NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
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Addendum 1 to Group Chairman's Factual Report

OPERATIONAL FACTORS / HUMAN PERFORMANCE

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Addendum to the Operational Factors / Human Performance Group Chairman's Factual Report dated July 31, 2011.

1.0 Flight Operations Quality Assurance Reports

During the period from 2009-2010 Southwest Airlines Flight Operations was in the process of establishing a Flight Standards and Quality Assurance department. The establishment of this department took place during the company's transition to automation and RNP and while the Automation and RNP program was in the later stages of step 3 training. As a first action for the newly created department, the VP flight operations requested that a study of the automation and RNP training program be conducted.

A report was produced evaluating the Step 3 automation training, and later another report was produced regarding the Step 4 automation training programs. The Operations and Human Performance Group conducted interviews with various company personnel and FAA inspectors regarding these reports.

Interviews with company personnel indicated that the reports included language indicating that the automation training did not build the pilot proficiency necessary to operate within the intent of the Flight Operations automation policy.[1]

According to an interview with the senior manager for flight standards and quality assurance, the department was in its infancy so the QA reports were generated by an ad hoc group created specifically for the QA study of the Step 3 and Step 4 training programs. The senior manager stated that the studies included a test group of 40 line pilots selected through a process of systematic random sampling to achieve a 95 percent confidence level in the resultant statistical evaluations.

The pilots in the studies completed the training and then were evaluated via observation on their application of the training during two different simulator LOFT[2] scenarios between two different city pairs. A delay of 7 days between training and testing in the LOFT scenarios was used to

[1] Refer to Attachment 13 Interview Summaries Addendum [Owsley p5, Magill p18].
[2] LOFT – Line Oriented Flight Training.

represent the delay some line pilots would have between training and implementation of the procedures during line operations. Observations of pilot performance in comparison to trained objectives were described in the QA reports.

In addition to the QA reports, the chief pilot stated that other methods of checks and balances were used to monitor the effectiveness of the automation and RNP training and its implementation in line operations. These methods included ASAP[3] and FDAP[4] analysis as well as subject matter experts (SME's) providing weekly updates of the automation and RNP program. Interviews indicated that although the QA reports projected a high rate of failure for pilots in the automation training program, the ASAP, FDAP, and monitoring by SME's did not support that prediction.[5]

Separate from the Flight Operations Department, the company's Safety and Security department was monitoring the automation and RNP program using ASAP and FDAP analysis. The main focus was to identify any trends indicating problems with the implementation of the automation program. The senior director of safety risk management indicated in an interview that with the introduction of automation, they saw increasing trends that immediately reversed back toward pre-automation levels. He stated that the trends were decreasing each month.[6]

Interviews indicated that after the incident in April 2011, the company had initiated a LOSA program and a working group to study the use of speedbrakes and thrust reversers on landing.[7] The analysis of data collected in the LOSA observations had not yet been completed as of this writing.

2.0 Guidance to Flight Crews on Speedbrake Use

The senior director of safety risk management indicated that, in addition to the information which was included in flight crew manuals, guidance was provided to flight crews regarding the use of speedbrakes on landing. The guidance was provided in the form of a presentation which was displayed on video monitors in the flight crew rooms at each crew base in February of 2011[8].

Interviews indicated the company had also published guidance in 2008 on the use of thrust reversers and the significance of speedbrake use on landing to increase crew awareness of these issues.

[3] ASAP – Aviation Safety Action Program.
[4] FDAP – Flight Data Analysis Program.
[5] Refer to Attachment 13 Interview Summaries Addendum [Magill p21].
[6] Refer to Attachment 13 Interview Summaries Addendum [Logan p15].
[7] Refer to Attachment 13 Interview Summaries Addendum [Magill p18].
[8] Refer to Attachment 13 Interview Summaries Addendum [Magill pp18 and 19].

3.0 FAA Oversight

Interviews with the FAA principal operations inspector (POI) and partial program manager (PPM) charged with oversight of the company indicated that they were not aware of the QA reports for the step 3 and 4 automation program produced by the Southwest Airlines Quality Assurance department and that there was no regulatory requirement for the company to share those reports with them.[9]

Oversight of Southwest Airlines Flight Operations Department was accomplished through observations of flight crew training and checking events, ground inspections, and enroute inspections conducted by the PPM's and other FAA inspectors operating under the guidelines of the Air Transportation Oversight System (ATOS).

The POI was included in briefings associated with annual Department of Defense (DOD) audits of Southwest Airlines and received a written report following the administration of each DOD audit.

The POI was included in regular briefings by the company regarding ASAP and FDAP data analysis and the identification of trends that required additional emphasis in training or procedures.

4.0 Request for Amendment of FSB report

Flight crew training, checking, and currency requirements applicable to flight crews operating different model 737 airplanes were directed by the Flight Standardization Board Report (FSB)[10]. The FSB report contained tables which specified the method of compliance and the level of training, checking, and currency applicable to fleet differences.

In February of 2009, Southwest Airlines requested an amendment to the Master Differences Requirement (MDR) table included in the FSB report to lower the training/checking/currency requirements when moving from a base airplane equipped with EFIS to a variant equipped with PFD/ND.[11]

A test was conducted by the FAA Aircraft Engineering Group (AEG) which the PPM's for Southwest Airlines participated in. The request was approved and the FSB MDR table was revised.[12]

[9] Refer to Attachment 13 Interview Summaries Addendum [Griewahn p22, Sloan p28].
[10] *Boeing B737-100, -200, -300, -400, -500, -600, -700, -800, -900, -900ER*, revision 12 of Flight Standardization Board Report (Washington, DC: U.S. Department of Transportation, Federal Aviation Administration, December 11, 2009).
[11] Refer to Attachment 14 – FAA Response Letter 11.522.
[12] Refer to Attachment 14 – FAA Response Letter 11.522.

5.0 Revised List of Attachments

Attachment 1: Interview Summaries
Attachment 2: Flight Release
Attachment 3: OPC Landing Output
Attachment 4: Landing Distance Increase
Attachment 5: RNAV Approach Reference Card
Attachment 6: ASRS Database Search
Attachment 7: Approach Chart
Attachment 8: RNAV Approach Callouts
Attachment 9: Step 4 Simulator Profile
Attachment 10: Flight Crew Statements
Attachment 12: OPC Landing Performance Module
Attachment 13: Interview Summaries Addendum
Attachment 14: FAA Response Letter
Attachment 15: Certification of Party Representatives
Attachment 16: FOM Autobrakes Limitations