U.S. House of Representatives
Committee on Transportation and Infrastructure
Washington, DC 20515

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June 4, 2007

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SUMMARY OF SUBJECT MATTER

TO: Members of the Subcommittee on Aviation

FROM: Subcommittee on Aviation Staff

SUBJECT: The National Transportation Safety Board's Most Wanted Aviation Safety Improvements

PURPOSE OF HEARING

The Subcommittee will meet on Wednesday, June 6 at 10:00 a.m. in Room 2167 Rayburn House Office Building to receive testimony regarding the National Transportation Safety Board's Most Wanted Aviation Safety Improvements.

BACKGROUND

Since 1990, the National Transportation Safety Board (NTSB) has issued a list of its Most Wanted Safety Improvements to focus attention on safety issues the NTSB believes will have the greatest impact on transportation safety. For 2007, the NTSB has identified the following issues as its Most Wanted for aviation: aircraft icing; fuel tank flammability; runway incursions; improved audio and data recorders; fatigue; and part 135[1] crew resource management.

I. NTSB Most Wanted Aviation Improvements

A. Aircraft Icing

The NTSB's recommendation on aircraft icing stems from the 1994 crash of a commuter airliner in Roselawn, Indiana, in which there were 68 fatalities. According to the NTSB, the Roselawn crash was caused by in-flight icing conditions and subsequent loss of control of the

[1] Part 135 of the FAA's regulations govern the operating requirements for air carriers providing scheduled service in aircraft with less than 10 seats, as well as on-demand or air taxi service. In addition to rules in Part 91, air carriers have to comply with Part 135 requirements to meet their responsibility to provide air transportation at the highest level of safety practicable.

aircraft. The Roselawn crash prompted the NTSB to examine the issue of airframe structural icing. The NTSB concluded that Federal Aviation Administration (FAA) icing certification process for aircraft has been inadequate because the process has not required manufacturers to demonstrate an airplane's flight handling capabilities under a realistic range of adverse ice conditions. In addition, the NTSB determined, after the 1997 crash of Comair flight 3272 in Monroe, Michigan, which was also caused by in-flight icing, that the FAA should perform additional research into the effects of in-flight icing, and apply revised icing requirements to currently certificated aircraft.

The NTSB recommended that the FAA revise the: (1) icing criteria and icing testing requirements necessary for an airplane design to be approved for in-flight icing conditions within the United States; and (2) operational means and limitations to determine icing conditions in which it is permissible to operate an approved aircraft. The NTSB states that FAA referred this work to an Aviation Rulemaking Advisory Committee (ARAC)[2] 10 years ago. The ARAC recommended to the FAA changes to the design requirements for new airplanes to evaluate performance and handling characteristics in icing conditions. The NTSB notes that the FAA currently has rulemaking activities geared towards improving icing design standards. However, the NTSB is concerned that because these rulemakings are in the preliminary stages, implementation of them may be years away, and will only apply to newly certificated aircraft. Accordingly, the NTSB still has icing on its Most Wanted list because the FAA has not yet adopted a systematic and proactive approach to the certification and operational issues of airplane icing.

NTSB Recommendation: Complete research on aircraft structural icing and continue efforts to revise icing certification criteria, testing requirements, and restrictions on operations in icing conditions. Evaluate all aircraft certified for flight in icing conditions using the new criteria and standards.

FAA Response:

According to the FAA, in December 2005, the ARAC completed its final report on supercooled large droplet[3] (SLD) icing conditions and ice crystal/mixed phase conditions. The report included recommendations to have the FAA define a SLD environment and to address ice crystal/mixed phase conditions as well as aircraft performance and handling qualities, engine installation effects, ice protection system requirements, as well as engine requirements. ARAC approved the report and sent it to the FAA in March 2006. The FAA is currently performing an economic analysis of the ARAC's proposal.

In addition, the FAA states that it has: investigated all airplanes used in regularly scheduled passenger service that are equipped with pneumatic deicing boots[4] and unpowered ailerons[5] to determine flight characteristics in icing conditions; issued over 40 airworthiness directives for airplanes equipped with pneumatic deicing boots and unpowered ailerons; and issued a

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[2] The Aviation Rulemaking Advisory Committee was established in 1989 to allow the FAA to consult with interested parties on rulemakings.

[3] Supercooled large droplets are typically found in freezing drizzle and rain where water droplets stay in liquid form even though the water temperature of the droplets is below freezing. In general, droplets greater than about one fourth the thickness of human hair are considered SLDs.

