Accident Board Recommendations

NTSB Safety Recommendation A-79-32: "Issue an Operations Alert Bulletin to have FAA inspectors assure that crew training stresses differences in fuel-quantity measuring instruments and that crews flying with the new system are made aware of the possibility of misinterpretation of gage readings.

FAA Response Letter dated 07/23/79: We plan to issue an air carrier operations bulletin to emphasize to flightcrews the differences in fuel quantity measuring instruments and the possibility of misinterpretation of gage readings. We expect to issue the bulletin within the next 90 days.

NTSB Reply Letter dated 03/13/80: Your letter (July 23, 1979), indicated that the FAA planned to issue an air carrier operations bulletin to comply with the above recommendation. We note that the FAA has since issued Air Carrier Operations Bulletin No. 8-79-2, "Possible Misinterpretation of Fuel Gage Reading". (No. 8430.17 chg 11 dated November 3, 1979). This action satisfies the intent of a-79-32 which is now classified in a closed-acceptable action status.

NTSB Safety Recommendation A-79-33: "Emphasize to engineering personnel who approve aircraft engineering changes or issuance of Supplemental Type Certificates the need to consider cockpit configuration and instrumentation factors which can contribute to pilot confusion, such as the use of similar-appearing instruments with different scale factors."

FAA Response Letter dated 04/01/81: "The FAA's Western Region Aircraft Engineering Division has issued a letter dated 9/9/80, titled, Findings of Compliance Involving Crew Station Design. This letter has been distributed to all western region engineering personnel involved in crew station design approvals. The document reemphasizes the need to consider cockpit configuration and instrumentation factors when approving engineering changes or issuing supplemental type certificates. On the basis of this letter, we are issuing an Advisory Circular for national application in order to enhance public awareness, particularly to those having responsibility for design. The FAA considers action completed on A-79-33."

NTSB Reply Letter dated 05/18/81: "We are pleased that the FAA's Western Region Aircraft Engineering Division issued a letter dated 9/9/80, to emphasize to engineering personnel who evaluate crew station design the need to consider cockpit configuration and instrument factors that contribute to pilot confusion. We are also pleased to note that the FAA is issuing an AC to enhance the public awareness on this subject. A-79-33 is now classified in a closed--acceptable action status.

NTSB Recommendation A-79-34: "Audit supplemental type certificate SA 335 WE-D for completeness, especially in the area of system calibration after installation."

FAA Response Letter dated 04/01/81: "In response to this recommendation, the subject audit was completed on 5/29/80, by FAA Western Region personnel. As suggested in the recommendation, particular attention was paid to completeness, especially in the area of system calibration after installation. No un-safe condition was determined to exist on this or any other STC issued by United Airlines under designated authorization station 1-WE. The data deficiencies on STC 335 WE-D have been resolved and a satisfactory calibration report is available. The FAA is satisfied that the DC-8 fuel quantity indicating system modification for STC 335 WE-D is safe and in accordance with applicable regulations. Accordingly, the FAA considers action completed on this recommendation."

NTSB Reply Letter dated 04/18/81: "We note that an audit was completed on May 29, 1980, and that no unsafe condition was found on this or any other supplemental type certificate issue by United Air Lines under designated authorization station 1-WE. We also note that data deficiencies on STC 335 WE-D have been resolved. This recommendation is classified in a closed--acceptable action status."

NTSB Recommendation A-79-47: "Issue an operations bulletin to all air carrier operations inspectors directing them to urge their assigned operators to ensure that their flight crews are indoctrinated in principles of flight deck resource management, with particular emphasis on the merits of participative management for Captains and assertiveness training for other cockpit crewmembers.

