, close-in departures often experience excessive and unpredictable ground delay when the overhead flow is full.
  - Solution: IDM uses three key technologies to improve EWR arrival flow management: TBFM to “tactically” manage delivery to a capacity-constrained airport, CTOP to “strategically” manage demand into TBFM, and CTOP-derived RTA clearances to control the entry time into TBFM-managed airspace (Figure 1). By using CTOP instead of MIT for conditioning the flow into TBFM, a more precise match of demand to capacity should be achievable, resulting in a more efficient blending of short and long-haul flights. The result should be more predictable and equitable delay impact, as well as better utilization of available capacity. A longer term objective of this IDM concept for CTOP/TBFM integration is to develop a framework that can be extended to address the larger and more dynamic demand-capacity mismatches associated with convective weather.
- **SCT Update:**
  - Surface Metering now seems as though it is being approached along two lines - NASA is starting to look at the technical needs for the research to go forward according to the 2017 timetable. The SCDM Stakeholders group is continuing to look at the user impact and interaction to help create a product that implement well. According to the information presented, Surface Metering is one small part of the ATD-2 concept.
  - However, Surface Metering has always been identified as a part that can produce benefits in the near term without a costly outlay in resources. A question for NASA will be how will they produce the Surface Metering without the other pieces of the ATD-2 being put in place at the same time.
  - The SCT Workgroup for CDM has received a tasking from the CSG to support TFDI Implementation of Surface Metering by visiting specified airports throughout the NAS to determine how the individual airport's policies and procedures across operations of industry and government can be harmonized with the surface metering concept. The first two sites are ATL Airport from January 5 to January 8, and LAS Airport from January 10 to January 13. Four more sites have

been tentatively proposed: BOS, PHL, SEA, IAH. Dates for those sites have not yet been determined, but there is a goal to complete them before June.

**NEXTGEN:** Melvin Davis (SCT) has represented the NATCA Membership for over four years as the NextGen Representative. Mr. Davis is retiring next month and this will be his last update to the membership. Kevin McLaughlin (SCT) will be the next National NextGen Representative.

- The NextGen Organization has started an effort to review and revise the NextGen Mid-term concept of operations (ConOps). The ConOps is a high level overview of the NextGen plan that was slated to take 20 years from inception to completion. The plan began ten years ago in 2005 and considering that it's midpoint of the plan this is an ideal time to review it.
  - Over those ten years the authorized spending has lagged the projected acquisition plan by about 33 percent.
  - This disparity has lead to delayed investment decisions and deferred achievement of capabilities.
  - The review of the ConOps will highlight areas that remain unfulfilled and potentially begin a broader dialog within the ATO and the broader aviation community about focus areas.
- These focus areas will likely become agenda items for the RTCA NextGen Advisory Committee (NAC), on which NATCA President Paul Rinaldi sits.
  - On the RTCA NAC each segment of the aviation industry is represented including general aviation and the Department of Defense.
  - This large gathering of high level aviation leaders has the influence and experience necessary to provide clear feedback to the government on modernization priorities within the NAS.

**TEMPORARY OPERATIONAL CONTINGENCY OFFICE (TOCO):** Tammy Norman (ZTL) is the TOCO Article 48 Representative. This is a one year detail at the Eastern Service Center to work on this project. Ms. Norman's report for this month is below.

- The TOCO's OCP Field Team consists of several members of the TOCO, a representative from the Command Center, and representatives for the Operational Support Group (OSG) from the three service areas. This team was tasked with providing recommendations for measuring facility OCP performance and compliance in accordance with the Administrator's efficiency targets.
  - Observations and Conclusions (Deliverable DO60.1 Final Report):
    - Based on data provided by the OPSNET data base that collects the number and type of flights in a 24 hour period in a specific EnRoute airspace, the TOCO OPC Field Team calculated an 8 week moving average for each ARTCC facility.
    - The calculation will be the measurement used for determining the performance and compliance of facility OCPs against the Administrator's efficiency targets.