[4] Pneumatic deicing boots are elastic membranes on the leading edge of airfoils, which can be inflated using pressurized air. When they are inflated, ice which has accumulated on the boot is fractured and carried away by the airflow.

[5] Unpowered ailerons are flight control surfaces used for roll control that are moved by the pilot without powered assistance from hydraulic or electrical actuators.

memorandum to all FAA Aircraft Certification Offices to require an evaluation of newly designed or derivative aircraft with unpowered ailerons and pneumatic deicing boots. The FAA states that it initiated rulemaking projects to amend the part 25[6] rules to require a reliable means for flight crews to know when they are in icing conditions and to improve airplane performance and handling qualities in icing conditions; as well as a rulemaking project to amend the part 121[7] operating rules to set forth more restrictive requirements for when flight crews must activate the ice protection systems and/or exit icing conditions.

NTSB Classification: The NTSB classifies the FAA's response as unacceptable because more than 10 years after the Safety Board issued these recommendations, the FAA has yet to issue any of the operational, design, or testing requirement revisions recommended.

B. Fuel Tank Flammability

The elimination of flammable, fuel/air vapors in fuel tanks on transport category aircraft has been on the NTSB's Most Wanted list since the 1996 crash of TWA 800, in which there were 230 fatalities. The NTSB determined the probable cause of the TWA 800 crash as a fuel explosion in the center-wing fuel tank, resulting from the ignition of the flammable fuel/air mixture in the tank. According to the NTSB, operating transport-category airplanes with flammable fuel/air vapors in fuel tanks presents a risk of explosion that is avoidable. The NTSB states that center wing fuel tank explosions have resulted in 346 fatalities in four accidents since 1989. In addition, there also have been several non-fatal fuel tank explosions, the latest of which occurred in India in May 2006. After the TWA 800 accident in 1996, the Board issued both short and long term recommendations to reduce the potential for flammable fuel/air mixtures in all transport category aircraft fuel tanks. The FAA has committed to action on the long term recommendation by fall 2007.

NTSB Recommendation: Complete rulemaking efforts to preclude the operation of transport-category airplanes with flammable fuel/air mixtures in the fuel tank on all transport category aircraft.

FAA Response:

The FAA states that since the TWA 800 crash, it has issued over 100 airworthiness directives and a special federal regulation to eliminate ignition sources. In addition, in May 2002, the FAA developed a prototype on-board inerting system that replaces oxygen in the fuel tank with inert gas, which prevents the potential ignition of flammable vapors. This system can significantly reduce the flammability exposure of high-risk fuel tanks. The FAA believes that inerting-based flammability reduction means, together with additional ignition prevention measures required, provide a balanced approach to fuel tank safety that will greatly reduce the risk of fuel tank explosions.

On November 23, 2005, FAA published a notice of proposed rulemaking (NPRM) that would require aircraft operators to reduce the flammability levels of fuel tank vapors to remove the likelihood of a potential explosion from an ignition source. The NPRM does not direct the

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[6] Part 25 of the FAA's regulations govern the design and airworthiness standards for transport category aircraft. These include all aircraft operated by major airlines, as well as most business jet aircraft.

[7] Part 121 of the FAA's regulations govern the operating requirements for air carriers —airlines operating scheduled service in aircraft with 10 seats or more. In addition to rules in Part 91, air carriers have to comply with these requirements to meet their responsibility to provide air transportation at the highest level of safety practicable.

adoption of a specific inerting technology; but rather, sets performance goals for acceptable levels of flammability exposure in tanks most prone to explosion or requires the installation of an ignition mitigation means in the tank. The FAA's proposal applies to new large airplane designs, and also requires the retrofitting of several airplane types including the Boeing 737, 747, 757, 767, and 777 as well as Airbus A320 and A330 models flown by U.S. operators. The comment period closed on May 8, 2006, and the FAA plans to issue the final rule by the end of 2007.

NTSB Classification: The NTSB classifies FAA's response, as set forth above, as acceptable (progressing slowly).

C. Runway Incursions

Since 1990, the prevention of runway incursions has been on the NTSB's Most Wanted list. A runway incursion is any instance on a runway involving an aircraft, vehicle, person, or object that creates a collision hazard or results in loss of required separation with an aircraft preparing to take off or land.

