

# 2005 National Airspace System Review

## December 2005

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**MITRE**  
Center for Advanced Aviation System Development  
McLean, Virginia

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## **Executive Summary**

The 2005 National Airspace System (NAS) Review was held on November 1 – 3, 2005 at The MITRE Corporation's Center for Advanced Aviation System Development (CAASD) in McLean, Virginia. The meeting was chaired by Mr. Mark Libby, National Operations Manager (NOM) at the Air Traffic Control System Command Center (ATCSCC).

The annual system review provides the Federal Aviation Administration (FAA), the system stakeholders, and customers an opportunity to discuss and critique the Traffic Flow Management (TFM) performance of the NAS during the previous severe weather season. The system review is also an opportunity to formulate recommendations aimed at improving the performance of the system in both the short- and long-term.

FAA participants included Managers of Tactical Operations (MTOs) and Traffic Management Officers (TMOs) representing FAA field facilities (towers, Terminal Radar Approach Control [TRACON] facilities, and Air Route Traffic Control Centers [ARTCCs]) as well as NOMs, National Traffic Management Officers (NTMOs), and severe weather specialists from the ATCSCC. Customer participants included representatives from the airlines, the Air Transport Association (ATA), and the National Business Aviation Association (NBAA).

The 2005 System Review began with a general session during the morning of November 1.

The participants then met for the next day and a half in smaller break-out groups to develop solution sets to the problem statements they had been provided. The break-out groups were provided with workbooks that included the problem sets—gleaned from feedback solicited from NAS stakeholders prior to the meeting—and various other materials for their use. CAASD provided the break-out groups with analytic tools such as CAASD Analysis Platform for En Route (CAPER) and the support of our technical staff who were able to provide analysis during the sessions.

On November 3, the participants reconvened in general session where each break-out group briefed their recommendations.

The purpose of this report is to document the proceedings of the meeting, the solution sets generated by the participants, and the action items developed based on the break-out groups' suggestions.

## Section 1

# Meeting Overview

The 2005 National Airspace System (NAS) Review was held on November 1–3, 2005 at The MITRE corporation’s Center for Advanced Aviation System Development (CAASD) in McLean, Virginia. The meeting was chaired by Mark Libby, National Operations Manager (NOM) at the Air Traffic Control System Command Center (ATCSCC).

The annual system review provides the Federal Aviation Administration (FAA) and system stakeholders an opportunity to discuss and critique the Traffic Flow Management (TFM) performance of the NAS during the previous year and to formulate recommendations aimed at improving the performance of the system in both the short- and long-term.

FAA participants included Managers of Tactical Operations (MTOs) and Traffic Management Officers (TMOs) representing FAA field facilities (towers, Terminal Radar Approach Control [TRACON] facilities, and Air Route Traffic Control Centers [ARTCCs]), as well as NOMs, National Traffic Management Officers (NTMOs), and severe weather specialists from the ATCSCC. Customer participants included representatives from the airlines, the Air Transport Association (ATA), and the National Business Aviation Association (NBAA). A complete list of meeting participants can be found in Appendix A.

The 2005 System Review began with a general session during the morning of November 1.

The November 1 general session consisted of several presentations that included discussion of status of action items from the 2004 meeting, analyses of delays and Severe Weather Avoidance Plan (SWAP) summary, and weather-related topics. The agenda and a short description of each agenda item is provided below. The briefings are not included in this document; however, they are available on the Collaborative Decision Making (CDM) website at (<http://cdm.metronaviation.com/whatscdm/cdmdocs.html>). A short description of the morning’s proceedings follows:

Mark Libby—Welcome, around the room introductions

Jim Strouth—Housekeeping issues

Jim Ries—Welcome remarks on behalf of Mike Cirillo and Mike Sammartino

Jim Ries welcomed everyone on behalf of Mike Cirillo, Vice President of System Operations, and Mike Sammartino, Director of System Operations. He mentioned that Mr. Sammartino will release a letter describing the new structure of the ATCSCC and new positions.

Mark Libby—Review of agenda

Mark Libby—Discussion of “Three-Phase Improvement Process”

Mark Libby discussed the three-phase process for system improvement. The first phase is the System Review; followed by the off-season planning, development, and training; and the third phase is the severe weather season. The three-phase iterative process is the framework for the System Review.

Joe Dotterer—“2004 Action Items Update” briefing

Joe Dotterer reviewed the 14 action items identified at the 2004 System Review, and provided an update on the status of each action item.

Ken Lamon—“Analysis of Delays, Weather, and Operations for Summer 2005” briefing

Ken Lamon’s briefing included delay data at various airports in 2005 compared with 2000 and 2004. The analysis showed an increase in delays due to Ground Delay Programs (GDPs) in 2004 and 2005. He also presented operations data at various major airports.

Dennis Gallus—“Severe Weather Avoidance Plan (SWAP) Summary” briefing

The briefing by Dennis Gallus focused on the GDPs in support of SWAP. He discussed the number of these initiatives and the resulting minutes of delays.

Danny Sims—“Verification of the Collaborative Convective Forecast Product (CCFP) 2005” briefing

This presentation included weather charts indicating the convective frequency from March to October. Danny Sims also presented the results of the CCFP verification analysis.

Marvin Burnette—“Midwest Airspace Enhancement (MASE) Overview” briefing

Mr. Burnette’s presentation included an overview of MASE, its history and background as well as a list of new routes developed as part of this project. He also described the modeling process as well as the expected benefits.

Mark Libby—“Overview of the Airspace Flow Program (AFP)” briefing

The AFP briefing included reasons for developing the capability, the concept, the expected benefits, and the obstacles that need to be addressed. It is expected that some form of AFP will be available for use in the Spring of 2006.

Mark Libby—Overview/Discussion of National Enroute Spacing Position (NESP) (July 19, 2005)

On July 19, 2005 the ATCSCC tested the concept of the National Enroute Spacing Position (NESP). Mark Libby reviewed the strategy and explained what seemed to

work and what did not. He mentioned that the NESP position will be staffed by supervisors.

#### Mark Libby—Preparation for break-out groups

Mark Libby explained that the groups each would be given a set of problems, which were provided by the customers and stakeholders prior to the meeting. The group members were responsible for developing solution sets to address each problem. On the final day of the System Review, the group members presented their solution sets to the entire group.

The participants met for the next day and a half in smaller break-out groups to develop solution sets to the problem statements they had been assigned. The break-out groups were provided with workbooks that included the problem sets—gleaned from feedback solicited from NAS stakeholders prior to the meeting—and various other materials for their use. CAASD provided the break-out groups with analytic tools such as CAASD Analysis Platform for En Route (CAPER) as well as access to our technical staff who were able to provide analysis during the sessions.

On November 3, the participants reconvened in general session where each break-out group briefed their recommendations. After the break-out group briefings, Mark Libby collected meeting evaluations from the group. Mike Sammartino provided closing remarks in which he expressed the importance of the System Review process and the high priority that is given to the development of improvements to SWAP initiatives.

## Section 2

# Break-out Groups—Problem and Solution Sets

## 2.1 Group 1—Reroute Planning, Timing, and Communications

Facilitator: Paul Eure, AUA TAC

Modeling and Analysis: Mike Klinker and Scott Kell, MITRE/CAASD

Attendees: Doug Balok, Joe Bertapelle, Sid Cooper, Joe Dotterer, Bob Everson, Greg Juro, Arthur Klassen, Steve Lutomski, Darin Meyer, Alvin Nepomuceno, Mike O'Brien, Mike Ogles, Marlin Palmer, Gary Tigert

### Problem Statement

Reroute planning, timing, and communications play a significant role during severe weather events. Collaborative decision making in the National Airspace System (NAS) demands that information be shared by all stakeholders. Routes are planned but may be changed with little or no notice. Some routes must be issued en route. Delays occur but seem to be disproportionate due to limited or no route availability at some of the nation's busiest airports. Facilities that have less demand rarely experience extensive delays.

### Objectives

Discuss how the FAA customer needs for airspace availability, pre-planning, and equitability can be met during severe weather events.

### Outcomes

- Identify actions, procedures, technology, and communication improvements that may provide enhancements to the reduction of delays, improved route availability, and a reduction in reroute complexities.
- Identify actions required to implement the recommendations.
- Identify appropriate tool usage.

# 2005 NAS End of Season Review

## Group 1 - Reroute Planning, Timing, and Communications



Federal Aviation  
Administration



## Reroute Planning, Timing, Communications

- **Problem Statement**

- Reroute planning, timing, and communications play a significant role during severe weather events. The NAS demands that information be shared by all stakeholders. Routes are planned but may be changed with little or no notice and some routes must be issued Enroute. Delays occur but seem to be disproportionate due to limited or no route availability.

- **Objective**

- Discuss how the FAA customer needs for airspace availability, pre-planning, and equitability can be met during severe weather events.

- **Outcomes**

- Identify actions, procedures, technology, and communication improvements that may provide enhancements to the reduction of delays, improved route availability, and a reduction in reroute complexities.
- Identification of action required to implement the recommendations.
- Identify appropriate tool usage.

2005 NAS End of Season Review –Group 1  
November 2005



## Reroute Planning

- **Problem Statement**
  - Routes are planned but may be changed with little or no notice and routes must be issued Enroute.
- **Objective**
  - Consistent and timely reroutes that can, as much as possible be applied before aircraft are airborne.
- **Outcomes**
  - Increased use of WX products (CIWS, ITWS, Common WX products, Echo Tops, etc.) in Route planning.
    - **ACTION – CONSISTENCY IN PRODUCTS, TRAINING IN USE OF WX PRODUCTS**
  - Expand use of FCAs for planning/executing reroutes, Use tops if known to open routes above, Requires change in the way we define FEAs/FCAs- Use altitude limits to define.
    - **ACTION - ONGOING / IMPROVED TRAINING IN USE OF FEAs/FCAs**

2005 NAS End of Season Review –Group 1  
November 2005



## Reroute Planning

- **Outcomes (continued)**
  - Use low altitude options (Capping, Tunneling) Especially when it can be done short range (500nm or less)
    - **ACTION – CONTINUED AND EXPANDED TRNG OF TFM PERSONNEL TO EXPAND TO A MORE FAA-WIDE CONSISTENCY**
    - **ACTION – CONSISTENCY IN ADVISORY PROCESS TO ENSURE COORDINATION WITH CUSTOMERS FOR THEIR INTERNAL PLANNING.**
  - Playbook Usage – consistent usage and limited modifications
    - **ACTION – Local TMUs must develop local initiatives to support**
    - **ACTION - Training of all local TMU personnel on what possible local initiatives may required to implement/support national playbook (LADDR, MIT, Capping, etc.)**
    - **RECOMMENDATION – Forward this information to ATCSCC SVR WX as supplemental information for their training/planning.**

2005 NAS End of Season Review –Group 1  
November 2005



## Reroute Planning

- **Outcomes (continued)**

- Departure escape routes
  - Get control of CDR issues (compliance with FAAO7210.3)
    - Agreement on disposition of unused
  - SERMN/METRO route scenarios
  - ZME/ZMA procedures
  - **ACTION – GROUP (CDM?) TO INVESTIGATE PRACTICES FAA-WIDE AND PUBLISH WHAT IS BEING DONE FOR POSSIBLE ADAPTATION IN MORE LOCALES**

2005 NAS End of Season Review –Group 1  
November 2005



## Reroute Planning

- **Outcomes**

- Increased use of WX products (CIWS, ITWS, Common WX products, Echo Tops, etc.) in Route planning.
  - **ACTION – CONSISTENCY IN PRODUCTS, TRAINING IN USE OF WX PRODUCTS**
- Expand use of FCAs for planning/executing reroutes, Use tops if known to open routes above, Requires change in the way we define FEAs/FCAs-Use altitude limits to define.
  - **ACTION - ONGOING/IMPROVED TRAINING IN USE OF FEAs/FCAs**

2005 NAS End of Season Review –Group 1  
November 2005



## Reroute Timing

- **Problem Statement**
  - Reroute timing, Routes are planned but may be changed with little or no notice and some routes must be issued Enroute. Delays occur but seem to be disproportionate due to limited or no route availability.
- **Objective**
  - Improve Timeliness of Reroutes and their availability to all NAS Stakeholders.
- **Outcomes**
  - Planning TELCON - Time frame of the planning TELCON (+45 vs. 1+45) start time of period being planned on PT
    - **ACTION – REDEFINE BACK TO 1+45 TO GIVE ALL MORE TIME FOR PLANNING/IMPLEMENTATION FOR FACILITIES AND CUSTOMERS.**

2005 NAS End of Season Review –Group 1  
November 2005



## Reroute Communications

- **Problem Statement**
  - Incomplete and sometimes confusing communications leads to lack of ability to move aircraft and often leads to excessive delays.
- **Objective**
  - Earlier and more complete communications on reroutes.
- **Outcomes**
  - Increased usage of PT web site.
    - **ACTION – Additional briefings, training, and publication of site as a time savings measure and means of communicating items for PT.**
    - **ACTION - Request feedback/input about design.**
  - Communicate reroutes via HOTLINEs to help towers with lineups (“No route available”) -Better communication with towers via PT and other means. Other ARTCCs and TRACONS via GI MSG.
    - **ACTION – Consistent flow of information as soon as it is available via the most efficient means available.**

2005 NAS End of Season Review –Group 1  
November 2005



## Reroute Communications

- **Outcomes (continued)**

- Communication between TELCONS - Preplan between TELCONS to set-up for major events.
  - **ACTION – CONTINUED TRAINING OF PLANNERS FOR CONSISTENCY OF PLANNER COORDINATING MAJOR EVENTS BETWEEN PTs.**
  - **ACTION – FACILITIES IMPROVE INTERNAL COORDINATION BETWEEN PTs TO COME TO PTS READY TO DISCUSS PLAN AND THEIR ABILITY TO SUPPORT OR MITIGATION AS REQUIRED BY INTERNAL CONDITIONS.**

2005 NAS End of Season Review –Group 1  
November 2005



## Training and Coordination Issues

Lack of consistent and effective training in TFM has led to lack of compliance and clear definitions - this leads to playing catch up on these issues - Train!