- In the future, calculations will be performed on the number of flights that can be moved through each EnRoute facility's airspace using published CPSS routes IAW 1900.47D.
- The FAA Order JO 1900.47E:
  - Includes the divestment of airspace, but does not include support in assisting facilities The TOCO created the OCP Field Team which will be available to assist facilities with the development of the new divestment plans, OCPs and the measurement and verification of OCP performance and compliance according to new requirements in 1900.47E, as well as the Administrator's efficiency targets.
  - Has exceeded another deadline for signatures; held up at the Command Center concerning requirements using the ACT-2 database for housing the OCPs.
  - Will be published in January with a later effective date.
  - Members of the Integrated Project Team (IPT) from Policy and Review & Compliance suggested a 60 or 90-day grace period after the effective date to allow facilities to meet the requirements of the new order.
- December 3<sup>rd</sup>, the TOCO team met with the Command Center Manager, the ACT-2 POCs, our Review and Compliance Co-Lead, and the DCC NATCA Rep Tony Smith.
  - Two TOCO members will assist with the Task Order, being worked by MITRE, to get the estimate to rebuild the ACT-2 database to meet requirements.
  - The TOCO will assist to standardize basic format of Divestment Plans within the OCPs requiring less interpretation of plans by the Command Center.
  - DCC briefed the TOCO members on the *Hotwash Discussion: A meeting held at the Command Center with the users, hosted by Vice President of System Operations Dan Smiley concerning contingency, continuity, and resiliency.*
- A Black Box Tabletop Exercise requested by Sys Ops Security occurred on December 17<sup>th</sup> in D.C. The TOCO manager Tony Jenkins and our technical specialist Randy Ficklen attended. Representatives from the Command Center, IOTA, Delta, United, Southwest and Airlines for America were in attendance for this exercise. The exercise was to manage outages in southern California after a 7.2 earthquake, losing several facilities at once. Most were pleased with the results. The TOCO anticipates a report/lessons learned on the exercise.
- Upcoming Efforts:
  - The TOCO will get an extension to continue contingency work and create the Contingency Operations Governance Plan for the permanent office.
  - 1900.47E Publication
  - Integration Meeting with Resiliency, NextGen and 2nd Level Engineering
  - Evacuation Bags added to the 7210.3 - Pushed out until further defined and deciding who will maintain them.
  - Resiliency and Integration of the OCP Field Team
  - Air Traffic Services and Mission Support Services working together to enhance or revisit OCPs as support infrastructure is modified.
  - Determine methodology for development and leveraging of Tower EnRoute Control (TEC) to enhance contingency posture.



- Determine how to effectively and efficiently communicate a measure of predictability for stakeholders.

**TERMINAL AUTOMATION MODERNIZATION REPLACEMENT (TAMR):** Mitch Herrick (MIA) leads the NATCA effort on TAMR as the Article 48 Representative. Below are reports from Mr. Herrick and other TAMR Team leaders for the membership.

- **Terminal Automation Modernization and Replacement (TAMR) and Section 804 Update.**
  - December saw Greensboro (GSO) successfully transition to G4 Elite and work around a possible government shutdown in the process. November 2015 was the last month between now and late 2018 that there won't be at least one STARS transition conducted somewhere in the NAS. Some months will have as many as 4 or 5. That is a huge proliferation of STARS deployment and one that we have been preparing for for nearly 4 years. We have a great team in place and a lot of people working incredibly hard to make this happen. We have nearly completed Segment one deployments and only T75, C90, PCT and N90 remain in the Common Arts Waterfall. The rest of the TAMR/STARS activity over the next several years will see us replace all of the ARTS IIE sites and tech refresh the Legacy STARS sites with either a full G4 system or a G4 Elite system.
  - 804 Activity. The Section 804 Workgroup has briefed Senior Leadership (President Rinaldi, FAA Administrator and PASS President Mike Perrone) on our recommendations for the CLE and AZO projects. Next week we will be traveling to the sites to deliver those recommendations and also meeting with the Aviation Subcommittee to brief them. Once those briefings are completed, the recommendations will be entered into the Federal Register for 45 days, Then there is a 60 day period in which the Agency will respond to public comments and finally a 30 working day window in which Congress must pass a joint resolution to disapprove the recommendations. If they fail to pass that the recommendations shall be implemented.
    - Next in 804. Section 804 also has Springfield, IL, and Peoria, IL currently being analyzed along with Bakersfield, CA and Charleston, SC. Those facilities are currently in Step 2 of our 4 step process. We are also working on next years activities which will be finalized in the last week of January.
- **STARS/TAMR Segment 1 Lead Doug Peterson-D10**
  - Lesson's learned site visits. We've have found this "Pay if forward" approach to be extremely helpful and successful. We bring in SMEs from previous sites and talk about the things we've done right and things we've done wrong. Two on site visits this month at N90 and PCT. We covered site specific issues including unique security concerns at PCT and additional training scenario development support at N90. The outlook is positive at both these and the other two remaining segment 1 sites.
  - SCT Tracking issues possible fall back to CARTS. Struggles continue to provide the controllers at SCT with an acceptable presentation. The