The deadliest runway incursion occurred in March 1977, when two passenger jumbo jets collided on a runway at Tenerife, Canary Islands, causing the deaths of 583 passengers and crew. The accident holds the record for the greatest loss of life for any single airplane accident. In the U.S., the deadliest runway incursion occurred in 1991 when a USAir 737 and a Skywest Metroliner commuter airplane collided at Los Angeles International Airport, resulting in 34 fatalities.

According to the Department of Transportation Inspector General (DOT IG), the total number of runway incursions in the United States decreased from a high of 407 in FY 2001 to 330 in 2006, and the most serious incidents have decreased from a high of 69 in FY 1991 to 31 in 2006. However, the DOT IG notes that since 2003, the number of runway incursions has leveled off, but serious incursions continue to occur.[8] Recent serious runway incursions have occurred at Chicago O'Hare and Denver International Airport. According to the NTSB, in July 2006, a United 737 passenger jet and an Atlas Air 747 cargo airplane avoided collision by about 35 feet at O'Hare airport. In addition, the NTSB states that on January 5, 2007, a Key Lime Air and a Frontier Flight avoided collision by about 50 feet at Denver International Airport.

The NTSB states that to further prevent runway incursions, information needs to be provided directly to the flight crews as expeditiously as possible. According to the NTSB, in an effort to improve runway safety, the FAA has taken action to inform controllers of potential runway incursions, improve airport markings, and install the Airport Movement Area Safety System (AMASS) and Airport Surface Detection Equipment Model X (ASDE-X). AMASS tracks ground movements and provides an alert to controllers if evasive action is required. The ASDE-X radar integrates data from a variety of sources, including radars and aircraft transponders, to give controllers a more reliable view of airport operations.

However, the NTSB states that these systems are not sufficient as designed to prevent all runway incursions because the information must be routed through air traffic control before it is relayed to the pilots on the ground. For example, the NTSB notes that after an AMASS alert, the controller must determine the nature of the problem, determine the location, identify the aircraft

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[8] *See* DOT IG March 6, 2007 testimony before the Committee on Appropriations, Subcommittee on Transportation, Housing and Urban Development, *Top Management Challenges Facing the Department of Transportation*, at p. 8-9.

involved, and determine what action to take. Only after all of these determinations have been made can appropriate warnings or instructions be issued. The flight crew must then respond to the situation and take action.

NTSB Recommendation: Implement a safety system for ground movement that will ensure the safe movement of airplanes on the ground and provide direct warning capability to the flight crews.

FAA Response:

According to the FAA, in fiscal year 2005, a study was conducted by MITRE/CAASD[9] to determine if a direct warning capability to flight crews could be developed by implementing a set of technologies that would create a layered safety net for the prevention of runway incursions. The MITRE/CAASD ground-based direct warning system simulation report was completed in November 2006, and the system architecture document for a ground-based Direct Pilot Warning System was completed in January 2007.

The FAA is also testing new technologies that will alert pilots when it is unsafe to enter, land or take off on a runway. One of these technologies is called the Runway Status Lights System (RWSL). RWSL uses inputs from surface and terminal surveillance systems and illuminates red in-pavement lights to signal when it is unsafe to enter, cross or take-off on a runway. Runway entrance lights (REL) are illuminated if the runway is unsafe for entry or crossing, and takeoff hold lights (THL) are illuminated if the runway is unsafe for departure. The initial operational evaluation of the runway entrance lights using ASDE-X surface surveillance was completed in June 2005 at Dallas/Ft. Worth International Airport. According to the FAA, the system showed promising results: the lights were compatible with the tempo and style of operations at a busy airport, there was no increase in air traffic controller workload, and the lights proved useful to pilots. The RWSL operational evaluation system will be extended to other runways at Dallas/Ft. Worth this year. The evaluation of Runway Status Lights with AMASS began December 2006 at San Diego Lindbergh Field. The RWSL is in the investment analysis phase of the FAA approval process for system acquisition.

Other new technologies being tested by the FAA include an experimental system called the Final Approach Runway Occupancy Signal (FAROS), which is being tested at the Long Beach/Daugherty Field Airport in California. FAROS is designed to prevent accidents on airport runways by activating a flashing light visible to landing pilots to warn them that the runway is occupied. An enhanced variant of the FAROS system (Active FAROS) is being developed for use at high-density airports.