FAA Response Letter dated 08/22/79: "We are preparing an air carrier operations bulletin instructing all principal operations inspectors to urge their assigned carriers to include resource management training in their flight crewmember training programs. We plan to distribute this bulletin by September 30. "

NTSB Reply Letter dated 03/21/80: "In your letter you indicated that the FAA was preparing an air carrier operations bulletin (8/22/79 ltr) to satisfy the recommendation. We note that the Air Carrier Operations Bulletin 8430.17, chg 11, dated 11/3/79, has since been issued. Paragraph 957 on page 945 deals with resource management and interpersonal communications training for air carrier flight crewmembers. This action fulfills the intent of recommendation A-79-47 which is now classified in a closed--acceptable action status."

NTSB Recommendation A-79-62: Issue an air carrier maintenance bulletin clarifying the content of 14 CFR, §25.811(d) regarding the conspicuity of passenger emergency exit signs when exits are open and the requirement for exit signs to be relocated in aircraft which have signs affixed on the exit closure.

FAA Response Letter dated 12/30/80: The FAA concurs in the intent of safety recommendation A-79-62 and, as an alternative action, has directed a letter dated 9/11/80 to all regional flight standards division chiefs. This letter advised each region that certain DC-8 and DC-9 series aircraft,

operated by various airlines, have floor level emergency exit identifying signs located on the doors rather than next to the exits. . . . the regional principal airworthiness inspectors assigned to DC-8/9 operators were required to verify that each floor level emergency exit marking is located next to each exit. Those operators with aircraft that do not comply must be advised of the regulatory requirements. It was also requested that all other aircraft be inspected to assure compliance with the requirements. A copy of the September 11, 1980, letter of regional flight standards division chiefs is enclosed for your information. We believe this alternate action satisfies the intent of safety recommendation A-79-62.

NTSB Reply Letter dated 04/16/81: We note that on September 11, 1980, the FAA issued a letter to all regional flight standards division chiefs clarifying the intent of the regulations regarding the conspicuity of passenger emergency exit signs. The status of this recommendation is classified closed--acceptable alternate action.

NTSB Recommendation A-79-63: "Expedite research with a view toward early rulemaking on a means to most effectively restrain infants and small children during inflight upsets and survivable crash landings."

Per Green Sheet A-83-1 dated 2/24/83: Recommendation A-79-63 has been placed in a Closed Superseded with A-83-1.

NTSB Recommendation A-79-64: "Expedite the release of operations review program Notice No. 13 containing the safety board's 1974 recommendation regarding a power source for public address systems independent of the main aircraft power supply in passenger carrying aircraft."

FAA Response Letter dated 12/30/80:"The FAA concurs in safety recommendation A-79-64 and the Board's 1974 recommendation, regarding a power source for public address systems independent of the main power supply in passenger--carrying aircraft, which is now contained in Operations Review Program Notice No. 11. It was moved from Notice No. 13 to Notice No. 11 to expedite its issuance. The Notice of Proposed Rulemaking for Notice No. 11 is currently in final drafting coordination and issuance is expected during December 1980.

NTSB Reply letter dated 04/06/81:"We are pleased to learn that the FAA has accepted this recommendation and advanced the Operations Review Program Notice No. 13 to Notice No. 11 which was issued in December 1980. The status of this recommendation is closed--acceptable action."

NTSB Recommendation A-79-65: "Include in the anticipated new rule a requirement for domestic and flag air carriers to maintain passenger lists with the provision that both ticketed and non-ticketed passengers' names be provided.

FAA Response Letter dated 12/30/80: "The FAA concurs in safety recommendation A-79-65 and the final rule of operations review Amendment No. 8 proposal 8-19, was published in the Federal Register on June 19, 1980. Title 14 of the Code of Federal Regulations (14 CFR), part 121, subsection 121.693(e) was changed, effective August 31, 1980, and requires the names of all passengers to be maintained by the air carrier or commercial operator. A copy of operations review program Amendment No. 8, final rule on proposal 8-19, is enclosed for your information."

NTSB Reply Letter dated 04/06/81: "We are pleased to see that a final rule fulfilling this recommendation was published in the Federal Register on June 19, 1980. The status of a-79-65 is classified as closed--acceptable action."