- **Use the best venue for the type of training.**
- **Correct emphasis on training from the top levels**
- **Time and resources to train**
- **SMEs in each TMU (FEA – NTML – ITWS – CIWS – etc)**
  - **NTML training/features**
  - **TFM/ATC lines of authority (MTOs to address)**
  - **Overall TFM Training-TMC/STMC responsibilities**
  - **Direct route (GENOT) – FAAO 7110.65P 4-4-6**
  - **Airway reopening-too long**
  - **Pathfinder every 5 minutes-“Severely constrained procedure”**
  - **Public FEA-Definition**
  - **Clear definitions of what is tactical and strategic.**
  - **TCA web page guidelines should be reviewed and redistributed to FAA Customers.**
  - **FAA facilities-What is a QAR, no notice holding, ATC Alert**

2005 NAS End of Season Review –Group 1  
November 2005



## TFM Tools Issues

- TFM TOOLS:
- CIWS-Expand coverage and usage
- TOOL-ARMT and other...tools to provide updated delay info, etc. to OIS, NTML etc.
- PDC amendments (routes) (Recommendation to CDM team)
- Identify resources (www addresses, tools, tech) There are so many different sources of information and tools. Systems Operations needs an overall evaluation of what is out there and who is responsible for it – functional evaluation – then publication to ALL of these resources for common situational awareness.
- Possible consolidation of Tools and Common Platforms.
- Functional evaluation of all TFM units and their technological abilities to ensure consistent ability to do their job.
- Single Point of entry concept follow-through.

2005 NAS End of Season Review –Group 1  
November 2005



## ATCSCC Internal Issues

- OIS Accuracy/Update Requirements (automation /procedures/delays/GSs)
- Area Coordinator definition, responsibilities, staffing, east and west
- NTML in SVR WX (location, usage, etc.)
- CIWS-Multiple locations in SVR WX.
- ADVISORY PROCESS – Consistency in application of Capping/Tunneling advisories for coordination with customers.

2005 NAS End of Season Review –Group 1  
November 2005



## **2.2 Group 2—Airport Departures During SWAP**

Facilitator: Joe Hollenberg, MITRE/CAASD

Modeling and Analysis: Michele Duquette and Kerry-Ann White, MITRE/CAASD

Attendees: John Guth, Dan Bueno, Kerry Johnson, Ved Sud, Tom Bock, Jim Bedow, David Emanuel, Mike Golden, David Conley, Jim Barth, Richard Humphreys, Ted Christie, Keith Campbell, Michelle Duquette, Kerry Ann White, James Buckner, Tony Tisdall, Margaret Hartman, Gord Fernie, Tim Stull, Bill Cranor, Mark Evans, Ed Masterson

### **Problem Statement:**

For a number of reasons, it is difficult for traffic managers and customers alike to identify and implement “acceptable” departure routes during a Severe Weather Avoidance Plan (SWAP) event.

### **Objectives**

- Determine advantages/disadvantages of a “departure flush” during SWAP.
- Better understand local/national traffic management use of Coded Departure Routes (CDRs) (i.e., when is it advantageous to use them, what are limiting considerations for using them, major versus satellite airport use).
- Explore feasibility of using multiple departure route options. Include identification of triggers prompting multiple route option use, how those departure route options are chosen, and what coordination is required. Involves overhead stream as well as local traffic/surface management considerations.
- Develop options for regional situations.
- Re-evaluate the concept of the System Operating Plan (SOP).

### **Outcomes**

- Identify a variation of the “departure flush” method for use during SWAP next season.
- Identify an improvement to identifying and sharing acceptable CDRs with customers during next SWAP season.
- Provide an outlined process for using multiple departure route options during next SWAP season.

## Group 2

# Departure Routes During SWAP

**Facilitator:** Joe Hollenberg  
**Modeling and Analysis:** Kerry-Ann White and Michelle Duquette

## Assignment

**Problem Statement:**

- For a number of reasons it is difficult for traffic managers and customers alike to identify and implement "acceptable" departure routes during Severe Weather Avoidance Plan (SWAP).

**Objectives:**

- Determine advantages/disadvantages of "departure flush" method during SWAP.
- Better understand local/national traffic management use of Coded Departure Routes (CDRs) (i.e., when is it advantageous to use them, what are limiting considerations for using them, major versus satellite airport use).
- Explore feasibility of using multiple departure route options. Include identification of triggers prompting multiple route option use, how those departure route options are chosen, and what coordination is required. Involves overhead stream as well as local traffic/surface management considerations.

**Outcomes:**

- Identify a variation of the "departure flush" method for use during SWAP next season.
- Identify an improvement to identifying and sharing acceptable CDRs with customers during next SWAP season.
- Provide an outlined process for using multiple departure route options during next SWAP season.

## Identify a variation of the "departure flush" method for use during SWAP next season.

- Flush is currently handled on an as needed basis – To improve the process we recommend the following
  - Overlying center (ZNY and ZDC) develops [SWAP statement/Advisory](#)
    - Initially use ZNY template/Explore use Dr Phil's CDR Advisory format
    - Submit to DCC Severe Weather
    - DCC issue advisory
    - Use Command Center planned threading capability
    - Test during winter of 2006
  - Overlying facility should use existing tools (DSP, FSM, ARMT) to identify departure delay situation
    - Use SWAP checklist to coordinate departure prioritization with DCC
  - Longer Term- Identify trigger for prioritizing action
    - Develop prioritization metric
      - Consider surface data
      - Routes available (Severely Constrained Area concept)
      - Number of aircraft
    - Define Gridlock and develop a gridlock prediction tool
  - Explore "preemptive flush" concept – Hold arrivals and depart on all available runways (ZDC/PHL TMOs)
- Justification for implementation
  - Provides a means for all FAA facilities and customers to know specific airports and routes affected by severe weather
  - Allows customers to plan for alternative routings (CDRs)
    - Enables flights to be dispatched for more than one route



## Improve process of identifying and sharing acceptable CDRs with customers during next SWAP season.

- Recommendation
  - SWAP Statement/Advisory should include specific area, direction or airway information for planning use of applicable CDRs (e.g. Expect J80 CDRs)
- Justification
  - Allows customers to plan for alternative routings (CDRs)
    - Enables flights to be dispatched for more than one route

# SWAP Statement Advisory

- ATCSCC ADVSY XXX DCC 04/01/06 NE SWAP IMPLEMENTATION PLAN
- VALID FOR 011700 THRU 012000Z
- THIS ADVISORY IS FOR PLANNING PURPOSES ONLY. CUSTOMERS ARE URGED TO FILE NML ROUTINGS AND TO FLIGHT PLAN FOR THE FOLLOWING ALTERNATIVE ROUTINGS.
- ZNY SWAP STATEMENT: New York Center anticipates SWAP after 1900Z due convective weather impacts to J80 from JST to HAR with potential additional impacts to J64 south of PSB to RAV and along J152 HAR
- IMPACTED DEPARTURE FLOWS: J80/J64
- IMPACTED ARRIVAL FLOWS: PHL VIA HAR AND PSB
- PLANNED ALTERNATIVE DEPARTURE ROUTES: J6/J60/J36 CDRS
- PLANNED ALTERNATIVE ARRIVAL FLOWS: PHL VIA SLT FQM ETX SPUDS OR VIA BKW J64 GVE DQO4
- EA REGION HOLINE ACTIVATION: AFTER 1900Z
- CUSTOMER ACCESS: (718)995-5600 PIN #1234
- ZNY TRAFFIC MANAGEMENT SUPERVISOR (631)468-1084

## Provide an outlined process for using multiple departure route options during next SWAP season.

- Recommendation
  - Center TMUs should use CIWS to better identify departure fix/route status
  - Notify underlying towers
  - When NY and DC hotline are active, STMC provide route and departure fix status every 60 minutes – ZNY on the hour and ZDC 30 minutes past
  - Reduce route throughput in lieu of ground stop/route closure (philosophy of “No Routes Available”)
    - Provide alternative route options or MIT
    - Enable trickles of traffic on impacted routes
  - Future Capability – Provide on web fed by NTML
  - Put CIWS in ZNY and ZBW areas
    - MIT LL to provide CBA
  - Explore possibility of putting ARMT in IAD ramp tower
- Justification
  - Allow for better use of airspace resource to reduce constrained areas

## Other Recommendations

- Explore possibility/feasibility of releasing aircraft with EDCTs from other NAS initiatives particularly when departing airports in SWAP (Enforce existing Order) (MTO NE)
- Create PHL position in ZNY TMU (ZNY TMO/PHL TMO)
- Explore providing CDR database changes to Customers (DCC Procedures)
- Explore ability to extract advisory information from NTML into an Advisory format (Mark Madden, ZOB)
- Generate [Departure Plan Advisory](#) to identify volume constrained departure fix/fixes and alternative routes/CDRs (ZNY TMO)

```
ATCSCC ADVZY 005 DCC 11/02/05
NAME: NEW YORK METROPOLITAN DEPARTURE PLAN
CONSTRAINED AREA: ZNY/N90
REASON: DEPARTURE VOLUME
INCLUDE TRAFFIC: EWR/LGA/JFK/PHL
FACILITIES INCLUDED: ZNY/ZOB/ZDC
FLIGHT STATUS: FLIGHTS FILED VIA SPECIFIED DEPARTURE FIX
VALID: ETD 021100Z-1500Z
PROBABILITY OF EXTENSION: MODERATE
REMARKS: VOLUME CONSTRAINTS/MIT VIA ELIOT/RBV/MXE,
ALTERNATIVE ROUTING: CUSTOMERS ARE URGED TO FILE NML ROUTINGS TO THE
FOLLOWING DESTINATIONS BUT CAN EXPECT ATC REQUEST TO ACCEPT THE FOLLOWING
ALTERNATIVE ROUTINGS/CDRS TO MINIMIZE DEPARTURE DELAYS
ROUTES:
ORIG          DEST          ROUTE
----          -
EWR           STL           EWRSTLJ6
              DEN           EWRDENJ6
              SAN           EWRSANJ6
LGA           STL           LGASTLJ6
              DEN           LGADENJ6
PHL           STL           PHLSTL60
              LAS           PHLLAS60
              PHX           PHLPHX64
JFK           DEN           JFKDEN36
021100-021500
05/11/02 10:40 FSA.//lxstn04a
```

## **2.3 Group 3—Multi-restrictions, En Route Spacing Program (ESP) Delays, East Coast Route Constraints**

Facilitator: Jim Houde, AVA TAC

Modeling and Analysis: Jennifer Gentry and Diane Woodall, MITRE/CAASD

Attendees: Jo Damato, Robert Deering, Steve Delo, George Dodelin, Rob Draughon, Greg Dunne, Dennis Gallus, Ron Haggerty, Rob Lowe, Kelly Moffitt, Alton Self, Danny Sims, Pat Somersall, Rich Sullivan, Lorraine Vomacka, Cheryl Zibrowski

### **Problem statement**

Severe weather events are complex by nature. Traffic Flow Management (TFM) responds to the weather and tries to mitigate the impact using a variety of tools and initiatives. Unfortunately, these actions can further complicate an already complex situation. Miles-in-trail (MIT) restrictions, Approval Requests (APREQS), Estimated Departure Clearance Time (EDCT) programs, reroutes, holding, and ground stops have the unintended consequences of increasing delays and air traffic complexity, thereby reducing system capacity.

### **Objectives**

Determine how system constraints can be used without making a difficult situation worse.

### **Outcomes**

- Provide possible solutions to the problem of multiple Traffic Flow Management Initiatives (TMIs).
- Identify actions, procedures, technology, and communication improvements that may provide relief to towers and enroute facilities from inefficient, laborious, and time consuming TFM requirements.

# Group 3

## Multi Restrictions, ESP Delays, East Coast Constraints

**Facilitator: Jim Houde**



## Problem



- **Modified Problem statement:**
  - Severe weather events are complex by nature. Traffic flow management responds to the weather and tries to mitigate the impact using a variety of tools. Unfortunately, these actions can further complicate an already complex situation. Multiple TMIs, such as, Miles-in-trail (MIT) restrictions, Approval Requests (APREQS), Estimated Departure Clearance Time (EDCT) programs, reroutes, holding, and ground stops have the unintended consequences of increasing delays and air traffic complexity thereby *reducing system efficiency and predictability*.
- **Objectives:**
  - To determine how system constraints may be managed without making a difficult situation worse. *Improve system efficiency and increase predictability. Limit compounding TMIs and reduce complexity for those executing multiple TMIs.*
- **Outcomes:**
  - Provide possible solutions to the problem of multiple Traffic Flow Management Initiatives (TMIs).
  - Identify actions, procedures, technology, and communication improvements that may provide relief to towers and enroute facilities from inefficient, laborious, and time consuming Traffic Flow Management (TFM) requirements.



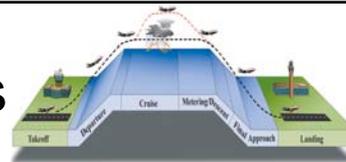
## Solution



- National no TMI day – November 15<sup>th</sup>, 2005

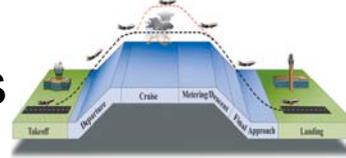


## Short Term Solutions



- Prioritize Initiatives
- Data Quality
- Optimize Communication

# Short Term Solutions



- Prioritize Initiatives
  - Give EDCTs Priority. Just do it!
    - EDCT programs (GDP & AFP) should be exempt from all other initiatives.
      - GDP first priority, AFP next. If more than one AFP, then first controlled AFP has priority.
      - GS already has priority.
    - FAA & Customers need to be accountable for the integrity of the program if the EDCT is the only TMI in place.
    - Make sure AARs for a program are realistic to avoid revisions, holding, MIT etc.
      - Take fleet mix into account
  - Prioritization is a training issue. Guidelines are currently in the 7210.3
    - Exceptions should not be the norm! Make sure that exceptions are truly exceptions.
    - The policy (17-8-1) should be clarified or more strongly worded.
    - Make sure that the TMI is the right one for the situation (does 50 MIT make sense?)
  - Greater use of FCA/FEA to monitor traffic, allowing exceptions for controlled traffic.
  - Explore the concept of alleviating sector volume MIT associated with GDP or other TMI, by identifying other traffic to “share the pain”
    - Both weather and volume related initiatives.