factors at SCT are unique and different than anywhere else. Two new software builds were delivered, R3b and R3aD4. Both were successful. The R3a software line is specifically dedicated to improvements needed at SCT for their unique fused tracking issues not encountered at any other of the 50+ sites using STARS. While R3aD4 successfully delivered improvements to tracking performance and we estimate an 80+% overall improvement in tracking anomalies since STARS IOC in July, there remain enough examples of poor performance that SCT is requesting to temporarily transition back to CARTS while remaining STARS software issues are resolved. This will be a difficult transition with significant impact to controllers and other users. The plan is being carefully prepared and reviewed while exhaustive restorative efforts are ongoing in STARS software and adaptation.

- **STARS/TAMR Segment 2 Lead Scott Robillard-K90**
  - **Upcoming Deployment Schedule.** Segment 2 continues to progress through an extremely aggressive waterfall without delay or failure. Our latest success was seen at GSO in mid December and we prepare for further success at TYS in early January, FAR in February and CHA, GPT and ACY in March 2016. 2016 and 2017 will be the largest proliferation of automation systems that the FAA has ever undertaken. Some 70 sites will be deployed during the next two years.
  - **Common Terminal Digitizer. (CTD).** With 30+ ASR-8 sites in the NAS that need to be optimized and modernized to provide input to STARS the Agency has to digitize those sites as well. The CTD is a replacement for the TDX2000 which was used previously to digitize ASR-8s. The CTD program has been identified by NATCA as a major risk to the successful deployment at the back end of the Segment 2 waterfall. A full team, group effort, is working through the process of ensuring that as the ASR8 is modified and upgraded to allow for transition to STARS, that a fully functional and high performing product is delivered to the field.
- **STARS/TAMR Phase 1 Lead Jimmie White-PHL**
  - **Main Display Monitor (MDM) Software.** The MDM is the LCD Monitor being deployed to replace the aging Cathode Ray Tube Sony 2Ks currently in use in all legacy STARS facilities and CARTS facilities.
    - There are 4 different software versions for MDM3. V2.01 for "flicker". V2.02 for screen shifting, reducing a whole screen shift to one line of pixels, almost indiscernible to controllers. V2.03 debugging software. And V2.04 for data collecting. Currently Seattle is our most troubled site for screen anomalies. V2.04 is input into their system to simply collect data. In truth neither TSLE nor Esterline can determine the cause of the anomalies. V2.04 in theory should put the Esterline engineers on a path to discovery. TPA is a second site considered for V2.04.
    - Since MDM3 has remained a hot topic, there is a plan for an MDM test bed. The argument is, is it the monitor, or the operating system, STARS. Since Esterline doesn't have access to a STARS system, the plan is to create a string at the tech center and run

faulty displays on a STARS system and see if TSLE/Esterline can catch these anomalies in real time. The TSLE lead for MDM and I think this is a bad plan and waste of resources, but this is just in theory for now. Realistically you will need to place a controller/tech in front of a display, solely to catch MDM anomalies. This is not achievable. I'll update as this moves from planning to implementing. Other plans are to have the QRO take part in MDM training to learn about field alignment procedures, so hopefully faulty monitors will be caught before they leave the factory. Possibly send no fault found monitors to a site that typically have no MDM issues (what are the pros and cons?). Lastly, find a better way to track double fault monitors. These monitors should be sent to test strings and not ops sites. Currently there is no way insure this doesn't happen.