NTSB Classification: The NTSB classifies FAA's response, as set forth above, as unacceptable because although the Board has been encouraged by some progress related to evaluating technologies, it has been 7 years since this recommendation was issued and it has been only in the past 2 years that the FAA has started evaluating technologies that are responsive to the recommendation.

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[9] MITRE is a non-profit organization and the Center for Advanced Aviation System Development (CAASD) was established in 1990 within MITRE. MITRE-CAASD is sponsored by the FAA as a Federally Funded Research and Development Center (FFRDC). An FFRDC meets certain special long-term research or development needs that cannot be met as effectively by existing in-house or contractor resources.

D. Audio, Data and Video Recorders

The NTSB has made eight separate recommendations regarding audio, data, and video recorders since adding this issue to its Most Wanted list in 1999. The NTSB states that enhancing audio, data, and video recorders on aircraft would help its investigators determine the factors related to an aircraft accident. According to the NTSB, automatic information recording devices, such as cockpit voice recorders (CVRs) and flight data recorders (FDRs), have proven to be excellent tools in gathering post-accident factual information, which is recorded immediately before and during the accident sequence, enabling investigators to quickly discover problems and make recommendations to correct them.

To enhance the quality of information recorded by CVRs, the NTSB recommended that, for airplanes required to carry both a CVR and FDR, FAA requires a retrofitted CVR that records a minimum of 2 hours of audio information and that uses an independent power source that provides 10 minutes of operation if normal power ceases.

In addition, the NTSB has analyzed multiple airplane crashes where the FDRs were either destroyed or contained inadequate data because the airplane's main power source shut down, inhibiting post-accident investigations. Accordingly, the NTSB has recommended that aircraft carry two combination CVR/FDR systems. Currently, most large airplanes in commercial service are required to have one CVR and one FDR on board. The NTSB states that if two combination systems are installed, one system should be as close to the cockpit as possible, and the other, as far away as possible. The NTSB recommends that both combination recorders meet the current FDR requirements to store 25 hours of flight data, and the proposed/recommended 2-hour duration for all cockpit audio and pilot-controller datalink messages.

The NTSB has also made several recommendations to increase the number of digital flight data recorder (DFDR) parameters for all Boeing 737 series airplanes, especially for the rudder system. As for cockpit video recorders, the NTSB believes that installation of such devices on smaller aircraft would provide investigators with critical flight information for airplanes that are not required to have FDRs or CVRs. Moreover, in large aircraft, the NTSB believes that video recorders would provide operational information not otherwise provided by FDRs and CVRs. Note that privacy concerns have been raised about the possible post-accident release of cockpit video data or images, especially when accidents occur outside of the U.S.

NTSB Recommendation: In addition to adopting a 2-hour CVR requirement, the NTSB recommends requiring the retrofit of existing CVRs with an independent power supply, and requiring that existing FDRs and CVRs be on separate generator busses, with the highest reliable power so that any single electrical failure does not disable both. Require the installation of video recording systems in small and large aircraft. Require the recording of additional needed FDR data for Boeing 737s.

FAA Response:

The FAA has proposed two separate rules that it believes would address many of the issues raised by the NTSB. The first proposal, which was issued on February 28, 2005, would make improvements to CVR and DFDR systems to: increase the recording time of certain CVRs; install a power supply that provides 10 minutes of back-up power to the CVR; increase the data recording rate for certain DFDR parameters; require that DFDRs and CVRs be in separate containers; require that both the CVR and DFDR be powered by separate, highly reliable electrical busses; and require that certain datalink communications received be recorded, if datalink communication equipment is installed. The FAA anticipates finalizing this proposal in July 2007.

In addition, on September 5, 2006, the FAA issued a supplemental notice of proposed rulemaking (SNPRM) to revise a previously published proposal to increase the number of DFDR parameters required for all Boeing 737 series airplanes, including the addition of sensor equipment to monitor the rudder system on 737s. Since that time, the FAA has mandated significant changes to the rudder system on these airplanes. Accordingly, the SNPRM seeks more current information to determine the need for flight recorder parameters that monitor the new 737 rudder systems. The comment period for the SNPRM closed December 4, 2006, and the FAA expects to finalize its original proposed rule, with updated information from the SNPRM, later this year.