# Short Term Solutions (cont.)

- Prioritize Initiatives (cont.)
  - Some TMI initiatives can preclude the implementation of more severe measures.
    - Use capping and tunneling instead of MIT
      - Need to communicate how long and at what altitude to customers
      - FAA controllers need to better understand the benefits of this initiative (training)
    - Development of offload routes ahead of time to mitigate MIT or ESP delays.
    - Preferential routes can cause route congestion. Make more alternatives available.
  - Post event analysis is a key to ensuring accountability for TMIs. Need to review why initiatives did or did not work.
    - Deviations should be analyzed and parties should be identified.
    - There needs to be a forum to discuss this type of information.
    - Determine how many TMIs flights are subject to.
  - Limit passbacks from 1<sup>st</sup> tier to 2<sup>nd</sup> tier with half the original MIT. No passback after that. Sorry ZID.
  - 50113 course needs to be more focused on Traffic Management

## Short Term Solutions (cont)

- Data Quality
  - Data quality is necessary for the least restrictive TMI to be implemented.
    - If there is no trust of the data, additional measures tend to be taken to ensure safety.
  - Early Intent is preferred for allowing accurate decisions to be made.
    - Early action helps avoid problems from compounding.
- Optimize communications between FAA and customers
  - Balance between need for relevant information and the time it takes to organize and communicate it.
  - FAA needs to give out information even though time frame is uncertain.
    - Planning telcon is a good forum for indicating potential for initiatives.
      - But still be as specific as possible.
    - The more information customers have, the better they can make business decisions.
    - Develop alternate offload routes in a planned format. Airlines will know they will need to accommodate (fuel) ahead of time. This allows for quicker acceptance of routes.
      - Proceduralize during peak demand periods
  - Customers need to voice priorities for a particular event as well
    - Taking delay in the air (capping n tunneling) or on the ground (how much time are we talking?)
    - If items are discussed on the SPT, it helps avoid situations where controllers are giving options to the flight crew, which can be much less efficient.
  - Educate stakeholders about the system
    - Emphasize the priorities that have been agreed to at End of Season Review
    - Use realistic examples that show the implications of actions
      - For example – Everyone trying to be nice on X-mas eve led to multiple GS.
- Develop arrival procedures from the East for IAD to improve system efficiency and reduce TMIs (see item # 8)

## Long Term Solutions



- Reduce Complexity for TMCs
- Increase Availability of Real Time TMI Decision Tools
- Automation Improvements and Integration

# Long Term Solutions



- Reduce complexity for TMCs
  - More sophisticated technology to help a TMC determine the impact of compounded TMIs. This should help them know when to release a plane subject to multiple initiatives.
  - Limited number of beacon codes increases complexity (especially during SWAP)
    - Develop alternative methods. Give each airplane a permanent code (equipment issue).
      - Could use system security as an argument
- Increase Availability of Real Time TMI Decision Tools
  - Ability to evaluate impact of MIT and Reroutes prior to implementing them (like CAPER)
    - Future time and past time display
  - Tracking system for current and past TMIs (not necessarily delay related)
    - What they are, who is involved, and what is the performance?
      - Share this information across the system.
    - Determine in real time how many TMIs is a flight subject to.
      - This will allow TMUs to more evenly distribute the "pain".
  - Make customer priorities available to FAA
    - What is original route desired
    - What are the preferences for a given tactical situation (on the ground or in the air)

# Long Term Solutions

- Automation Improvements and Integration
  - One piece of glass!!! One system, one database, omnipotent knowledge of TMIs.
  - Integrate a flight's real-time status into current FAA technology (OOOI etc.)
    - Look into getting day-of "nose numbers" or tail numbers so system can keep track of a flight and delay propagations
      - This will assist with data quality, especially in multi GDP situations
      - Better match system capacity with real-time demand
      - Modify ETMS and CDM/ADL automation to capture and use.
  - Get information to customers quicker to get them off the ground faster
    - Others in queue aren't forced to wait for route for someone ahead of them.
    - Review PDC restrictions. Can amended routings be expedited?
  - Several customers can't accept dynamic information regarding CDRs
  - Multiple fix GDPs
    - Integrate with TMA
  - Increase connectivity between Centers and Towers (multi-center TMA). Integrate into GDPs and other TMIs
    - Make sure TMIs are prioritized.
    - This should also help alleviate ESP.

## Questions & Comments



## Additional Information on Recommendations

## **2.4 Group 4—Exit Strategies**

Facilitator: Mark Huberdeau, MITRE/CAASD

Modeling and Analysis: Nazanin Eshragh and Jack Brennan, MITRE/CAASD

Attendees: Gail Ferguson, Bob Flynn, Dave Frame, Dean Fulmer, Debra Griffith, Greg Hollinger, Billy Joyce, Cliff Keirce, Bill Leber, Doug Molin, Ron Ooten, Rory Reed, Dave Rodenhuis

### **Problem statement**

The NAS is slow to respond to changing conditions and can appear inflexible. We frequently establish Traffic Flow Management Initiatives (TMIs), but often the plan does not include an Exit Strategy.

### **Objectives**

Discuss issues relating to exit strategies, which could involve a smooth transition to normal operations after the TMI ends.

### **Outcomes**

- Provide recommendations for an exit strategy process.
  - Develop a timeline/decision tree to describe the exit strategy process
  - Identify who, what, where, when for exit strategy procedure
  - Identify trigger events
  - Identify appropriate tool usage
- Identify actions required to implement the recommendations.

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## 2005 System Review

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### Group 4: Exit Strategies Recommendations & Comments

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### Group Focus:

- Exit Strategies for Traffic Management Initiatives (TMI's)
    - Capacity recovery
    - Transitioning a TMI (modifying)
    - Phasing out of a TMI
-

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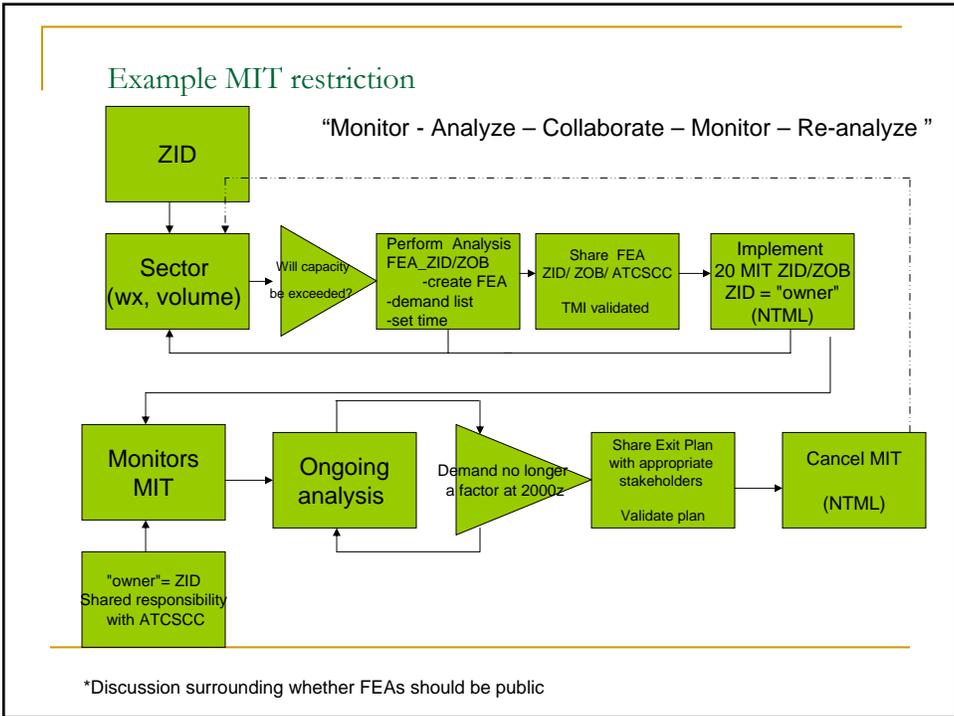
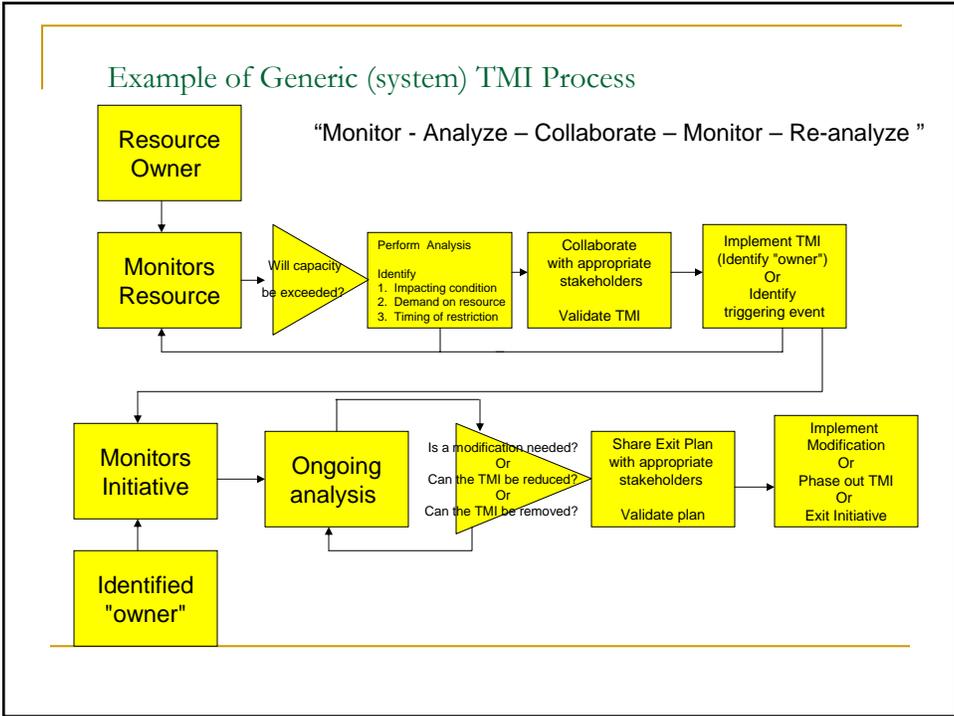
## Positives – GDP's

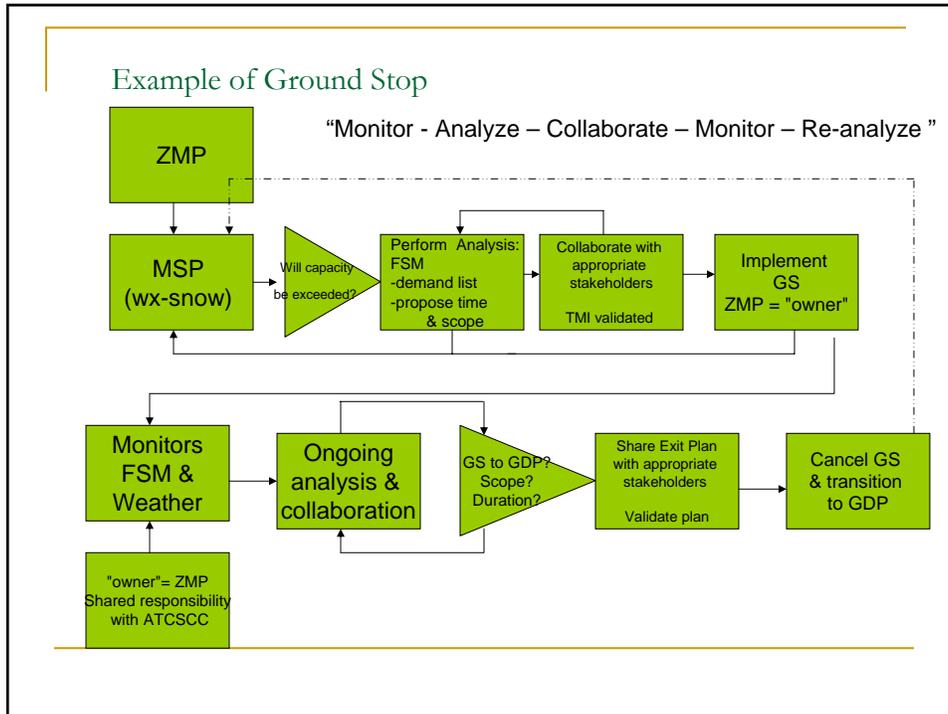
- This year the group recognized positive results with entry and exits from GDP's
  - Suspected reasons include:
    - Technology:
      - Common technology (FSM) and data used by all
      - Use of distance based programs versus tier based programs
      - Allows for modeling, which provides each stakeholder with the ability to do “what-ifying” of various scenarios
      - Allows for common situational awareness
- 

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## Positives – GDP's continued

- Communication
    - Improved lead time in planning, and communication with more stakeholders prior to implementation of the program.  
Action: Add speed dial for who wants to be contacted, more than 2 customers.
  - Monitoring and owning the problem
    - There is constant monitoring of the condition by the responsible parties that implement the program (unlike Ronco you can't “set it and forget it”).
  - Experience gained in modeling GDP cancellations has resulted in implementation of appropriate Exit Strategies.
-





## Ground Stops

- Comments

- Needs improvements

Problem:

- Transitioning from GS into GDP: flights caught in a GS then issued EDCT are not afforded the credit for delayed status incurred by GS.
- Coming out of the GS with no route available
- Rolling GS

Technology:

No ability to perform GS using distance based

No ability to perform fix-based load programs

GS message lag time --IDS – 4/5 (Systems Atlanta) interface OIS

## Ground Stops - continued

- Recommendation:
  - More Training
  - Improve awareness of impact to releasing traffic with out performing analysis of backed up demand and the resulting overhead stream conditions
  - Improve the communication

## Recommendations for improved exit strategies

- Good planning in entering a TMI facilitates a good exit strategy
  - Fewer TMI's = less exit issues
  - Formalize the decision making process
- TMI's can not be a "set and forget it" philosophy
- Identify responsible "owner" for initiative, then monitor the conditions using available tools for re-analysis.
- Adapt a process that fosters an exit strategy

## Recommendations for improved exit strategies (continued)

- Education:
  - National training (S2K + 6) develop a scenario for a good exit planning and implementation.
  - Use the least restrictive TMI to address a constraint.
    - Example: utilize more FCAs at location of constraint rather than departure time status in implementing playbooks.
    - Exiting a TMI
      - Reduce scope—incremental reduction within an existing TMI
      - Reduce from playbook to FCA to FEA to MIT.
- Procedures
  - Identify the “owner” for reroute TMI’s
    - Have “owner” facility report status of TMI’s—structure to be determined.
  - Utilize remarks section of cancellation advisory to provide guidance of exit / transition options.