- **Phase 1 team.** Chris Hilbert (PHL), Jill Carr (TPA), and Teah Lord (F11) will be designated with Jimmie White (PHL) for Phase 1 deployments. Adding these ladies and Gentlemen will insure we can make all meetings and important site visits with a NATCA presence. They are already prepared to give ATC training briefings to the sites they will be assigned to.
- **Upcoming Phase 1 Deployment Schedule**
  - A90 Training for ATC Specialist (planning window) 1/15/16. Typically ATC training begins 30 days out from I.O.C., to prevent having to do recurring training.
  - F11 Training for ATC Specialist is targeted for 1/28/16, I.O.C. date is 2/27/16 (proposed).
  - SBA Initial Site Survey set to begin 1/7/16. SBA is an ELITE opportunity site. All logistics will be handled by the Seg 2 group.
- Surveillance Engineer Joe Yannone (Region-X) leads many of our engineering initiatives
- **Common Terminal Digitizer (CTD) Testing:** The CTD is an integral part of the back end of the TAMR Segment 2 waterfall to digitize the remaining ASR-8 radars, as a STARS system only accepts a digital radar feed. In-plant DTE testing of the CTD system starts at the Telephonics facility on January 13. This will provide the FAA the first long term opportunity to observe the performance capabilities of this new system. Follow on testing at the Technical Center ASR-8 will commence mid April.
- **CTD ASR8 Performance Analysis/“Health” Assessment:** There are significant issues with some of the ASR-8 facilities that are cause for operational and programmatic (TAMR/CTD) concern. Operational stock levels at the FAA Logistics Center are not at sufficient levels to accommodate the needs of the ASR-8 field sites. To get ahead of the schedule, several data collection efforts (ATSAP, NAP entries, TSAP, maintenance logs, etc.) are under way to identify potential problematic sites. Additionally we've identified a method for bulk analysis and prioritization of potential problem sites due to failed/degraded antenna



subsystems for more indepth onsite evaluation well ahead of TAMR activities so as not to potentially impact TAMR schedules.

- **Enhanced Surveillance/Aircraft Intent Information:** NATCA supports the use of enhanced surveillance information (altitude intent, etc) to some day be used by ATC equipment to improve safety measures. While this was analyzed a few years back as a mitigation to one of the first “Top 5” Safety Issues, the FAA does not currently have any proposals to modify ATC equipment for this use. The topic seems to have risen again and various organizations within the FAA (ANG and AVS) as well as ALPA have shown interest in the ability to provide aircraft enhanced surveillance intent information (altitude, speed, heading) from the cockpit to the controller automation systems. Europe has been successful in implementing this technology via both their Mode S radar systems and ADS-B.
- Removal of the **“Terra Fix”** at two Radars feeding C90: There are numerous false beacon targets generated at two radar feeds into C90 that cannot be eliminated other than implementing the Terra Fix Removal change at those radars. These false targets are currently being masked by the C90 CARTS system. STARS has a higher standard for radar performance compared to CARTS. There is a proposal to delay implementation due to concerns over changing the primary radar feed for FMA use. We are investigating the cause of the concern. However, there is additional concern over the decision to possibly delaying the Terra removal implementation as it may cause unnecessary false targets during the testing/transition to TAMR and eventually impact operations. This is similar to SCT where we were successful in vastly improving performance - with regards to false target elimination - by removing the Terra Fix at LXS and LXN radars.
- **Radar Accuracy at SCT:** One of the main residual issues at SCT is poor tracking performance due to inaccurate radar reports in certain areas. However, the outlier radar reports are due to the surrounding environment and are not a maintenance or radar optimization issue. The radars are displaying very good accuracy overall, yet some radars are inaccurate in very specific localized areas. These localized areas correlate to a structure (trees, towers, hotels, office buildings, etc) in the path from the radar to the aircraft. The obstacles are corrupting the aircraft returns thus causing the positional inaccuracies of all aircraft at and below the elevation angle impacted by the tops of the buildings. A radar analysis tool has been modified to help identify these precise areas automatically. This information can then be used by STARS to make better tracker decisions and/or eliminate the “bad areas” from these radars into the tracker.
- **Operational Support Facility (OSF) Lead is Candy Barr-Multi Unit**
  - The OSF's biggest challenge as we move forward in the TAMR deployment is the replacement of Software Management System (SMS). The SMS is the tool used for creating STARS adaptation. The SMS replacement is 3 years behind schedule and is now threatened further by being incompatible with future software builds.

