

CAST Update to ECAST



- CAST Status
- TCAS Action Plan
- JIMDAT Status
- Data Mining
- Runway Safety Initiative
- SMS (E-CAST presentation)
- Composites
- TAWS Implementation

Frank Stadmeyer, FAA
Office of Aviation Safety
Analytical Services

EASA, Cologne, 12 March 2009

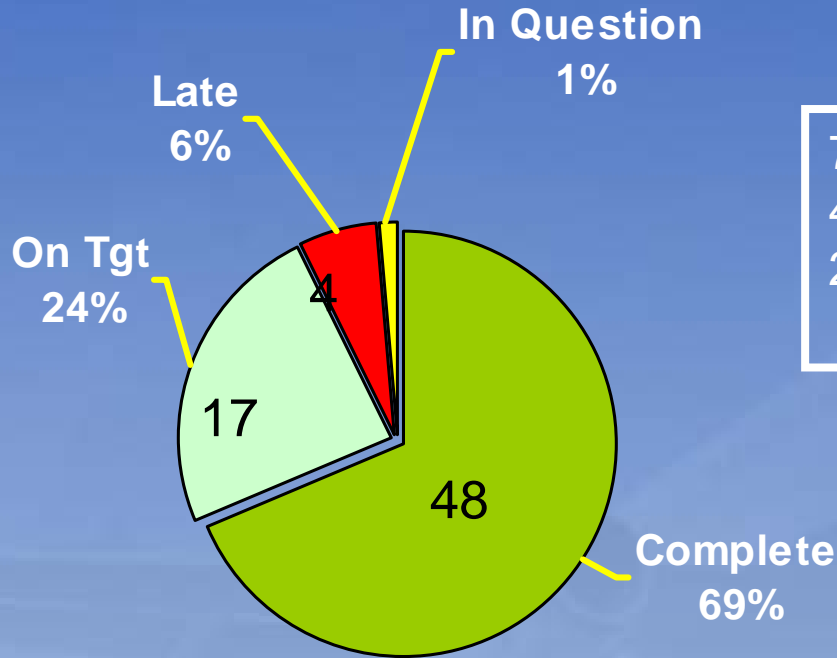
COMMERCIAL AVIATION SAFETY TEAM (CAST)



2020 Safety Plan Status
February 5, 2009



CAST Safety Plan - February 5, 2009



70 Safety Enhancements
48 Complete
22 Underway

- Complete
- On Tgt
- Late
- In Question

CHANGES from last meeting SE-47 CLOSED.

2020 Plan Risk Reduction
Estimate

74 %



2020 CAST SAFETY PLAN – WORKING SEs

(Total Plan – 70 SE; 48 Complete; 22 Underway)

39 ANM	53 ARA	120 ATA	101R1 AIA	121 ATA	125R1 ATA	
127R2 AIR	131R1 ATA	133R1 AIA	134R2 AIA	136 ATA	159R1 ATO	165R3 AFS
169R1 AFS	170R2 AIA	172R1 AFS	175R1 ATA	179R1 AFS-1	180 ATS-1	181R1 AAS
182R1 ATO-1	183R1 AFS-1	184 MVA	185 RNAV			

ON TRACK
COMPLETED
LATE

LATE OP
IN QUESTION

Action Needed
SE # LOOSEC





Directed Study: Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory (RA) Analysis

Presented to CAST

Mike Borer, jetBlue
Vince Zaccardi, jetBlue
Pat Massimini, MITRE

5 February 2009

Study Objectives

- **Leverage quantitative data sets to assess TCAS RA landscape throughout the NAS**
- **Utilize NAS-wide results and expert input to guide focused investigations at key airports**
 - **Categorize RAs by degree of risk**
 - **Group by operational situation: closely spaced parallel approach, IFR / VFR separation, ...**
 - **Identify common threads / contributing factors**
- **Determine compliance rates, and factors that contribute to observed rates**
- **Measure TCAS RA event rates experienced by international carriers while operating at US airports**
 - **Determine whether those rates exceed the rates experienced by domestic carriers inside US airspace**
 - **Determine whether those rates exceed the rates that would otherwise occur outside US airspace**

Data Sources and Analysis

NOP (National Offload Program radar surveillance data)

Run simulations that will encompass all carriers and traffic to better estimate RA rates and degree of risk. Perform domestic / foreign comparisons. (Provides intruder information.)