## Recommendations for improved exit strategies (continued)

- For departure route closures
  - Procedures: implement Severely Constrained Area (SCA) procedures to reduce the need for lengthy pathfinder process
  - Long term efforts
    - Use terminal look ahead functionality (currently displayed in RAPT test prototype in NY Tracon)
    - Change amended flight plan process to reduced the need for Full Route Clearance – utilizing Pre-Departure Clearance (PDC).

## **2.5 Group 5—NESP / Optional Playbooks (Review of July 19)**

Facilitator: Tom St. Clair, FAA NTMO

Modeling and Analysis: Charlie Bailey and Matt Yankey, MITRE/CAASD

Attendees: Craig Bergeson, Roger Bruce, Jim Burgan, Rick Dalton, Johnnie Garza, Kari Gonter, Wes Hall, Pat Harten, Joe Hof, Mark Hopkins, Rick Kervin, Roger Mandeville, Jeff Miller, Bill Murphy, Mike Murphy, Mark Phaneuf, Tom Wray

### **Problem statement**

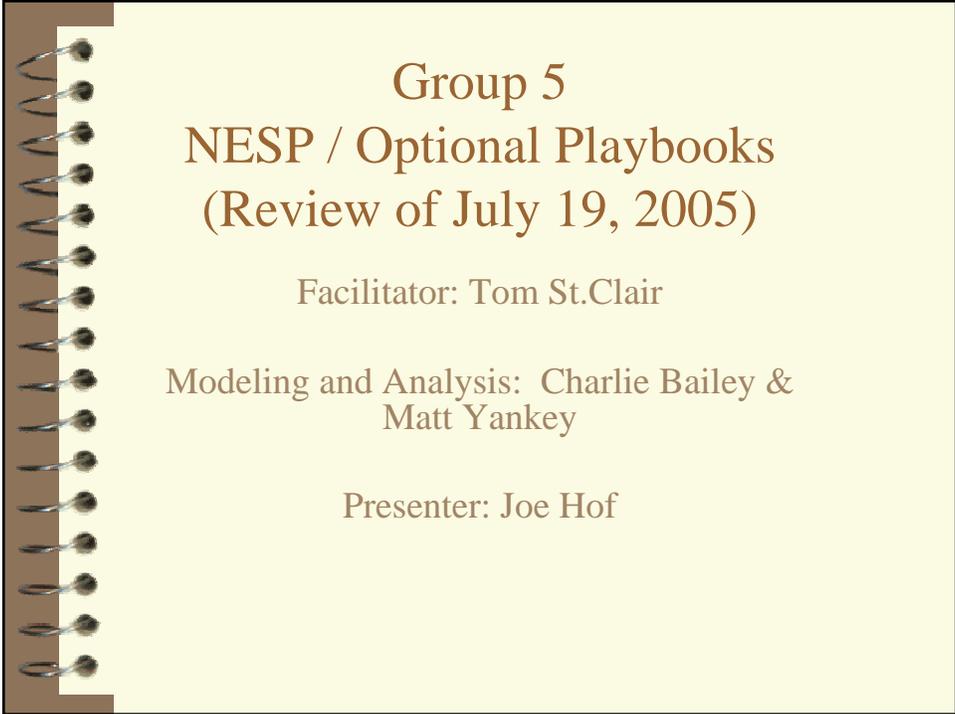
There is a desire to try new approaches to responding to certain severe weather events. One concept for TRANSCON flights, west to east, involves offering optional Playbook routes and incorporates a National Enroute Spacing Position (NESP) in the ATCSCC.

### **Objectives**

- Review applicable severe weather events from 2005.
- Explore the NESP potential and evaluate the optional Playbook Route concept.
- Analyze the July 19, 2005 attempt to offer optional Playbook routes and utilize the NESP.
  - Lessons learned
    - Determine what worked
    - What did not work
  - Evaluate potential for delay reduction
  - MIT evaluation
  - FAA and Customer concerns
  - Discuss alternatives

### **Outcomes**

- Determine the viability of utilizing the NESP and optional Playbook concept.
- Identify appropriate tool usage.
- Identify actions required to implement the recommendations.

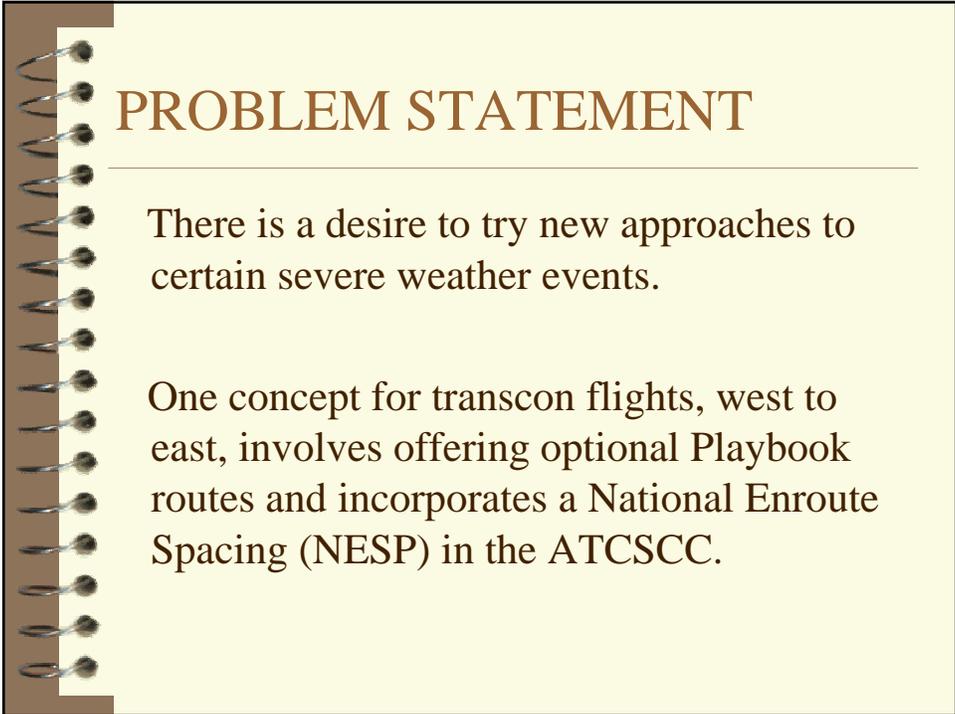


Group 5  
NESP / Optional Playbooks  
(Review of July 19, 2005)

Facilitator: Tom St.Clair

Modeling and Analysis: Charlie Bailey &  
Matt Yankey

Presenter: Joe Hof



## PROBLEM STATEMENT

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There is a desire to try new approaches to certain severe weather events.

One concept for transcon flights, west to east, involves offering optional Playbook routes and incorporates a National Enroute Spacing (NESP) in the ATCSCC.

## OBJECTIVES

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- ▣ Review applicable severe weather events from 2005
- ▣ Explore the NESP potential and evaluate the Optional Playbook concept

## OBJECTIVES

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- ▣ Analyze the July 19, 2005 attempt to offer Optional Playbook routes and utilize the NESP
  - Lessons learned
  - Evaluate potential for delay reduction
  - MIT evaluation
  - FAA and customer concerns
  - Discuss alternatives

## OUTCOMES

---

- 1 Determine the viability of utilizing the NESP and Optional Playbook concept
- 2 Identify appropriate tool usage
- 3 Identify actions required to implement the recommendations

## RECOMMENDATIONS: UTILIZING THE NESP

---

- 📄 Continue to develop and deploy the NESP
  - Will provide significant system benefits
    - Customers
      - Increased operational flexibility
      - Increased predictability
    - Field Facilities
      - Enhanced system monitoring
      - Enhanced information sharing
      - Single focal point for MIT, reroute issues and enroute volume

## RECOMMENDATIONS: UTILIZING THE NESP

---

📄 Continue to develop and deploy the NESP

– System benefits

- ATCSCC
  - Improved internal coordination
  - Proactive risk mitigation

## RECOMMENDATIONS: UTILIZING OPTIONAL PLAYBOOK CONCEPT

---

📄 Continue to develop the optional Playbook concept

– System Benefits

- Supports industry request for flexibility
- Reduces volume in constrained facilities
- Enables improvements in east-to-west flows
- Provides an efficient distribution of enroute volume
- Reduces need for multiple TMIs (including GDPs)

## RECOMMENDATIONS: UTILIZING OPTIONAL PLAYBOOK CONCEPT

---

📄 Continue to develop the optional Playbook concept

– Development needs include:

- Evaluating the interaction of multiple plays to reduce route crossings and sector complexity
- Reviewing the west-to-east transcon plays
  - Multiple route plays
- Using modeling/analysis tools to enhance the predictability of the delay range

## RECOMMENDATIONS: IDENTIFY APPROPRIATE TOOL USAGE

---

📄 Potential NESP / System Tools

– ATCSCC

- AFP
- ARMT
- CAPER (ability to predict volume and model ESP delays)
- Communications
  - web page, telephone lines
- Meteorological
  - consider adding weather products to the collaborative package

## RECOMMENDATIONS: IDENTIFY APPROPRIATE TOOL USAGE

---

### ☞ Potential NESP / System Tools

- FIELD
  - ARMT / DSP
  - TMA
    - Near term: departure management tool
    - Long term: enroute spacing tool
  - Communication
    - web page, telephone lines
  - Meteorological

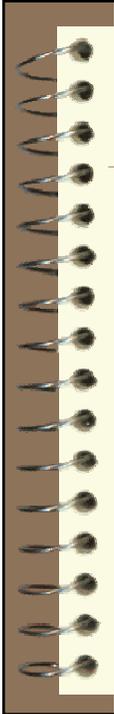
## RECOMMENDATIONS: IDENTIFY APPROPRIATE TOOL USAGE

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### ☞ Continue the development of existing tools

- FEA/FCA
- Reroute monitor

### ☞ Assign an NESP workgroup to evaluate tools for applicability

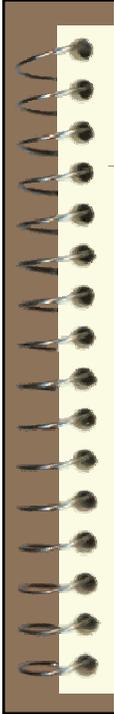


## RECOMMENDATIONS: IDENTIFY REQUIRED ACTIONS

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📄 As soon as possible, convene a cross-sectional internal ATCSCC group to:

- Review the national NESP NOTICE
  - Update as needed
  - Help the position develop to meet its potential
- Review the draft internal procedures
- Begin prototype, real-time evaluations



## RECOMMENDATIONS: IDENTIFY REQUIRED ACTIONS

---

📄 Convene a cross-sectional national group to:

- Develop and conduct HITL
- Refine the national procedures
- Incorporate AFP
- Develop training

📄 Set a target implementation date of February 1, 2006 for full use

## RECOMMENDATIONS: IDENTIFY REQUIRED ACTIONS

---

### 📄 Steps toward full NESP utilization

- Determine how the position will be staffed
  - Number of people
  - Hours of operation
  
- Identify and test the communications to be used between ATCSCC / Field Facilities / Customers:
  - Web
  - Telcons
  - Phone lines
  
- Design the training
  - Customer, Field Facilities, and ATCSCC

## RECOMMENDATIONS: IDENTIFY REQUIRED ACTIONS

---

### 📄 Steps toward full NESP utilization

- Develop the internal and external coordination and operating procedures
  - MIT/Reroutes/Ground Stops/AFPs
  
- Address the challenges facing field TMUs
  - Multiple restrictions
  - Projecting and managing ESP delays

## RECOMMENDATIONS: IDENTIFY REQUIRED ACTIONS

---

### 📄 Steps toward full NESP utilization

- For any given event, develop TSD scripts and FEAs
  - Share with Field Facilities and Customers
    - To enhance situational awareness

## RECOMMENDATIONS: IDENTIFY REQUIRED ACTIONS

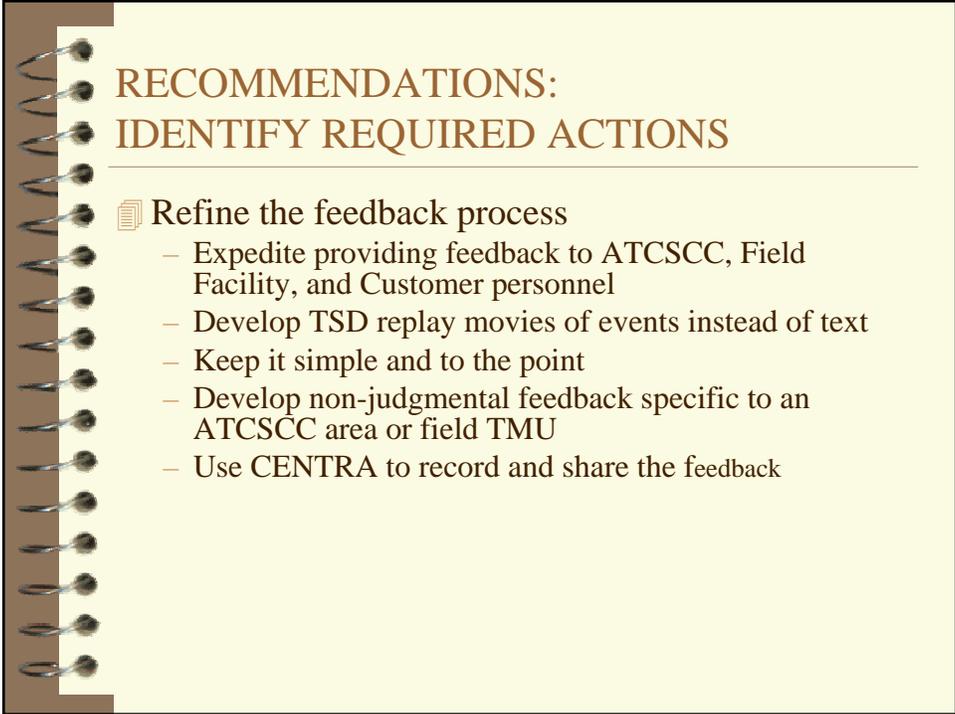
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### 📄 Develop a traffic management initiative operating philosophy for the NESP

- Lesser -> Greater
- Exercise the position and TMIs
- Provide an on-going analysis of the results

### 📄 Reconvene a weather workgroup

- Include meteorologists and TM operational personnel
- Consider adding an 8 hour outlook to the CCFP
- Consider adjusting the convective criteria for key areas of the country
- Consider adding additional weather products to the collaborative package



## RECOMMENDATIONS: IDENTIFY REQUIRED ACTIONS

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### Refine the feedback process

- Expedite providing feedback to ATCSCC, Field Facility, and Customer personnel
- Develop TSD replay movies of events instead of text
- Keep it simple and to the point
- Develop non-judgmental feedback specific to an ATCSCC area or field TMU
- Use CENTRA to record and share the feedback

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 Thank you!