**TERMINAL FLIGHT DATA MANAGER (TFDM):** Matt Baugh (IAH) represents the membership as the Article 48 Representative for TFDM. Mr. Baugh's report to the membership is below.

- The TFDM Implementation Strategy and Planning Document was approved and signed by Teri Bristol (FAA ATO COO) just prior to Thanksgiving.
- The program is in the Final Investment Analysis phase of the Acquisition Management System life cycle, with the Final Investment Decision still planned for March 16, 2016.
- TFDM PM briefed Airlines for America (A4A) rep. on Nov. 23, a follow-up meeting for a larger group is being scheduled for early 2016.
- **Advanced Electronic Flight Strips (AEFS)**
  - Cleveland (CLE)
    - Build 5.3.0.2 was re-tested from Dec 5-9 with no major issues, the build is currently still up and running.
    - CLE tech ops is now providing first-level support of the AEFS system.
  - San Francisco (SFO)
    - Training system was installed on Nov 17th. Training dates have been finalized: Operational Try Out (OTO) March 1/3, 2016 and First Course Conduct (FCC) April 5-6, 2016. IOC planned in the new tower in Oct 2016.
  - Newark (EWR)
    - Mr. Baugh, the AEFS team, the NATCA AEFS EWR team, EWR management and FacRep all met 11/30 - 12/02 to discuss the EWR adaptation of AEFS as well as the training and implementation strategy. The meetings were very productive, and the entire group left with a positive outlook for the program succeeding in EWR by the April IOC date.
    - Training will begin March 7, 2016 and run until April 1, 2016.
    - Two displays will be installed in the cab to start field familiarization in late Dec or early Jan. An additional training system has been placed in the EWR TSS lab to assist in the training.
  - Phoenix (PHX)
    - PHX was sent, and has installed, new hardware due to the original server hardware failure.
    - Remaining AEFS sites are LAS planned for August 2016 and CLT planned for the end of 2016 to support the NASA ADT-2 program.
    - A request for SME support from current AEFS facilities for the growing DR list is in the works and the selections should be made by the end of Jan 2016.
- **SWIM Visualization Tool (SVT)**
  - Deployment of the new software build featuring more comprehensive filtering capabilities has been deployed to SCT and SDF, who have agreed to test the build for 30 days. The final version of the new build is expected in early 2016, ending a positive review from the test sites.

- NATCA and FAA met at N90 on Dec. 9 to discuss N90's involvement and usage of SVT. They currently use Aerobahn as their main surface tool but agreed to use SVT more in the future. To further increase usage, SVT will look into upgrading to add an auto-offset function, faster refresh rate and better updating of airports regarding construction/closures.

**TIME BASED FLOW MANAGEMENT (TBFM):** Eric Owens (I90) is the TBFM Article 48 Representative. Below is Mr. Owens' report for this week.

- A group from the TBFM Ops Team went to the Tech Center to assist with ZDV lab scenarios. Multiple scenarios were run to determine the best way to use GIM-s while in an extended metering (XM) environment.
  - We also looked at Coupled Scheduling (CS). The meter point was set from 190nm to 230nm. The controllers did not feel CS gave them enough room to make adjustments to the aircraft and lose the time needed. There were numerous times that the controller received a "No Advisory" so it was determined a new aircraft characteristics file which is currently being developed. After testing numerous configurations, the ZDV controllers preferred the Arrival system configuration with the freeze horizons moved out to 230nm.
  - In addition, they liked the Arrival and XM configuration with the stipulation that TMU could turn it on for ZMP to either schedule "only" into the XM or hit XMP times when needed. The preference would be to have ZMP schedule into XM "only" on a regular basis. Additional testing by ZDV will need to be performed to see how moving the freeze horizons out to 230nm would impact the SE arrivals from ZKC since those freeze horizons are set at 155nm and the aircraft compete for the same runways. Having at least two runway choices in the runway decision tree file for the ZDV adaptation will be a requirement for this to work correctly and DOI will need to be in agreement.
  - Bringing ZKC onboard to XM would be a logical solution by adapting their arcs to similar distances as the ZMP arcs. Asymmetric freeze horizons could be another option. Traditional adjacent center metering (ACM) wasn't ruled out entirely either.
  - The final scenario was Arrival metering only with the freeze horizons set at 230nm and requiring ZMP to get the arrivals down to at or below (AOB) FL320. As a result, GIM-s generated speed advisories on the majority of aircraft and the controllers were able to absorb up to 5 minutes in delay.
  - To be fair, the ZDV controllers and TMC acknowledged they would only issue AOB FL320 to ZMP on an as needed basis. Many questions remain:
    - 1) Will users and industry be happy being descended to FL320 230nm out and issued a speed restriction in lieu of a vector?
    - 2) How much more fuel efficiency do the airlines realize at FL380 as opposed to FL320? Is it a big difference?
    - 3) Wouldn't speeds be more predictable for the users?
    - 4) Do speeds in lieu of vectors makes the sector less complex and safer?