FOQA

Assess NAS wide TCAS RA landscape. Investigate compliance with advisories. (Lacks intruder information.)



TOPA (TCAS Operational Performance Assessment)

Debug, tune, and assess accuracy of simulation software. Mode-S downlink provides information similar to FOQA, and is enhanced with surveillance radar data.

Text Reports (ASAP, ASRS, OE)

Help get the story behind the numbers at selected airports.

International Data (AEA, AAPA text reports and event counts) Facilitate comparisons between domestic and foreign RA rates.

Summary and Next Steps

- **Continue NAS-wide look**
- **Continue analysis of target areas**
- **Drill down at selected airports**
- **Debug and tune TCAS simulation software using TOPA data**
- **Run TCAS simulation software with NOP data for all selected airports**
 - **Use intruder information to assess risk**
 - **Perform domestic / international comparisons**
- **Complete ASAP report review**



**CAST Meeting of 5 Feb 2009
ALPA Headquarters, Herndon, VA**

SMS Guidance by ECAST

Presented by G. Guyot, Airbus

gguyot.sfo@aeroconseil.com



Commercial Aviation Safety Team (CAST)

Joint Implementation Data Analysis Team (JIMDAT)

JIMDAT Update

Commercial Aviation Safety Team

Herndon, VA

February 5, 2009

Jay Pardee, FAA
Paul Russell, Boeing


JIMDAT Activity

- ◆ CAST Plan Status Update
- ◆ International Update
- ◆ Miscellaneous (birdstrike database)
- ◆ ATA Safety Council CAST Class
- ◆ TAWS Project
- ◆ Metrics
- ◆ Collier Nomination Support

Miscellaneous – Birdstrike Database

- ◆ Request for manufacturer support through AIA subcommittee to update engine birdstrike database (currently goes through 2000) to validate size and effect assumptions and calculations
- ◆ Propose as a CAST activity – bring results back to CAST, determine if any CAST action Req'd.

ATA Safety Council CAST Class

- ◆ Held January 8, 2009; 14 airline Directors of Safety
 - ◆ 3-1/2 hr training session covering CAST and ASIAs history and current products
 - ◆ DOS's will brief their carriers on material covered; have requested condensed briefing for a future session involving senior management
 - ◆ Feedback that shared data efforts and quality of ASIAs analytical products were impressive
- 



Commercial Aviation Safety Team (CAST)

International Update

Commercial Aviation Safety Team

Herndon, VA

February 5, 2009

Glenn W. Michael

Far East – North, South, and Southeast Asia

- China Safety Enhancement Update
January 19 – 21, 2009; Beijing, China

Working on 8 SEs in FY 09
Goal is 5, completed 2

-
- South Asia COSCAP Steering Committee
Meeting
Feb 17 – 19, 2009

Far East (Cont)

- North Asia COSCAP Steering Committee Meeting; April 2009
- Combined Asian Safety Team and Maintenance Team Meeting; June, 2009
- Southeast Asia COSCAP Steering Committee Meeting; September, 2009

European Coordination

- ECAST Meetings
- ECCAIRS Meetings
- CAST – ICAO CICTT Meetings
- SISG Meetings

Latin America

- RASG-PA; Regional Aviation Safety Group - Pan American
- Steering Committee Meeting; March, 2009
- Safety Group Meeting; October, 2009
- CAST will continue to participate in this effort

Gulf States

- Gulf States Steering Committee Meeting;
No firm date
- CAST Wrong Runway Briefings are
Planned in 2009; No firm dates
- Members of the Gulf States COSCAP are:
 - UAE, Bahrain and Kuwait
 - They have not yet formed a COSCAP team nor
have they held a GASR workshop

Africa

FUTURE

- Planning follow-up to the Banjul Accord Regional Safety Team Meeting that will be held February 25–26, 2009 in Nigeria
- Boeing Rep will attend

FSF Runway Safety Status

- Runway Excursions; CAST Participation
- Next Meeting; February 24-25, 2009
Brussels, Belgium
- Three groups to present final reports
- Final product planned in 2009

Commercial Aviation Safety Team (CAST)