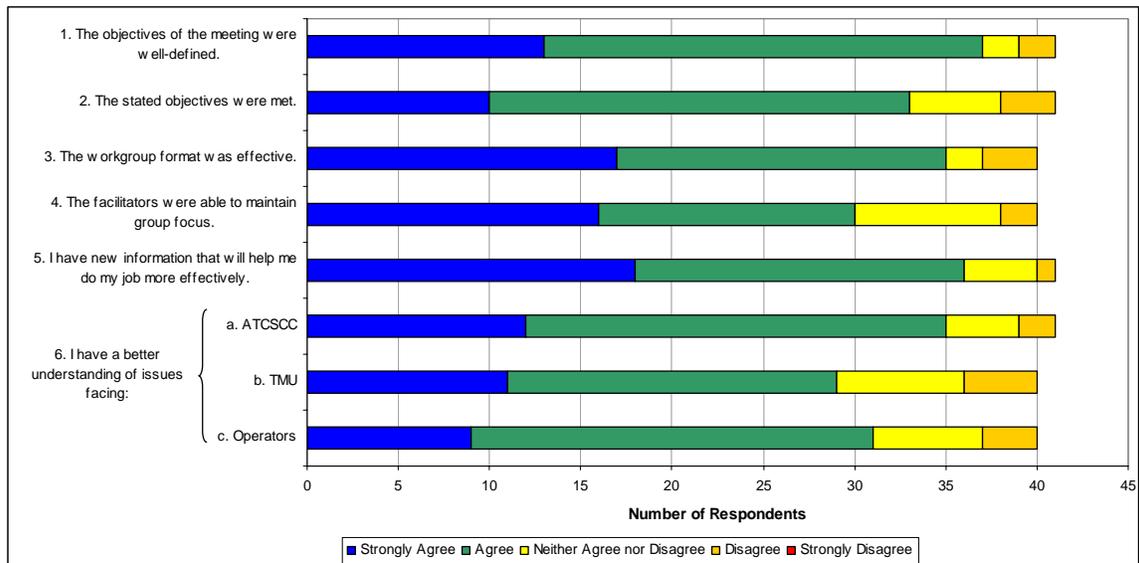
### Section 3

## Meeting Evaluation Results

The participants were asked to critique the meeting by completing a survey. Forty-one participants turned in their completed survey. A sample survey is provided in Appendix B.

The survey consisted of three parts. In the first part, the participants were asked to rate various aspects of the meeting. The rating consisted of score of 1 (Strongly Agree) to 5 (Strongly Disagree). The summary of the results are illustrated in Figure 4-1. Each shaded box indicates the number of respondents selecting that rating.

It should also be noted that not everyone answered all the questions as can be seen on questions 3, 4, 6b, and 6c.



**Figure 3-1. Numeric Evaluation Results**

The second and third parts of the survey asked the participants to provide comments on what they liked the most, and what areas they would improve. The individual comments are provided below.

The second and third parts of the survey asked the participants to provide comments on what they liked the most, and what areas they would improve. The individual comments are provided below. The comments have been organized into categories in order to group related comments together.

### **What did you like most about this year's Review?**

#### **System Review Process**

- Discussion of last year's progress was good.
- Review last year's initiatives and status.
- Review of last year's items.
- The review of last year's issues was very helpful.
- Format and the Recap of last year.

#### **Break-out Groups and Participation**

- Group discussions helped me to see other's perspective.
- Groupings of Breakout Groups, i.e., stakeholders, NTMO, ATCSCC, NAVCANADA, TMMU, ACC, MITRE. Good cross section.
- Interaction w/customers and opportunity to discuss in open forum issues that impact the NAS on a day-to-day basis.
- Interaction between various groups and seeing how each group "sees" problems and solutions.
- Work groups and the briefings. Very interactive with customers.
- The interaction of all participants.
- Genuine honesty of everyone (our faults).
- Excellent collaboration—customer interaction essential. TMO's essential as well.
- The mix of participants various SME.
- Good to see all the TMOs.
- Felt my group did a great job staying focused on the issues assigned.
- Addition of TMO to the groups was crucial to adding system perspective from each facility.
- There is good discussion around the issues.

- Once again, the workgroup format appears to be effective.
- FAA participation was strong—TMOs!
- Having all the TMOs/MTOs here.
- Amount of participation by Industry.
- Diversity and size of group facilitated comprehensive dialogue.
- Break-outs.
- Good mix of reps in groups. Format worked well w/MITRE support and audio-visual.
- TMO presence much appreciated!
- The work-groups were energetic, great participation by all facets.
- The break-out groups.
- The break-out groups were very effective at tackling the issues and objectives.
- Overall good representation of customers and FAA.
- Break-out groups to work issues and bring recommendations back to larger group—Q & A during break-out—all good.
- Pulling weather into the break-out groups. We have treated weather as a separate component in the past. Weather needs to be an integral part.
- Participant mix with all TMOs.
- Opportunity to discuss issues and work together to develop possible solutions.
- Good to have all TMO's. Great opportunity to gain/share knowledge and use their expertise.
- Break-out session format worked well. Allowed multiple issues to be addressed.
- Good to have all the TMO's.

### **Logistics, Organization, and Planning**

- Workgroup out-briefs were excellent, but needed more time for general discussion.
- The organization was excellent. Good preparation from all the facilities and operators; excellent building on collaboration.
- The location of the review.

- Well organized, defined, objectives goals and recommendation.
- The format seems to work well.
- The formulation of focused group efforts that addressed the issues submitted by the various interests in the system. The Problem Statement, Objectives, and Outcomes orientation was helpful guidance for the effort.
- Format and schedule. Nice agenda and nice job staying with it.
- Excellent facilities.
- Organization was good.
- Narrow focus on what to address.
- Meeting room accommodations were great.
- MITRE setting was better than ATCSCC because there were less work-related distractions. Break-out rooms were excellent and well equipped.
- Tasking and expectations of break-outs.
- Break-out groups were small enough to be manageable, yet large enough that multiple groups were represented.
- Good use of facilitators.
- Good help from MITRE folks.
- MITRE facility worked well. Use MITRE again. Great for break-outs.

### **Information and Resources**

- Initial briefing helped me see departures more of an issue than I previously thought.
- Getting information on all the work that is going on behind the scenes (technology).
- Location and use of MITRE personnel in work groups.
- Always great benefit sharing problems and knowledge base of other SysOps and customer personnel—the lunch break conversations are almost as beneficial as structured discussions.
- There was good information exchange—each entity should have taken something new back to their jobs.
- Available resources to use during group break-out to help with discussion.
- First and last day presentations were good – availabilities of MTO and TMO's was good—advancement of A&P is very hopeful and resources should be dedicated.

## **What improvements/changes would you recommend for next year's review?**

### **System Review Process**

- Complete review of last year's recommendations.
- The more success we bring to underscore our efforts next year, the more productive the environment is likely to be.
- The Review of last year's accomplishments didn't translate into how they have been applied into the real world.
- Tie this year's action items back to the previous year's where applicable. It shows the "evolution" of our effort.
- Half the objectives, (defining problems and recommending courses of action) have been met. How effective we are at solving them will be told in time.
- It seems that there are repeating issues from past years. I would like to see someone in authority to take ownership of implementing these repeating issues.
- A review of any improvements in system problems/constraints made as a result of this year's work/recommendations. Did any facility try any new techniques/ideas to help improve their operation and or help "the system" as a result of the end-of-year-review.
- While many worthwhile and potentially beneficial recommendations were offered, it will be interesting to see if any or how many will actually be implemented.
- Perhaps little less time brainstorming for next year with corresponding more time spent in candid assessment of accomplishments in meeting last year's goals... several customers commented "we've discussed this every year..."
- It would be nice to see at least a couple of recommendations adopted, processed, proceduralized and implemented in the field before the next System Review. We have made progress; however, there are several issues that are repeat topics from one year to the next.
- Follow-up from previous year's recommendations. What happened to them? Did they make a difference?
- 2004 ITEMS: Who made the decision and based on what criteria when these items are complete – of the 11 items from 2004 that are indicated complete; seven (7) items (identical or almost so) were a part of this year's Review.
- Action Items based on group response needs to be assigned. Implementation dates and go/no goes decisions made on these Action Items.

## **Break-out Groups and Participation**

- Workgroup format was too long. It led to a lot of “re-hashing” issues and solutions.
- Work one real world scenario among the entire group. MTOs need to be more involved with breakout groups.
- Make adjustments to groups where necessary. (No “users” were in our group).
- The groups need more initial focus/direction on the problem they are working. Aim for 1 or 2 recommended solutions per group to avoid the laundry list syndrome.
- Possibly query the attendees as to what group (subject matter) they would like to participate in. Obviously not all would get their first choice, but could plan a few subject matter experts, or those who think they are experts, in a group they feel they contribute most.
- More openness to customer issues/perspectives.
- With all the MIT/ED&T (sic) discussion, TMOs from the areas would be helpful.
- Try to fund some front-line operations (TMs/STMC) participation next year even if only local travel facilities.
- Facilitators were good but would like to see the MTO’s included in more of a moderator/facilitator role.
- Better mix in work group. Stated problems to be more related to problem (filter better). Facilitator needs to keep group more focused on topic. Too much straying from topic diminishes the end product.
- Presentations turned into discussions more than the presentation of solutions.
- Group participants – utilize your resources better – get input from MIDs/ATCSCC NTMOS as to the best group for their person to participate in.
- More customer participation – our group ended up with only one customer type in it – maybe make final decision on group makeup on the first morning once you know who is actually in attendance.
- Smaller groups facilitate good discussion but topics for group should be a little more diverse.
- Some of the work groups had more customer participants. I heard one work group say it would have been nice to have a few customers. I don’t feel we got a system response. We got a slanted FAA view on how to fix the problem.

## **Logistics, Organization, and Planning 4**

- When invitations are sent allow requests for breakouts as required, if: ANC has issues with CZVT on these issues. (sic)
- Lots of great ideas, lots of discussion, but oddly, it appears that similar issues and discussions were conducted last year (and the year before). The scope should be narrowed prior to the meeting to demand specific solutions and implementation plans that can be tangibly measured for success. Ask ourselves “why have we had difficulty making changes to our tactical practices/methods?” Adding technology does not equal changing our methods. A cultural shift is needed.
- Some of the topics were very broad. Need to narrow the subject even further in order to come away from the convenience with a task to accomplish. A log of great philosophy was spoken. I think if we define a topic that is regional we could have an outcome to work with. Then as a group have one national topic!
- Some recommendations are repeat items from previous end of season reviews. Let’s attempt to resolve all issues from one review to the next.
- Identify smaller/specific issues with a clear expectation of the group to bring a resolution back for presentation, with defined direction for responsibility of who will take care of what.
- Hold somewhere else. MITRE security requirements, escort to restroom. Badge police while leaving lunch facility.
- New venue. As a contractor not being able to use a bathroom without an escort was annoying. Felt more like a prisoner than a participant.
- Most issues have been long standing. TMI and constraints are understood by all members in the group from the on-set of discussion. Work-arounds, programs and procedures must be trained at all levels for cultural change and systemic evolution. Fuel awareness!!!
- Start at 7:30 A.M. on Day 1.
- A bit less predetermined scripting of the agenda.
- A more adequate facility for plenary sessions.
- Better accommodations – hotel too far from MITRE.
- I believe that the work group objectives should have been sent out to MTO’s and the MTO’s should place their personnel in the group based on strengths of their people. Also helpful if workgroup members had info prior to meeting—would allow data to be brought that would have assisted in more productive discussions.

- Problem Statements...Better refinement of the pre-workshop input into the actual problem statement and then went through all the input anyway...maybe linking individual items by number to the problem start.
- No clear definition of objective for the overall meeting—only the individual break-out groups—is that what is meant?
- More time for break-out group presentations.
- Stay closer to venue.
- Need better dissemination of meeting notices. Start by emailing everyone who attended this year.
- Distribute the program documents, group discussions, and planned groups prior to meeting day. Participants could possibly bring supporting documentation.
- Seems rushed on last ½ day. Perhaps three(3) full days—not 2 ½ .

### **Information and Resources**

- Use terminal E/W specialists. Our group discussed exit strategies—most of them validated/approved by E/W specialists—not severe weather yet —we only had severe weather specialist in our group. Much discussion surrounding justification of MIT and exiting a GS to keep from rolling GS. E/W would benefit from a presence here as would conference participants. Lots of discussion regarding tools and wish lists. It might be helpful to have a program person ref TFM tools and also one program person from WX program for the out brief day only. It would be helpful for them to hear the discussion. (sic)
- When presenting information at the beginning of the review, be prepared to answer “why” the data reflects what it does, instead of just giving the information without explanation.
- More analysis to qualify the efficacy of the procedures/actions resulting from the effort. Follow through, follow through, follow through.
- More video/playback presentations on specific events (like 7/19 Charlie Bailey presentation).
- Would like data presentations on Day 1 to include stats of all customers to include GA/non-scheduled data and visibility. (sic)
- More info on new tools.
- Better understanding of where identified issue will be worked/resolved.