With regard to cockpit imaging recorders, the FAA states that it has explored the NTSB recommendations in a government/industry forum of subject matter experts, RTCA Future Flight Data Collection Committee (FFDCC), which was tasked with identifying flight data needs ten to fifteen years in the future. The FAA states that the information presented by the FFDCC did not persuade it of the necessity of installing image recording systems in transport-category aircraft. The FFDCC did mention, in the report, recommendations to resolve issues of security, privacy and confidentiality with regard to any mandate of image recorders. Although not planning to pursue rulemaking to mandate installations of cockpit image systems, the FAA states that if the NTSB requires additional flight data information to investigate an accident or incident, the FAA would likely propose a performance-based requirement that stipulates that this flight data must be captured.

NTSB Classification: The NTSB classifies FAA's response, set forth above, as unacceptable because it has been more than 10 years and the FAA is still only at the NPRM stage. The FAA is responsive to the 2-hour CVR and separate generator busses for CVRs and FDRs, but only for new airplanes. There is no rulemaking underway for cockpit image systems and the NPRM for duel combination units states "the FAA is unable to justify the excessive cost that would be incurred in the installation of two complete systems." Although the FAA's recent proposal seeks changes to the parameters required to be recorded for Boeing 737 aircraft, the Board is concerned that the proposed changes will not allow investigators to differentiate crew actions from anomalies in the rudder control system.

E. Fatigue

The NTSB has included operator fatigue on its Most Wanted list since 1990. Since 1972, the NTSB has issued more than ten aviation fatigue recommendations. There are currently four open aviation recommendations concerning flight crew and maintenance technician fatigue.

For flight crews, the NTSB is particularly concerned about tail-end ferry flights. These are flights that are conducted by part 121 or part 135 carriers, such as repositioning flights, but are flown under part 91[10] rules. Flying under part 91 rules allows pilots to continue to accumulate flight hours even if they have exceeded their duty time limits under part 121 or part 135. The NTSB

[10] Part 91 of the FAA's rules govern the operating and flight rules for everyone operating in the National Airspace System.

would like the FAA to require that hours flown in company non-revenue flights be included in a crewmembers' total flight time accrued in revenue operations. In addition, the NTSB has recommended that FAA revise current flight and duty limitations to take into consideration the latest research findings in fatigue and sleep issues, as well as length of duty day, starting time, workload, and other factors.

For aviation maintenance personnel, the NTSB has recommended that the FAA study the issue and then establish duty time limitations consistent with current state of scientific knowledge for personnel who perform maintenance on air carrier aircraft.

More recently, on April 10, 2007, the NTSB issued two recommendations to the FAA to work with the controllers union to revise controller work-scheduling policies to provide for adequate rest periods, and to develop fatigue awareness and countermeasures training program for controllers and controller-schedulers. These recommendations are not currently on the NTSB Most Wanted list.

NTSB Recommendation: The FAA should set working hour limits for flight crews and aviation mechanics based on fatigue research, circadian rhythms, and sleep and rest requirements. The FAA should also ensure that all company flying conducted after revenue operations-such as training and check flights, ferry flights and repositioning flights-be included in the crewmember's total flight time accrued during revenue operations.

FAA Response:

In 1995, the FAA proposed to amend existing regulations to establish new duty period and flight time limitations, and rest requirements for flight crewmembers in parts 121 and 135. This rulemaking was based on recommendations from an ARAC. It included a 14-hour duty period, 10 hours of rest, increased flight time to 10 hours, and addressed other related issues. According to the FAA, the pilots felt 10 hours of flight time was too long and the operators felt 14 hours of duty time was too short. To date, the regulations have not been revised. However, in 2000, FAA issued an interpretation of the flight and rest rules for domestic operations, which clarified that a flight cannot be started if the pilot has not had a minimum of eight hours of rest in the 24 hours preceding the end of the flight.[11]

In 2004, the FAA established a joint FAA/Industry Aviation Rulemaking Committee (ARC) to develop recommendations for revising the commuter and on-demand flight time and rest requirement rules in 14 CFR part 135. The ARC recommended revised language for part 135 operators to permit three options to ensure that crewmembers are provided adequate opportunities for sleep including rules that: are similar to the current rules, but which are more restrictive in nature, recognize the latest fatigue science, and close current regulatory "loopholes;" permit the certificate holder to vary when a duty assignment may be made, but ensures that crewmembers are given an opportunity for sleep at the same time every day; and would allow a certificate holder to

[11] The FAA notes that it is also working with the International Civil Aviation Organization (ICAO) to develop a Fatigue Risk Management System (FRMS) to regulate flight and duty time. A FRMS would provide an alternative to existing flight and duty limitations, and would move towards a risk based approach to improve flight crew alertness. The FRMS would require the company to manage fatigue with input from all company personnel, including management, flight crewmembers, maintenance personnel, schedulers, and dispatchers.

develop and implement an "Alertness Management Program" in lieu of current requirements. The FAA is presently developing an NPRM that incorporates the ARC's recommendations.