Terrain Awareness and Warning System (TAWS) Study

February 5th, 2009

Executive Steering Group:
Jay Pardee
Paul Russell

Working Group Chairs:
Steve Erickson
Vivek Sood

Analytical Task

- Conduct an in-depth analysis of selected airports, (including those identified in VSIS EGPWS study - Reno, San Diego, San Francisco, Oakland, Las Vegas, Albuquerque, Burbank, and Boise) to develop mitigation strategies for—
 - ▣ Flight crewmember desensitization to TAWS warnings caused by the occurrence of unwanted warnings when the aircraft is not in imminent danger.
 - ▣ TAWS warnings triggered by the interaction of airspace design (for example, minimum vectoring altitudes) and aircraft flight path trajectories.
 - ▣ Potential incompatibilities between aircraft and air traffic control warning systems.
 - ▣ The role of Traffic Collision Avoidance System (TCAS) alerts issued following crew reaction to a TAWS warning.

Next Steps

- Request CAST approval for JIMDAT to develop:
 - SE-184
 - Evaluate MVA airspace designs in relation to terrain and traffic flows in terrain airports
 - SE-185
 - RNAV or other procedures to reduce unnecessary terrain alerts and to provide better separation from terrain
 - Develop Supplemental Implementation Plan for SE-120
 - Substantiate rationale for installing enhanced TAWS software (218 or equivalent) and GPS (also suitable for DOS)
 - Develop business model for GPS
 - Provides rationale for DOS use as well



**Overview of
Accident Risk Metrics Applied to the
ASIAS FOQA Archive**

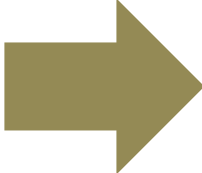
Presented to CAST

**Doug Schaefer, Austin Digital
Pat Massimini, MITRE**

5 February 2009

Metric Development

2.97 million flights from 5 airlines



**Stage 1:
Analytical Data
Quality Review**

Filter results to eliminate known problem events or parameters

Today's results



**Stage 2:
Operational Data
Quality Review**

Iterate on data quality profiles

Iterate on event profiles

Will complete over next 2 months

Current State-of-the-Art in Data Mining Methods

Presentation to CAST



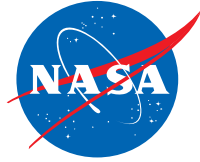
Amy Pritchett

NASA Aviation Safety Program Director

With Assistance from NASA Data-mining Team

Feb 5, 2009

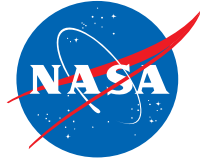
Domains with Vast Data Mining Research



- Science
 - Earth Science / Climate
 - Space
- Medicine
- Business
 - Credit Card Fraud
 - Market Trends
 - Intrusion Detection
 - Directed Marketing
- Engineering
 - Aviation
 - Space
 - All Others!
- Web Analysis
 - Google/Yahoo! Searches
 - Blogosphere

Similarities abound across these domains!

Summary: Data Mining Methods



- **Monitoring** → Extensions to Monitoring
 - Can Be Multi-dimensional
 - Can Be Based on Pre-defined Definitions of 'Nominal' – or Can Automatically Identify the 'Off-nominal'
 - Spans a Range of Phenomenon (FDR, Cockpit Switches, Sky's the Limit...)
- **Trending**
- **Anomaly Detection**
- **Procedural Compliance**
- **Text Mining** → Extensions to Text Mining
 - Can Be Based on Pre-defined Categories – or Automatically Identify 'Features'
 - Can Apply Natural Language Techniques
- **Prediction** → Prediction
 - Can Identify Degradation Before Failure
- **Information Protection** → Extensions to Information Protection
 - Must be Done Very Carefully
 - Extended Methods May Facilitate Analysis

Runway Safety Initiative

FLIGHT
SAFETY



F O U N D A T I O N

Jim Burin

Director of Technical Programs

Operational Safety of Composite Aircraft Structure



Federal Aviation
Administration

FAA/Industry Composite Safety and Certification Initiatives

- Challenges for composite use
- Background

Progress in Damage Tolerance and Maintenance Initiatives

- FAA/EASA/Airbus/Boeing WG
- Workshops, guidance & training
- Sample results

Future needs & strategies

- Support from industry
- FAA initiatives

Larry Ilcewicz

CS&TA

Federal Aviation
Administration

Feb. 5, 2009

Thank you