- MACE & AFP Briefs: While these briefs were informative...I don't see how they fit into or contributed to the purpose of the meeting. Let's keep all the presentations germane to the purpose of the meeting.
- The initial day briefing on the season needs to include all aspects in one briefing, i.e., delays, operations, weather (actual and forecasted performance), ... Have weather work more closely with the other presenters in developing this. (Note: the NESP recommendation seems to be taking this approach.)

## Appendix A

### System Review Attendees (Listed Alphabetically)

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## Appendix B

# 2005 System Review Agenda

### November 1, 2005

8:00 – 8:15	Welcome remarks, housekeeping, and administration items	
8:15 – 8:45	Presentations:	
	Three-Phase Improvement Process	Mark Libby
	Recap of 2004 NAS System Review	Joe Dotterer
	2004 Review Action Item Status Report	Mark Libby
8:45 – 9:15	Analysis of Delays, Weather, and Operations for Summer 2005	Ken Lamon
	Severe Weather Avoidance Plan (SWAP) Summary	Dennis Gallus
9:15 – 9:30	Break	
9:30 – 11:00	Presentations (continued):	
	Weather Application Workgroup	Danny Simms
	Midwest AirSpace Enhancements (MASE)	Marvin Burnette
	Airspace Flow Program (AFP)	Mark Libby
	Experimental Strategy of July 19, National Enroute Spacing Position (NESP)	Mark Libby
11:00 – 11:45	Prepare for breakout sessions	Mark Libby
11:45 – 12:30	Lunch	
12:30 – 5:00	Breakout sessions	

**November 2, 2005**

8:00 – 5:00 Breakout sessions continue

**November 3, 2005**

8:00 – 9:00 Breakout Groups 1 and 2 brief solution sets, Q&A (30-min each)

9:00 – 9:15 Break

9:15 – 10:45 Breakout Groups 3, 4, and 5 brief solution sets, Q&A (30-min each)

10:45 – 11:00 Break

11:00 – 12:00 General group discussion of solution sets

12:00 – 12:30 Closing remarks, collection of evaluation forms

1:00 – 4:00 **FAA ONLY – TMO Playbook Meeting, room 6N120**

Joe Hof, Ric Humphreys, ATCSCC Procedures Department

Appendix C

# Meeting Evaluation Form

## 2005 System Review Evaluation

November 1 – 3, 2005

Name (Optional): \_\_\_\_\_

Select Affiliation (Optional): TMO    TMC    Svr Wx    Industry Rep    Military    Other    \_\_\_\_\_

Please circle the response that best characterizes your experience

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1. The objectives of the meeting were well-defined.	1	2	3	4	5
2. The stated objectives were met.	1	2	3	4	5
3. The workgroup format was effective.	1	2	3	4	5
4. The facilitators were able to maintain group focus.	1	2	3	4	5
5. I have new information that will help me do my job more effectively.	1	2	3	4	5
6. I have a better understanding of issues facing:					
a. ATCSCC	1	2	3	4	5
b. TMU	1	2	3	4	5
c. Operators	1	2	3	4	5

### Comments

What did you like most about this year's Review?

What improvements/changes would you recommend for next year's review?

## Appendix D

# Stakeholder Feedback

Prior to the System Review, the NAS stakeholders – both FAA and customers – were canvassed, requesting their feedback to the following question:

“What are the three most important problems you faced during convective weather events that, if corrected, could benefit the efficiency or capacity of the NAS?”

The responses were broadly categorized to become the problem statements for which the break-out groups were tasked to develop solution sets.

The following are the responses, grouped under the problem statement categories.

### **Group 1—Reroute Planning, Timing, and Communications**

1. Hate to even bring this one up. Direct routes.
2. No Notice or Little Notice Reroutes After a Flight is Off the Gate or Airborne. With today's fuel prices internal airline fuel policies are a very important process to save millions of dollars annually in fuel burn. These policies generally ensure that each flight is carrying only the fuel that is needed for that segment. Careful flight planning by the dispatcher and the Captain is essential for the success of this process. When there is a reroute required that comes via a Command Center Advisory, the proper planning can be accomplished. However, when no advisory is issued and an unplanned reroute is received either off the gate or while airborne, then en route landings for additional fuel is sometimes required, delaying passenger connections, crew connections, and costing unneeded fuel burn. We need to find a way to keep everyone on the same page and tuned in to strategic and tactical situations.
3. Be sure to ask whether the weather can be topped and use normal routes for those aircraft.
4. We need to improve the timing on re-route issuances. Ex. An are of TS is impacting VHP. TS are expected to move E of VHP by 20Z. A re-route is issued for flights with P-times up to and including 20Z, but 20Z departures will not be over VHP until 21Z-22Z. The re-route should expire prior to 20Z to allow for en route travel time.
5. Failure to publish reroutes in a timely fashion. There is usually a lag time of 1 hour between a normal route being shutdown and CDR/reroute being issued.
6. SVR WX constantly changing the plan immediately after the telcon is over.

7. Published REQUIRED reroutes that we don't get. The crew calls for clearance and they are told indefinite delay, no routes available. Why even bother publishing a route?
8. "No Routes Available" (NRA)--NRA and route closure procedures appeared at times to be confused. Subsequent airway re-opening was often lengthy amounting to excessive delay awaiting the "administrative" process.
9. Can ARINC develop or expand Pre-departure Clearance so that SWAP routes can be disseminated without changing the beacon code, just annotate on the strip that a revised routing has been issued?
10. Can choke points be developed based on the jet stream that would allow the customers a choice. For example, instead of using IOWA city as the common chokepoint for traffic going from west coast to east coast, develop 2 or 3 alternatives based on the jet stream. Allow the customers a choice.
11. IAH/ZHU SWAP issues.
12. NTML. when will the Svr Wx unit use NTML?
13. not capturing east bound transcon flights often enough or early enough negatively impacts Midwestern facilities.
14. Access to east coast airports (N90, PHL, PCT). When our routes are shut off to one of these airports, it is often difficult to access routes through adjacent centers due to their heavy demand and the length of the re-routes. It would seem to save money and provide access to share routes to other airports within the same airspace constraints when available.
15. We on the west coast do not have much involvement with SWAP other than a support role. My biggest concern is the late notification of newly implemented SWAP routes and giving airborne reroutes. Our departures headed east, which are normally the ones requiring reroutes, go through our three busiest sectors. The frequency congestion and the possibility of error in re-clearing aircraft makes for an undesirable situation. I am aware that it is a very dynamic situation, however it does present certain difficulties for us.
16. The timeliness of SWAP/CDR implementation (in my humble opinion, often too late).
17. Failure of the Ops Planning Telecon Agenda webpage to gain acceptance - Because it was designed in authority mode for SCC rather than designed for collaboration. Planning TELCONs can have an autocratic approach by the SCC. More collaboration needed by both facilities and customers.
18. Inaccuracy of the OIS page of the SCC website.

19. Shift comments page – biased and incomplete as far as the questions asked.
20. Required routes include RNAV routes for /a aircraft and FCA/FEAs continue to not be made public.
21. Limited use of off shore routes. Could this be expanded? Can we create more routes to avoid ZNY? What exactly does "offshore" mean? (12nm, 50nm or 162nm all three of these mean different things for us.)
22. Scapegoating of the CCFP as the cause of TFM shortfalls. Abuse of CCFP as a no-fly zone or use of CCFP for weather less than 2 hours in the future.
23. No one seems to know whom at the severe weather desk does what for who. I have called the severe weather line to get assistance moving a flight that for reasons unknown is stuck and can't get airborne. I call them because looking at the TCA page I see so many issues being posted that the TCA would take well over an hour just to get to my issue, let alone resolve it. Some of the SVWX guys are very helpful, but others just refer me to the TCA as if they didn't fathom how busy the TCA really is. The ATCSCC may need to re-establish some protocol for issues that get posted to the TCA page. The original rules were that only issues we were unable to resolve on our own, with our own resources or contacts were to be posted. Yet we see on an almost daily basis posts for why am I in holding, and why did I get routed this-a-way or that way, I don't like my EDCT I want a better one, simple dispatch 101 type stuff.
24. Better use of GDPs in support of SWAP. Granted they may be going away but if they don't, they need to be administered better. Several times this year when they were in place they let them run way past the length of time they needed to. When they are implemented they are only accurate until the Ground Stops come.
25. Conflicting instructions from severe weather and east area.
26. Calls from different ATCSCC personnel about the same issue within moments of one another.
27. Implementing numerous Playbook initiatives that flow large volumes of traffic over the same fix, i.e., VUZ Vortac.

## **Group 2—Airport Departures During SWAP**

1. I would like to know when airports stop departures due to weather. It's frustrating to get a call from the crew or station telling us this. It then takes another call to confirm the departures are stopped.
2. Resolve the conflict of airlines filing legal routes as opposed to ATC desire to file "normal" routes and fuel for re-route.

3. Let me fly around the weather if I want to. Example: There is a CDR/SWAP route from MDW-DCA over IJU/BKW that is appropriate when there is weather impacting normal routes. ATC is very reluctant to let us use this route. If we file the CDR, ATC will clear us normal route and then give us indefinite delay. Why?
4. Not having all customers play in the CDR arena places a workload on TMC's and CPC's that could be directed elsewhere.
5. Availability of CDR's off internal airports. While CDR's are in place for internal airports, their use is often denied or impeded by surrounding centers due to volume issues (not weather). There needs to be a mechanism to share these resources among all airports in need of re-routes, so that some minimal departure flow can be kept moving.
6. Severe Weather needs to provide multiple escape routes from an impacted airport, instead of letting centers use one route with excessive miles in trail.
7. When an airport is in lengthy departure delays because there is weather impacting a departure direction off of an airport. There needs to be a trigger identified (90 minutes) where escape routes can be developed. These routes would be to get the initial aircraft out that may be blocking other aircraft from departing.
8. Chicago Metro Area experienced multiple occasions where ORD was "grid locked" due to the emphasis placed on getting arrivals to ORD without the long term look at balancing the airport. Once we get into this situation it is very difficult to recover. Even with swap/CDRs available if an aircraft is staged for a specific runway, and needs to go to a different runway due to swap, many times it is impossible for the ORD ground controller to move the aircraft due to congestion of taxi ways.

With additional emphasis placed on balancing the airport flow we can reduce this impact. Additionally, we need to develop a method of reducing overhead volume on west to east transcon routes when the Chicago metro area is impacted with delays. Too often we are severely restricted with MIT on swap routes, due to over flight volume, which inhibits the recover of Chicago area delays.

9. My biggest complaint is getting delays on both ends. Many days we have GDP in support of SWAP for the major east coast airports (BOS, EWR and LGA). The expectation discussed on the SPO is that departure delays out of those airports would stay reasonable. Many times they did not and departure delays became outrageous (2-3 hours). This led to gridlock, ground stops and diversions. Departures need to be flushed to prevent this from happening. That may mean stopping departures from satellite airports even when there is no line for takeoff. It is unacceptable for airlines operating into airports like LGA to be delayed inbound due to GDP with additional delay outbound while airlines operating to satellite

airports flow freely. SWAP is an airspace problem. The delays need to be spread out over the entire system.

10. Notification on the use of CDRs by Advisory—minimal progress.
11. Closure of routes around small cells of weather with no apparent effort to allow for deviations, even if expanded MIT was available.
12. Route closures that do not allow for some traffic to continue to flow with expanded MIT initiatives.

### **Group 3—Multi Restrictions, ESP Delays, East Coast Route Constraints**

1. Volume of Restriction/TMIs placed on some sectors and terminals. Particularly high volume airports such as ORD. Frequently ORD would be required to ESP 10-14 airport destinations, meet dept fix sequencing MIT, EDCT, as well as shoot gaps in landing traffic. This causes a considerable workload on the tower controller. In some instances the controller was unable to comply with TMIs thus disrupting the enroute environment and sequencing. Additionally, enroute TMIs may include some sectors providing MIT to multiple destinations, which become extremely burdensome on the enroute controller. This leads to inconsistent application of the TMI and subsequent loss of system efficiency.
2. Effect large MIT rstns have on the NAS. On several occasions ZKC had 50 or 60 MIT to the DC Metro, treated as one. Extremely difficult to coordinate, and caused excessive ESP departure delays.
3. The consistent use of multiple restrictions, EDCT, MIT and CFR. Most of it involves the Eastern Airports and ATL. It adds a great deal of complexity to move an aircraft on the ground when there are multiple restrictions for an aircraft.
4. Relief for DFW/DAL departures fitting into the overhead stream during both Wx periods in ZHU and/or other points requiring Miles in trail which result in lack of availability to get dpts into the stream.
5. Lack of Routes Through or Around the Northeast Corridor. During choke point situations or other FCA events, many times the transcon flights are all routed north or south around the constrained area. This in turn creates an overhead stream situation for ORD or other important Midwest hubs. The entire system suffers. In July an attempt was made to offer multiple Play Book routes in support of SWAP for Transcon's departing the West Coast. This had some success but also some limitations. However, the idea behind the attempt was valid; provide the users some options. Rather than sending everyone via the CAN1 Play Book, lets find a way to spread the flows out across the continent alleviating the compression caused by using a single Play Book route. It might make sense for the departures from the Pacific Northwest or even MSP and DEN, if appropriate, to use the CAN1 routes

while southern California uses a different Play Book over BNA, for example. We need to find a way to provide options for the transcon flights, thus providing more fuel efficient routes while at the same time alleviating the overhead stream issues for mid continent departures during a choke point or constrained area event.

6. The equitability of departure delays between airports in different geographic locations vying for the same routes (J29 comes to mind).
7. Attributing ESP delays to the arrival airport when the constraint is the enroute sector (MAP values).
8. Impact of international flows to the system and specifically to New England. There is not a fair and equitable distribution of delays. We are also seeing unannounced ground stops coming from Boston Center. This kills us as it takes away our ability to plan. Some days are better than others depending where the Internationals make landfall. Can we not have a Dulles East arrival fix?
9. Can we do a better job of DSP'ing out of BOS Center? Is pen and a paper (legal pad) really the most efficient way of doing business?
10. PHL departure delays are an issue worth discussing. When in an east flow, departure delays are automatic due to mile in trail restrictions. Convective activity compounds the issue. Is this really a matter of airspace capacity or is this just the way it has always been.
11. Inadequate usage of the low altitude stratum when the high altitude sectors were busy.
12. MIT requests during GDPs.
13. Multiple airports tied to large MIT restrictions. i.e., TEB, MMU, EWR HPN 50 MIT as one.
14. Getting exemption from EDCTs and MIT for flights using A761 only to told to give 80 MIT once flights are rerouted and airborne.
15. Multiple airports included in one MIT.
16. MIT with GDP.
17. MIT compliance from 1st tier facilities.