- In addition, a group was at ZMP in support of a fix to an issue identified where aircraft were stacking on the timeline. After the patch (4.3.3 P3) was installed, we observed that the stacking issue had been resolved. However, when an aircraft are manually manipulated, stacking can occur with that aircraft which is normal behavior.
- **Terminal Sequencing and Spacing (TSAS):**
  - We are continuing work on Terminal Sequencing and Spacing (TSAS). The requirements are still being developed and we are looking at different options with Raytheon and Lockheed Martin.
  - Weekly telcons will begin after the first of the year. In addition, we will have monthly meetings. A kickoff meeting was held in Washington DC, December 10th.

**TRAFFIC FLOW MANAGEMENT SYSTEM (TFMS):** NATCA's TFMS Article 48 Representative is Cliff Keirce (DCC). Mr. Keirce's report for the member is below.

- The Traffic Flow Management Deployment Team (TFM DT) met December 8-10 At the FAA Tech Center.
  - The first two days were mostly spent testing the ABRR/PDRR tool and field 10 Special Characters. This testing was connected to ERAM to determine that the use of Special Characters did not negatively affect the expected results.
  - Day 3: Reviewed and edited the ABRR/PDRR CBI sections that pertain to the handling of Special Characters.
- ABRR Optimize testing. As mentioned in previous updates, getting the optimize feature to work as well as possible has been a priority of the group. CSC made changes to the programming to use the following logic:
  - Uses either a PREF route, a CDR, or Direct to.  
PREF routes must be High Altitude, CDRs must be Pre-Coordinated, and meet *arrival angles into the airport*.
- Getting onto the TARGET ROUTE (TR)
  - PREDEPARTURE (use one of the following - in priority order)
    - Use the shortest PREF route that has a fix in common with first fix of TR
    - Use the shortest CDR that has a fix in common with first fix of TR
    - Use PREF route with shortest distance to first fix, but also meeting turn angle rules to get onto first fix
    - Use CDR with shortest distance to first fix, but also meeting turn angle rules to get onto first fix
    - Go direct to first fix
  - AIRBORNE (use one of the following - in priority order)
    - 1.If CURRENT ROUTE (CR) has a fix which is also on the TR, use CR up to that fix (the resultant route will tailor out

- elements prior to the current position including portions of adapted routes. In the case of DP. STARs, the entire name will be tailored.
- 2.Go direct to first fix \*
  - Getting off of the TARGET ROUTE (TR) (use one of the following - in priority order)
    - Use the shortest PREF route that has a fix in common with last fix of TR
    - Use the shortest CDR that has a fix in common with last fix of TR
    - Use PREF route with shortest distance to airport, but also meeting turn angle rules to get off the last fix and onto Pref Route
    - Use CDR with shortest distance to airport, but also meeting turn angle rules to get off the last fix and onto Pref Route
    - Go direct to Airport
    - Regardless of turn angle
    - CR= Current Route TR= Target Route
  - The request for participation in TFMS Release 13 Operational testing was sent out by NATCA.
    - There will be two sessions, the week of March 7 and the week of March 28. Participation for each session will include 1 DCC Terminal and 1 DCC SVRWX Specialist, 3 ARTCC TMC's, and 1 Tracon TMC.
  - The next TFM DT meeting is scheduled for January 12-14, 2016 at the FAA Tech Center.

*Dale Wright*

Dale Wright  
Director, Safety and Technology