NTSB Recommendation A-79-66: "Issue an Air Carrier Operations Bulletin which will provide guidance and criteria to FAA inspectors in determining the scope, quality, and effectiveness of training programs with respect to communication and coordination among crewmembers."

FAA Response Letter dated 11/23/79: An air carrier operations bulletin has been prepared and is presently in final coordination. It should be printed and distributed by the end of this year.

NTSB Reply Letter dated 01/04/80: The safety board's is pleased that the FAA expedited the issuance of operations Bulletin No. 8-79-3 which emphasizes the benefits of special training in flight resource management. The bulletin fulfills the intent of the recommendation. The status of A-79-66 is now classified as closed--acceptable action."

NTSB Recommendation A-81-14: "Amendment 14 CFR, 121 and 14 CFR, 135 to require that all air carrier operators include in their flight operations manuals minimum operational fuel requirements for their aircraft, including fuel quantities below which a landing should not be delayed. In determining minimum fuel quantities, allowances should be made for fuel quantity measuring system tolerances and for the possibility of a missed approach."

FAA Response Letter dated 05/20/81: "The FAA has reviewed pertinent rules and air carrier operations bulletins and determined that sufficient guidance is presently available on the subject of fuel planning requirements and pilot-in-command (PIC) responsibilities. Therefore, we do not concur in the need to amend 14 CFR, 121 or 14 CFR, 135.

The scope of the Federal Aviation Regulations (14 CFR) on fuel planning provides adequate guidance for the PIC and the dispatcher. Federal Aviation Regulation, §121.647 provides the foundation for assuring an adequate fuel supply for air carriers complying with part 121 requirements. This 14 CFR indicates that the person computing the required fuel shall consider wind and other weather conditions, anticipated traffic delays, an instrument approach and possible missed approach at destination, plus any other condition that might delay the landing.

Federal Aviation Regulations, §121.639 applies to the domestic operations cited. This section indicates that no person shall takeoff in an airplane unless it has enough fuel to fly to the airport to which it is dispatched, then proceed to the most distant alternate, if required, and finally to fly for 45 minutes at normal cruising fuel consumption.

Additional guidance on fuel planning requirements is found in 14 CFR, §91.5 and §91.23. Federal Aviation Regulations, §135.61 also references part 91 for operators complying with part 135 rules. This guidance indicates that each PIC shall, before beginning a flight, familiarize himself/herself with all available information concerning that flight, including fuel requirements. The specific responsibilities of the PIC are also adequately defined.

Federal Aviation Regulations §91.3 and §121.555 state that the PIC has definite responsibilities prior to takeoff and that the PIC is directly responsible for a safe operation while inflight. Preflight planning must include provisions for an adequate fuel supply. Inflight operations must include monitoring the fuel supply. If a determination is made inflight that an unsafe condition exists, such as a low fuel state, the PIC and/or dispatcher are charged with the responsibility to declare an emergency, if required (14 CFR, §121-557). In no case should a PIC continue a flight toward any airport if he/she determines that the flight cannot be completed safely (14 CFR, §121.627)."

Additional information has been disseminated to our field inspectors through Air Carrier Operations Bulletins.