#### **Group 4—Exit Strategies**

1. Reversion of the Diversion Recovery Website to read-only application with bad information posted and no way for operators to make corrections/additions.
2. Today's traffic managers are not trained in understanding equity, a subject of enormous complexity yet are empowered to make decisions which they insist are

fair, without understanding all the factors or implications. High delay airports are favored at the expense of hubs that have adequate capacity.

3. We still see delays out of New England to the KIAD. Still no one can answer why BWI and DCA do not get the same restrictions as IAD. Or why can I not fly the same route as DCA for IAD? Question in point: sitting in BOS tower last month 4 aircraft launched with no delay to BWI and DCA. On the other hand two aircraft tried to get to IAD and both took a 30 min delay.
4. Communications. Very broad, but still a problem. The only reason we can not proliferate the use of low/tower routes. Ex. NY says yes and lets you taxi out, only to be stopped because PHL or some other stakeholder says no way. Yet command Center and facility reps have already given their blessing and briefed their controllers? How does this happen? I was flying out of PVD last week in the morning and was told that we were on a ground stop because of IAD tower. This was not true, it was because of ZNY volume. Yet still the towers get a bad rap. How do we fix it?
5. Lack of focus on recovery and ramping up of traffic after the weather dissipates.
6. Better communication from ZBW/ZNY. Trying to figure out which routes are open out of town is too difficult and time consuming. You call ZBW and the answer is always " We're stopped by ZNY"? You might as well not even bother calling ZNY because the phone is likely to ring incessantly. Without the communication you don't know what to tell anybody. Board the aircraft/don't board the aircraft. Push the gate/don't push the gate. They may be in SWAP. Your only real option is to go through the TCA and sometimes wait for 30 minutes for an answer.
7. Exit from TMIs (reroutes / MIT) is not timely. These are left in place well after the need (weather has moved or demand has diminished).

**Group 5—NESP / Optional Playbooks (Review of July 19)**

1. Limited ability to make expedited approval of route exceptions to required reroutes.
2. Closing routes unnecessarily ala "No Routes Available" - better this year but still problematic.

## Appendix E

# 2005 Playbook/CDR Meeting Notes

The ATCSCC Procedures representatives held a short meeting with the MTOs and TMOs on the last day of the 2005 System Review.

### Use of CDRs by GA

The first discussion of the group was the use of CDRs by GA. The GA community would like access to CDRs through a capability similar to the one at TEB. Carmine explained that the TEB activity was a prototype. There are some legal issues that are being addressed.

Document change proposal will come out soon for FAA Order 7210.3. Need to determine which customers and which airports will use the CDRs.

Currently, there are local agreements and some discussion on national agreement. The national one (covering the airlines hubs and all other airports served by the airline) will be difficult to manage.

Lag between RMT and downloading. Host computer should match RMT. Since the smaller airports do not have TMCs, the Supervisors have to be trained on the procedures and use of the CDRs.

### CAN3 East Playbook

CAN3 was used only once this summer. Why?

Typically, when CAN playbooks are used, traffic to NY through ZOB is moved laterally. Mark Evans explained that the first time CAN 3 East was used, the NY traffic was not moved and it resulted in increased volume in ZOB sectors. Since the issue was not raised earlier, it was not resolved and hence the playbook was never used again. The 7210.3 has a requirement that negative feedback needs to be brought out, but it is rarely done.

It is necessary for the group to discuss changes to the playbooks before the next severe weather season. The timeframe for the meeting can be as early as December or as late as Jan/Feb. Previous year's discussions have been held in Jan/Feb. Use of CENTRA for this activity was discussed.

Additional suggestions:

- Review which plays are not being used (delete those not being used).
- Need to have plays published 7 days before the update.
- Match up the Playbook & CDR update dates.

ORD escape routes are being documented. These routes are used on a regular basis, but now they are being documented.

### **New Canadian Routes**

It was decided that a meeting between NavCanada and FAA would be held no later than February 2006 to discuss any new Canadian routes.

### **MASE**

Need to synch MASE, Playbooks and CDRs by June 2006. Concern is the synching of the CDRs mainly because of the number of these routes. Playbooks will not be as difficult.

## Appendix F

# Notes of the ATCSCC Severe Weather Unit Review of October 12 – 13, 2005

## Day 1

Mark Libby opened with an update to the Airspace Flow Program (AFP).

Specialists voiced concerns about getting information down to the tower level—specifically the contract towers.

A suggestion was noted to exclude contract towers from the initial phase of AFP.

Currently AFP in HITL exercises.

Due to some extra time in the agenda (Automation session cancelled), Mark Libby also gave an overview of the NESP position.

Position meant to be a very creative position that monitors the flow of the NAS, anticipating weather and potential TFM impacts, strategically planning NAS initiatives to minimize the impacts.

Initially, the NESP position will be managed by NTMOs because this new position will be put into operation while it is continuing to be developed. Specialists expressed concern that not having SVRWX expertise in the position may reduce its effectiveness. More discussion on this position occurred on Day 2.

Danny Simms and Mark Huberdeau provided a CCFP presentation including proposals for risk analysis and traffic weather impact analysis.

Specialists comments:

- CCFP focus needs to remain more on forecasting accuracy rather than traffic analysis.
- Address CWSU process to incorporate regional weather data into TFM.
- Would like to see a continuous flow CCFP (CIWS-like) rather than snapshot.
- There needs to be an increased focus on +4 and +6hr forecasts, leverage ITWS/CIWS for 2 hour time frame (in wx chatroom also).
- Supported NOWCAST use in CCFP proposal (not sure what this means...?).
- Would like to see an overlay of the Severe Thunderstorm 12 hr forecast onto the CCFP display.

Sid Cooper and Rob Draughon updated the group with FAO (expand abbreviation) status presentation.

In summary, AR1 and AR7 routes are removed along with A-NAV STARS. 8 new STARS and 9 new, city pair-specific routes are in place. All new routes (except AR24) are within 162 nm of the shoreline, so customer off-shore waivers will apply. Customers have been requested to file routes as published and not mix destination airports. New intersections have been added to ease transition from A761 to all new routes. Reduced need for SNOWBIRD routes and better management of the increased Caribbean traffic are expected.

Severe Weather Season Review – Review of 2004 action items presented by Joe Dotterer.

All action items may be viewed on OIS SVRWX web page. 2005 action items will be added.

26 items were reviewed and status of “completed”, “ongoing”, or “combined with.”

Ongoing items:

- NTML group exploring use of Instant Messaging.
- “View all facilities” option on OIS so all SVRWX notes can be viewed at once.
- RMT use of PAR data. Outdated PDAR data has been removed from RMT and no one has been assigned responsibility to update it. Specialists are getting this information elsewhere.
- AFP development for spring 2006 implementation.

A suggestion was made to fix the update process and reinstall PDAR data into SVRWX RMT, or remove RMT tool.

Midwest Airspace Enhancement (MASE) –Bill Cook ATCSCC:

- The Midwest AirSpace Enhancement (MASE) is the union of several efforts involving new routes:
  - ZOB and ZID new routes for Detroit Metro and Cleveland Metro operations
  - ZTL and ZJX new routes for operations influenced by Inappropriate Altitude For Direction Of Flight (IAFDOF)
  - ZTL, ZID, ZME, and ZAU new routes for elimination of VXV transition to MACEY arrival into ATL
  - ZDC, ZMP, ZKC additional coordination for new routes.
- First design process started in 2000 (ZOB and ZID).
- Multi-Center modeling efforts in 2001-2002 by MITRE/CAASD.

- Design completed 2004/Environmental work 2003-2005.
- Increase in arrival throughput at DTW/Decrease in departure delay at DTW.
- Reduction in arrival Miles In Trail restrictions caused by DTW, passed back through several Centers.
- Reduction of workload complexity:
  - ZID and ZOB arrival and departure interaction
  - ZTL arrival traffic into ATL
  - ZTL and ZJX IAFDOF coordination.
- Foundation for future redesign:
  - Additional ORD departure gates
  - CVG arrivals and departures
  - NY Metro arrival and departure routes.

Ken Lamon of MITRE/CAASD provided delay analysis results from the summer season.

In summary, delays have gone up because airlines are adding traffic to airports that are already operating above their bad-weather capacity.

Highlights:

- One-hour delays are up 16% from 2000 (baseline pre-9/11).
- OPSNET delays increased 7% from 2000.
- The eight most delayed airports during the summer of 2005 were ATL, ORD, PHL, EWR, LGA, JFK, IAH, and IAD.
- In the summer of 2000, these same airports accounted for 58% of all the OPSNET delays at the OPSNET 45 airports. Today these eight airports account for 74% of the total—nearly three times as many delays as the other 37 airports combined. Since 2000, delays at these eight airports increased 23% overall, whereas delays decreased 39% everywhere else.
- This summer had significantly more weather at ATL and ORD airports.
- The 45 major airports in the sample handled 5% fewer flights overall in the summer of 2005 than in the summer of 2000.

CAPER Demonstration –Michelle Duquette, MITRE/CAASD.

Reroute Modeling, or “What-if” scenario development, drew most of the discussion.

Specialists identified potential uses of CAPER:

- Scenario-based training for terminal (area) and enroute (SVRWX) specialists.
- Early morning transcon modeling of multiple routes.
- Referencing NAS and Center Monitor modeling results when analyzing potential reroutes.
- Future Traffic Display (FTD) for graphical depiction of current traffic trajectories. Also for modeling future traffic based on proposed reroutes (“What-if” scenarios).

Recommendations:

- Add Create Reroute to CAPER.
- Add ability to import GDP data by airport.

Mike Klinker and Charlie Bailey of MITRE/CAASD presented initial findings based on field facility observations for SWAP Season 2005.

- FAA and MITRE CAASD Goals:
  1. Observe, record and analyze TFM actions taken in response to severe weather in the NAS at all levels, including national and regional perspectives.
  2. Provide feedback to the FAA aimed at improving the communication, coordination, and execution of strategies to resolve traffic flow problems associated with severe weather.
  3. Provide context for the 2005 ATCSCC severe weather unit review; additionally, Service Area, ATCSCC, MTO, regional, and/or locally centered TFM based reviews, workshops, and meetings.
  4. Provide information to other forums, such as, Growth without Gridlock-2, S2K initiatives, and CDM workgroups.
- Facilities visited during SWAP season 2005:
  - ZDC/ZNY/ZOB/N90/PCT/PHL T/IAD T/ATCSCC/ZTL/LGA
- Briefed findings and observations concerning:
  - Tower/TRACON/Center/ATCSCC interaction
  - Use of Technology
  - Application of Traffic Management Initiatives
  - Delay reduction

- Communication and Coordination
- SWAP/Reroutes
- Military Airspace
- Training and experience of TMCs.

## **Day 2**

Severe Weather Observations – Nancy Toma, MITRE/CAASD

### Survey results:

- Received 10 completed surveys.
- Training was identified as good for new specialists.
- Recurrent training insufficient.
- Variable level of involvement by NTMOs and Coordinators.
- Lack of feedback re: previous day's operations.

### Observations:

- Different levels of involvement/leadership by supervisors and Coordinators.
- Coordinator and Supervisor roles and responsibilities at times overlap.
- Inconsistent coordination between the Planning Team and the Severe Weather Unit.
- More efficient route development process used by some specialists.
- Time-consuming route coordination process.
- Route development is more reactive than proactive.
- Facilities tend to contact the Severe Weather Unit for routes.
- Some tools/procedures not utilized as effectively as possible (i.e., DSP, METRO).

### Potential Areas of Improvement:

- Communication Issues:
  - All communication via phone; potential for miscommunication and time consuming
    - When busy, facilities are unable to promptly answer phone calls
  - Route/fix availability information is not always timely
  - Feedback on previous day's operations is very limited or non-existent
  - Limited follow up from Planning Team/NTMO regarding planned routes after telcons.

## Recommendations:

### Internal:

- NOM, NTMOs conduct meetings with specialists to facilitate on-going reviews of operational issues
- Identify problems
- Investigate solutions
- Provide clear directions on priorities
- Assign points of contact
- Ensure follow-up
- Require Planning Telcon debriefs by NTMO after each telcon (DCC 7200.100D, Ch-5, pg 5-1-4)
- Make available to the specialists the NTMO's critique of the severe weather operations.

### External:

- Use the online QA survey as a means of receiving feedback from customers
- Identify the information needed by the Severe Weather specialists and add those topics to the survey
- Route Planning and Coordination
  - Limited strategic planning
  - More reactive than proactive
  - Route coordination is a lengthy process
  - Need to re-coordinate any changes
  - Limited monitoring of the reroutes for compliance
  - Limited compliance might indicate additional follow up is necessary.

### Recommendations:

- More proactive in planning strategies
  - Identify high-risk areas of the NAS that will require coordinated routes even if CCFP indicates low confidence areas (e.g., ZNY)
  - Develop back up plans/options as part of the route planning, & discuss/coordinate with facilities.

- Roles and Responsibilities
  - Variable levels of interaction by NTMOs and Coordinators
    - Roles and responsibilities can overlap or be unclear
  - Coordinator and NTMO
    - Unclear if specialist should take initiative or if supervisor should direct tasks
  - Differing guidance from severe weather handbook and SOP.

Recommendations:

- Modified roles and responsibilities
  - Create tactical and strategic positions
  - Assign smaller number of specialists to the tactical issues in the morning while other specialists work closely with the planning team to develop route options and conduct the necessary coordination. As convective weather develops, specialists are assigned to resolving tactical issues.
  - Determine the look-ahead time for the tactical (0-2 hrs?), and the strategic (2-6 hrs?).
- Training
  - Not timely - too late for the severe weather season
  - Does not address concept of use
  - Lacking or insufficient initial and on-going training for NTMOs.