As to personnel fatigue in aviation maintenance, the FAA issued a report in 1999 entitled *Study of Fatigue Factors Affecting Human Performance in Aviation Maintenance*, in April 2000 completed an expanded study and issued a report entitled *Evaluation of Aviation Maintenance Working Environments, Fatigue, and Maintenance Errors/Accidents* and in January 2001 issued a report entitled *Evaluation of Aviation Working Environments, Fatigue, and Human Performance.*

The FAA's initial findings suggest that fatigue is an issue in this work force. Data from "mini-logger monitors" that recorded data from the selected parameters of light, noise levels, and temperature; activity monitors that monitored physical activity, sleep, and sleep quality; and the answers to background questions that employees were asked clearly indicate that sleep durations are inadequate to prevent fatigue. For most aviation maintenance technician specialties, 30-40 percent of respondents reported sleep durations of less than 6 hours, and 25 percent of respondents reported feeling fatigued or exhausted. While these studies did identify that mechanics generally did not have adequate rest, there was no attempt to correlate lack of rest to incidents and accidents.

The FAA has developed a manual entitled "Operator's Manual for Human Factors in Aviation Maintenance" that includes information on fatigue and fatigue management. Starting in 2007, the FAA states that it redesigned its Human Factors in Aviation Maintenance training program for all airworthiness safety inspectors that provides information on how to recognize fatigue issues while performing inspections and safety oversight of maintenance facilities.

The FAA studies indicate education and training in fatigue management are the most appropriate and direct actions for the FAA to address the fatigue issues. The FAA consequently has developed fatigue information materials and conducts education and training activities on fatigue management for aircraft maintenance personnel through symposiums, workshops, conferences, etc.

Currently, FAA is undertaking a rulemaking initiative to revise 14 CFR part 121 and 135 maintenance training requirements. This new rule will require part 121 and 135 maintenance training programs to include human factors training to be approved by the FAA.

The FAA plans to respond to the controller fatigue issues within 90 days of the NTSB's April 10th, 2007, recommendations.

NTSB Classification: The NTSB classifies FAA's response, set forth above, as unacceptable because the FAA has neither taken the recommended action nor have they indicated any firm plans to take the recommended actions.

F. Crew Resource Management (CRM) Training for Part 135 Flights

Part 121 and scheduled part 135 operators are required to provide pilots with CRM training in which accidents are reviewed and skills and techniques for effective crew coordination are presented. CRM training enhances pilots' performance in the cockpit by helping crew identify mistakes in judgment or action and to compensate for them to prevent accidents. The NTSB states that it has investigated several fatal aviation accidents involving part 135 on-demand operators (air taxis) where the carrier either did not have a CRM program, or the CRM program was much less comprehensive than would be required for a part 121 carrier. The NTSB states that CRM training may have aided the crews involved in the accidents. According to the NTSB, the FAA has agreed in principal with this recommendation, but no progress has been made on the regulatory front.

NTSB Recommendation: Require that part 135 on-demand charter operators that conduct dual-pilot operations establish and implement an FAA-approved CRM training program for pilots in accordance with part 121.

FAA Response:

CRM training is currently required for part 121 operators as well as for fractional ownership operators. The FAA established an ARC in 2004 to revise and improve part 135 regulatory requirements, including requiring CRM training for part 135 operators of airplanes with two pilots. The ARC has provided its recommendations to the FAA, stating that the FAA should require all part 135 certificate holders (including both single pilot and dual pilot operations) to implement CRM training for crewmembers and flight followers/dispatchers.

The FAA is developing a proposed rule based on the ARC's recommendations. The FAA expects to publish the proposed rule in the summer of 2008. The FAA states that the proposed rule would codify current FAA guidance, respond to NTSB recommendations, as well as respond to the recommendations of the part 125/135 ARC that was established in April 2003.

NTSB Classification: The NTSB classifies FAA's response, set forth above, as unacceptable because an NRPM has yet to be issued and the Board is concerned that the CRM revisions will be part of a comprehensive revision to part 135 that will be slow moving.

WITNESSES

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