Bulletin 8-79-2 specifically discusses the United Air Lines accident and places emphasis on correctly reading the fuel gauges and training the crews to correctly interpret the fuel gauges. Air Carrier Operations Bulletin 8-79-4 addresses flight planning to an alternate airport. This bulletin is directly related to the Pan American incident discussed in the NTSB safety recommendation. Some companies were planning direct routes when in actual practice the routing could result in a substantial increase in the distance. The resultant increase in required fuel was not accounted for in the flight planning process. The main thrust of this bulletin was to charge the principal operations inspectors to evaluate their carriers to assure reasonable profiles were being used for fuel planning purposes. This type of information dissemination provides the principal operations inspectors with data against which to measure the assigned carrier's operation and provide the impetus for change when found necessary. The implications of this discussion are that the PIC's must perform certain duties. The preflight preparation that involves fuel planning must receive the appropriate attention by the PIC and, where applicable, the dispatcher. The guidelines contained in the current rules provide ample safety margins for the fuel planning process, and as the PIC participates in this process, he/she will have the necessary knowledge of the various categories of required fuel. This planning process provides the PIC with the necessary knowledge of the fuel quantity below which a landing should not be delayed. The pilot's operational decisions must be based on this knowledge. If a problem should develop during flight, the PIC is vested with the authority to declare an emergency and take the necessary measures to safely complete the flight. Therefore, the rules that affect the fuel planning and use process are considered adequate and amendment is not considered necessary. Accordingly, the FAA considers action completed on Safety Recommendation A-81-14.

NTSB Reply Letter dated 09/25/81: Although the review by the FAA has concluded otherwise, we continue to believe that flight operations manuals should include the minimum fuel quantity below which a landing should not be delayed. This vital information would thus be readily available to the flight crew. Our investigation revealed that the captain did not know the minimum fuel required to complete an approach flight from outer marker to threshold, nor had the airline provided this information. Moreover, other flight crews operating the same type equipment varied widely in their estimates of the amount of fuel required for an approach

and go-around. In all instances, we found that no company guidance was given in this area. The 14 CFRs cited in the FAA's response do not satisfy the intent of the recommendation. While 14 CFR, part 121.639, 14 CFR, part 121.647, and pertinent requirements of 14 CFR, part 135 and 14 CFR, part 91 encompass a broad range of fuel planning requirements, we do not believe the responsibility of an operator to assure their flightcrews are aware of the minimum fuel quantity needed for an approach and go-around is adequately addressed. In addition, Bulletins 8-79-2 and 8-79-4 do not address the subject of the fuel quantity required for approach and go-around nor do they stress the importance of such knowledge to flight crews. Based upon the above considerations we request the FAA to reconsider this response to A-81-14 which we have classified in an "Open--Unacceptable Action" status.

FAA Response Letter dated 12/21/81: The FAA believes existing regulations applicable to 14 CFR, 121 and 14 CFR, 135 operations adequately address the fuel requirements for both normal and abnormal occurrences. Many sections of the 14 CFR require specific fuel amounts for operations under instrument flight rules (IFR) and visual flight rules (VFR). Each IFR and VFR flight currently requires comprehensive fuel planning to ensure safe operation with adequate fuel reserves. For example, 14 CFR, 135 requirements vary from 20 minutes for helicopters to 30 minutes for airplanes when planning en route fuel reserves for a daylight VFR flight. For an IFR flight, flight planning requires fuel to the destination airport, to the alternate airport, and then fuel for an additional 45 minutes at normal cruise speed after arriving at the alternate airport. The Air Carrier Operations Bulletin (ACOB) 8-81-1, enclosed in our response of September 30, 1981, is applicable to both 14 CFR, 135 and 14 CFR, 121 operations. The illustrations in the ACOB are intended to emphasize the need for complete preflight planning by the pilot in command, and by the dispatcher, where applicable. A review of accidents and incidents related to mismanagement of fuel for parts 135 and 121 operators indicates a low incidence of this problem. We believe the low incidence is directly attributable to the fuel planning requirements stated in current rules. The FAA is not considering further action on this recommendation.

NTSB Reply Letter dated 04/08/82: After reviewing your response to the Safety Board's request for reconsideration of A-81-14 we offer the following comments. Although your reply cites a review of accidents and incidents related to fuel mismanagement by part 135 and 121 operators, which indicates a low incidence of this problem, the Safety Board believes that the inclusion of fuel quantities as part of the minimum operational fuel requirements in air carrier flight operation manuals has merit. Therefore, we have classified your response as "Closed--Unacceptable Action."