Recommendations:

- Ensure initial and ongoing training for non-bargaining unit personnel
- Evaluate scenario-based training during the off-season
- Conduct training prior to the start of the severe weather season
- Ensure training addresses use of tool/procedure in operations.

A structured forum facilitated by Tom St. Clair consumed the remainder of the day to discuss what worked/did not work over the FY05 severe weather season. Where the same topic was commented on throughout different discussions, those comments have been associated with the common topic and documented. The following is intended to organize comments by topic.

## What Worked Well

1. Severe Weather Unit teamwork
2. Initial use of Coordinator position
  - a. Position worked best when consistently staffed by SVRWX specialist
3. SVRWX experience level in unusual situations
4. FEA/FCA use for evaluating and monitoring
5. Relocation of ITWS and CIWS
6. RVSM implementation
  - a. Request made for blue alerted sectors to be removed from display
7. CCFP display enhancements
  - a. Gray vs. yellow seems to improve flexible use of airspace
8. SOP
  - a. Note - Brad will gather input from SVRWX and coordinate with Mark Libby before bringing to Joe Hoff

## Issues

### **1. Training**

*All training referred to in this section includes instruction and scenario-based training.*

- 1.1. Intra-facility training
  - 1.1.1. Winter training
    - Gave example of getting 8 hours of FSM training to build a GDP (a tool they do not normally use) and then only received a memo regarding METRO, a route tool they could use more often.
    - Include East/West Areas and Operational Supervisors
    - Incorporate any training items recommended at End Of Season Review
  - 1.1.2. Equipment training
    - Initial and recurrent training needed on new tools
    - Operational Concepts of new tools should be included with training
  - 1.1.3. Severe Weather training
    - Area specialists, SVRWX specialists, Operational Supervisors, and Coordinators need an initial and recurrent severe weather training requirement
  - 1.1.4. Initial and recurrent training/certification
    - Guidelines should include required training specific to position plus a familiarization module to enhance cross-role education/understanding
    - Explore SVRWX Unit certification need/practicality

- Need to have training assignments for trainers (i.e., shadowing)
- Explore standard 10% pay differential for trainers
- 1.1.5. Need to have a cadre of TCA-trained specialists
- 1.1.6. Training related: There is a need for separate Position Descriptions for SVRWX specialists and Area specialists

Tim Grovac, now ATCSCC Training Manager, plans to develop training for Supervisors, new specialists, and Coordinators. He added he would also develop a structure for future implementation of training.

## 1.2. Inter-facility training

- 1.2.1. New tools (i.e., how to more effectively use Reroute Monitor)
- 1.2.2. Tailor familiarization modules to ARTCC specific nuances
  - 1.2.2.1. Understand unique limitations/circumstance of own airspace
  - 1.2.2.2. Understand unique limitations/circumstances of neighboring facilities (i.e., cross-pollination)
  - 1.2.2.3. Understand national impacts of facility actions (e.g., ARTCC solutions may not be the most effective NAS solutions)
- 1.2.3. Requesting static reroutes (e.g., providing justification and validation of request)
  - 1.2.3.1. Explore developing a repeatable process by which facility researches justification for request, then SVRWX validates request, holds a coordination discussion, then implements reroute
- 1.2.4. ATCSCC involvement
  - 1.2.4.1. Specifically: What they do and why (i.e., cross-pollination)
- 1.2.5. Need classroom or workshop environment as precursor to 50113 course

## 2. Coordinator

- 2.1. Inconsistent staffing
  - 2.1.1. Sometimes combined with Operational Supervisor position
    - Creates disconnect between Ops Sup and Coord functions
  - 2.1.2. Volunteer approach ineffective, needs to be assigned
  - 2.1.3. Supervisor pulls Coordinator off position to handle phones
  - 2.1.4. Specialists would like to see experience level/expertise of SVRWX specialists in the Coordinator position
- 2.2. Coordinator role clarification needed
  - 2.2.1. Unclear who is working what issue (Coordinator? Supervisor? Specialist?)
  - 2.2.2. Rotate position?

Issue: Difficult to embrace “big picture” concept if only working 2 hours or less, or coming back from 30 minute break; however some benefit is seen in rotating the

coordinator position because more specialists are given an opportunity to get the “big picture.”

### 3. **Planner**

#### 3.1. Inconsistent staffing/level of experience

3.1.1. Use of inexperienced staff when an experienced supervisor is on the floor working an area position

#### 3.2. Not enough planning done prior to or during Planning Telcon

3.2.1. Example of planner asking SVRWX for a route just before Planning Telcon resulting in poor plans or problematic routes

3.2.2. Planners “disappear” after telcon

### 4. **ETMS**

#### 4.1. Need Reroute display options

#### 4.2. Need method of capturing/requesting/tracking ETMS bugs and enhancements

4.2.1. Suggestion to incorporate Rich’s automation bug list for review and update to get process started

### 5. **NTML**

5.1. “Pending List” capability didn’t work as well as expected. Possibly due to lack of procedures

5.1.1. Issue with facility use of “SVRWX” checkbox. If facility checks this box for a MIT restriction request, specialists in the ATCSCC East and West Areas expect that a SVRWX specialist has already approved the request when this may not be true.

5.2. Restriction coordination is cumbersome.

5.2.1. Difficult to locate MIT associated with SWAP

5.3. NTML fails to load Advisory data without a nightly reboot. This needs to be fixed.

5.4. NTML Instant Messaging (IM)

5.4.1. Capability currently broken – IM goes to incorrect address

Tom St. Clair will coordinate a follow-up discussion to explore a potential near-term work-around: NTML “Miscellaneous Message”. This message goes to the “Pending List” for initial coordination. This can be considered preliminary coordination prior to the required phone call follow-up.

### 6. **New ARTCC Phone Lines**

6.1. Revisit new phone lines installed at facilities. Specialists unclear of status.

6.1.1. Are they working as intended?

6.1.2. Have processes/procedures been briefed/implemented?

## **7. ZNY Coordination Process**

- 7.1. Need better coordination regarding the following situations:
  - 7.1.1. PHL/ABE/MDT to ORD routes (e.g., too frequent “no route available”)
  - 7.1.2. SYR reroutes (e.g., staying in reroute too long)
  - 7.1.3. Shutting off ZBW departures
- 7.2. SVRWX would like a regionally based workshop
  - 7.2.1. ZNY better understand national impacts
  - 7.2.2. Capture ZNY best practices (e.g., differences in ZNY TMC actions)
  - 7.2.3. Work out better method of pre-coordination
  - 7.2.4. Explore using ZNY TMC Tools to share restrictions (i.e., closed routes/fixes)

## **8. TMC Tools Data**

- 8.1. Need a method of sharing TMC Tools data used by facilities
- 8.2. Suggestions include:
  - 8.2.1. OIS page
  - 8.2.2. Link only on OIS page to another web page
  - 8.2.3. Incorporate data into NTML
  - 8.2.4. Project data to Status Information Display (SID) (aka Big Screens)

NOTE: Specialists indicated a need for better common situational awareness (in addition to sharing TMC Tools data) within the Command Center. Using the big screens was a favored option.

Issues for using big screens in Command Center:

- Text unreadable
- Lack of automation to feed updates
  - Could NTML be used to populate some SID data?
- Funding for upgrades

## **9. Operational Feedback**

- 9.1. Little to no feedback to specialists regarding previous day operations. Discussed different types of feedback that would be useful
  - 9.1.1. ATCSCC internal
  - 9.1.2. Facility
  - 9.1.3. ATO
- 9.2. Discussed using “Red Board” to disseminate such feedback

## **10. Revisit “I&I” Process for New Tools**

- 10.1. What is the “Application life” for new tools?
- 10.2. After what length of time should a benefit analysis be done to determine usefulness of new tool?

- 10.3. What is SVRWX feedback process for new tools (both procedural and technical feedback)?

## **11. CCFP Accuracy**

- 11.1. Need to improve CCFP forecasting accuracy
- 11.2. Explore using NOWCAST overlay and for base lining 2 hour forecasts

At day's end, Mark Libby confirmed issues raised throughout this meeting would be included on sub-team agendas for the End Of Season Review. Mark also committed to follow-up on identified action items. Appreciation letters from Jim Reis were announced and handed out for SVRWX unit participants in the CDM FEA/FCA working group.

Mark closed the Severe Weather Unit Review by reminding specialists that the success of the NAS is a shared responsibility. "For example, if you need more training, you need to ask for it. We need to commit to follow through ourselves and work together."

## Summary of Recommendations and Action Items

### **SVRWX Unit Recommendations**

1. AFP: Explore excluding contract towers for initial implementation of AFP
2. CCFP: Focus more on forecasting accuracy rather than traffic analysis.
3. CCFP: Incorporate CWSU regional weather data into TFM and CCFP
4. CCFP: Explore depicting a continuous flow CCFP (CIWS-like) rather than snapshot
5. CCFP: Focus on +4 and +6hr forecasts, leverage ITWS/CIWS for 2 hour time frame (in wx chatroom also)
6. CCFP: Explore NOWCAST overlay
7. CCFP: Explore Severe Thunderstorm 12 hr forecast overlay
8. RMT: Fix the update process and reinstall PDAR data into SVRWX RMT, or remove RMT tool
9. CAPER: Add Create Reroute capability
10. CAPER: Add GDP information by airport
11. CAPER: Add User Guide next to CAPER workstation
12. CAPER: Use for scenario-based training
13. TSD: Add an option to remove the RVSM blue alerted sectors from displaying
14. TRAINING: Improve ATCSCC Intra-facility training
  - a. Winter training plan
  - b. Equipment/Tools
  - c. Separate SVRWX specialist and Area specialist core training modules

- d. Develop initial and recurrent SVRWX Unit training programs
  - i. Specialist
  - ii. Supervisor
  - iii. Coordinator
  - iv. Planner
- e. Training (OJT or shadowing) process
- f. Cross train SVRWX specialists for TCA position
- 15. TRAINING: Improve Inter-facility training
  - a. New tools
  - b. Tailor familiarization modules to ARTCC specific nuances
    - i. local
    - ii. neighboring
    - iii. national
  - c. ATCSCC involvement
    - i. Specifically: What they do and why (i.e., cross-pollination)
  - d. Need classroom or workshop environment as precursor to 50113 course
- 16. Explore feasibility/need for SVRWX Specialist certification
- 17. Develop separate Position Descriptions for SVRWX specialist and Area specialist
- 18. Explore developing a repeatable process by which facility researches justification for reroute request, then SVRWX validates request, holds a coordination discussion, then implements reroute
- 19. COORDINATOR: Staff consistently
- 20. COORDINATOR: Assign position
- 21. COORDINATOR: Develop Position Description clarifying role and relationship to specialists, Supervisor, and Planner
- 22. COORDINATOR: Decide if position will rotate and clarify how that works
- 23. PLANNER: Staff position with SVRWX-experienced Supervisors until remaining Supervisors are trained
- 24. PLANNER: Focus on NAS planning more between telcons
- 25. ETMS: Develop more reroute display options
- 26. ETMS: Develop method of capturing/requesting/tracking bugs and enhancements
- 27. NTML: Fix Pending List
- 28. NTML: Develop better procedures for facility use of SVRWX Checkbox
- 29. NTML: FIX IM capability
- 30. NTML: Explore use as automated feed to a ATCSCC Standard Information Display (Big screen)
- 31. NTML: Explore incorporation of TMC Tools data
- 32. Recommend a NE region workshop to analyze ZNY national impacts
- 33. Develop a method of sharing TMC TOOLS data within ATCSCC
- 34. Develop a method of obtaining feedback internally, from facilities, and from ATO
- 35. Revisit I&I process for new tools

### **Action Items**

1. Tom St. Clair to coordinate NTML IM follow-up discussion
2. Brad Sherman will solicit SOP feedback from specialists and coordinate with Mark Libby and Joe Hoff
3. Tim Grovac will develop training for new SVRWX specialists, Supervisors, and Coordinators
4. Tim Grovac will develop a structure for future implementation of ATCSCC training
5. Joe Dotterer will follow-up with new ARTCC phone line status

# Glossary

ACC	Area Control Center
AFP	Airspace Flow Program
ANC	Air Navigation Conference
APREQS	Approval Requests
ARTCC	Air Route Traffic Control Center
ATA	Air Transport Association
ATC	Air Traffic Control
ATCSCC	Air Traffic Control System Command Center
CAASD	The MITRE Corporation's Center for Advanced Aviation System Development
CAPER	CAASD Analysis Platform for En Route
CCFP	Collaborative Convective Forecast Product
CDM	Collaborative Decision Making
CDR	Coded Departure Routes
CIWS	Corridor Integrated Weather System
DSP	Departure Spacing Program
EDCT	Estimated Departure Clearance Time
ESP	En Route Spacing Program
FAA	Federal Aviation Administration
FCA	Flow Constrained Area
FEA	Flow Evaluation Area
FSM	Flight Schedule Monitor
GA	General Aviation
GDP	Ground Delay Program
GS	Ground Stops
HAR	High Altitude Redesign
IAD	Washington Dulles International Airport
ITWS	Integrated Terminal Weather System
MASE	Midwest Airspace Enhancement
MIT	Miles-in-Trail
MTO	Manager of Tactical Operations
NAS	National Airspace System
NBAA	National Business Aviation Association
NESP	National Enroute Spacing Position
NOM	National Operations Manager
NTML	National Traffic Management Log
NTMO	National Traffic Management Officer
OIS	Operational Information System
PDC	Predeparture Clearance

PHL	Philadelphia International Airport
PT	Planning Team
Q&A	Question and Answer
SLT	Student Training Terminal
SME	Systems Maintenance Engineer
SOP	System Operating Plan
STMC	Supervisor-Traffic Management Coordinator
SWAP	Severe Weather Avoidance Plan
TFM	Traffic Flow Management
TMC	Traffic Management Coordinator
TMI	Traffic Flow Management Initiatives
TMO	Traffic Management Officer
TMU	Traffic Management Unit
TRACON	Terminal Radar Approach Control
WX	Weather
Z	Zulu
ZBW	Boston ARTCC
ZID	Indianapolis ARTCC
ZMA	Miami ARTCC
ZME	Memphis ARTCC
ZMP	Minneapolis ARTCC
ZNY	New York ARTCC
ZOB	Cleveland ARTCC