FAA RECAT Phase I Operational Experience

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- **Tittsworth (FAA Air Traffic Organization)**
- **Pressley (NATCA / IFATCA)**
- **Gallo (FAA Flight Standards Service)**
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Outline

- Background
  - Quick High Level Description of RECAT
  - Historical Note on RECAT I
  - Recent Changes
- Updates
  - Initial Implementation in US
  - The Rest of the Waterfall Implementation
  - Lessons Learned for RECAT II

RECAT Introduction

- **RECAT is a Three Phased Effort**
  - Phase I is static 6 category system IOC in MEM in Nov 2012
  - Phase II is static pair-wise separation
    - Requiring no automation tools
    - With the flexibility of 6 customizable categories for optimization of local fleet mixes
  - Phase III is dynamic pair-wise separation using
    - Phase II pair-wise separations as a base, and
    - Taking atmospheric and aircraft data to dynamically change the separations.
- **All three phases directly support NextGen and SESAR capacity enhancement goals**

RECAT Phase I

- **RECAT I - Genesis**
  - At the request of ICAO, FAA and EUROCONTROL formed a WG to examine the feasibility
  - Want to have *Wake Based*, instead of *Weight Based* wake turbulence separation minima categories
  - Refine category boundaries
  - Maintain safety, but changes are driven by operational benefits

RECAT I – Where Boundaries Come From

- **RECAT I – Anticipated Level of Benefit Going In (1/2)**
  - Categorization, thus benefit, strongly depend on fleet mix
  - Traffic / fleet mix from eight airports were chosen to develop RECAT I categories
    - KATL, KEWR, KJFK, KORD and KSFO
    - EGGL, EDDF and LFPG
  - Safety analysis done using ICAO baseline
  - Benefit analysis done using local standard as references

RECAT I – Where Boundaries Come From

- **RECAT I – Anticipated Level of Benefit Going In (2/2)**
  - Categorization is not optimized for any specific airport, but categorization drives towards everyone getting benefit over baseline, as a first step towards global harmonization
  - Other factors that influenced details of the final RECAT I optimization of categories
    - EU traffic has relative higher proportion of Heavies
    - US traffic has relative higher proportion of Mediums and Lights, and 757
    - Weight boundary differences between ICAO and FAA (7110.65)
  - So, the categories are not optimized for US traffic, but US implementation has been more successful than first anticipated

RECAT I – N7110.659A to N7110.659B

Old – RECAT I

Wake Turbulence Separation Table for "On Approach"							
		Follower					
		A	B	C	D	E	F
Leader	A		5NM	6NM	7NM		8NM
	B		3NM	4NM	5NM		7NM
	C				3.5 NM		6NM
	D						5NM
	E						4NM
	F						

New – RECAT “1.5” (As of April 2015)

Wake Turbulence Separation Table for "On Approach"							
		Follower					
		A	B	C	D	E	F
Leader	A		5NM	6NM	7NM		8NM
	B		3NM	4NM	5NM		7NM
	C				3.5 NM		6NM
	D						4 NM
	E						
	F						

On Approach
F behind E was 4 miles now MRS
F behind D was 5 miles now 4 miles

RECAT I – N7110.659A to N7110.659B

- Additional Changes:
  - Cat F crossing 500 ft below Cat D
  - Any category can depart from one runway after a Cat D departs from a closely spaced parallel runway

High Level Summary of RECAT I Experience

IOC	Facility	Months of Operation
Nov-12	MEM	30
Sep-13	SDF	20
Mar-14	CVG	14
Jun-14	ATL	11
Dec-14	IAH	4
Mar-15	N90	2
Mar-15	CLT	1
	Total	82

At the time of this brief, over 58,000 TRACON hours of RECAT I operation in the NAS

RECAT and Automated Terminal Proximity Alert (ATPA)

- **Available on CARTS and STARS (national release)**
- **Some Sites Implemented ATPA Prior to RECAT**
  - SDF
  - CLT
- **Some Sites Implemented RECAT without ATPA**
  - MEM
  - ATL
- **Some Sites Implemented RECAT and ATPA Simultaneously**
  - CVG
  - I90
  - N90
- **All Three Options are Acceptable**
- **Preference is to have site gain ATPA operational experience 3-6 months prior to RECAT IOC**
- **ATPA Phase II planning discussions underway**

Summary of MEM To Date

- **30 months into implementation (key site)**
- **We learned a lot of lessons with MEM**
  - Training needs to be done in a different manner
  - New tools with RECAT makes controllers jobs easier
  - Departure benefits will show up quicker
  - Arrival benefits will often have several “walls” that need to be knocked down before similar benefits are recognized.
  - A six category system does not need a separate tool to be successful, but improvements to current tools are needed to reduce what would be an increased workload for controllers.
  - These equipment improvements and training changes are a main part of controller “buy-in” when implementing RECAT
  - The overall implementation process takes 6 months to get the most benefit/buyin up front.

Summary of ATL To Date

- **11 months into implementation at the Number 2 (or 1 depending on the month) busiest airport in the world.**
  - RECAT can allow airlines to have a more consistent and reduced taxi time on arrivals and departures.
  - This allows for a more consistent scheduling of gates (and a tremendous cost savings in taxi time alone).
  - Learned we didn't have to implement RECAT at all of the airports in an approach control.
  - Delta estimates between $14 Million and $38 million in savings the first full year (Delta is 60% of the airports operations).
  - RECAT can be successful at high density air carrier airports and controller acceptance of the change is very high.

Summary of N90 (NY TRACON) To Date

- **2 months into implementation**
  - A major complicated metroplex
  - Implementation involves the entire TRACON - six satellite airports IOC simultaneously (not all airports went RECAT)
  - Controller acceptance of RECAT is high and this will improve with time.
  - We do not have a clear picture yet on the benefits for New York.
    - Very complicated airspace with several major airports in close proximity
    - JFK is in the middle of extensive construction with both runway and taxiway closures daily
    - EWR and LGA are working out changes in taxi routes to maximize benefits
    - Throughput has increased overall at the major airports and we expect that to increase.

ORD and SFO Status

- **Chicago expects to implement RECAT I (1.5) at the end of June, 2015**
  - Currently Operating With ATPA
  - Including sites: C90, ORD, MDW (6 others will not)
- **SFO expects to be the first site to implement RECAT II during FY15 Q4**
  - Currently Operating With ATPA
  - Including sites: NCT, SFO, OAK, SJC with additional satellite airports to be identified
  - Note some 60+ airports operate under NCT
  - The same issues implementing Phase I plus some new ones*
  - Implementation strategies learned during Phase I implementations will be used for Phase II.

Summary

- RECAT Phase I is successful on its own with very little change for the workforce.
- Successful RECAT implementation strategies are critical for the acceptance of the procedure.
- RECAT Phase I is successful at both passenger and cargo based airports.
- RECAT Phase I is continuing to improve based on data gathered from current RECAT sites and from other sites with different wake turbulence mitigation tools
- RECAT Phase II implementations will be heavily influenced by lessons learned during Phase I implementations