DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 121, 125, and 135

[Docket No. 24418; Amendment Nos. 91-199, 121-191, 125-8, and 135-23]

Flight Recorders and Cockpit Voice Recorders

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This amendment requires improved (digital) flight recorders with additional data parameters for airplanes type certificated before 1969 and operated in Part 121 operations. Review of National Transportation Safety Board accident/incident files for January 1983 to February 1986 revealed the high failure rate of the metal foil flight recorders. The data revealed that 37 recorders (48 percent) had one or more malfunctioning parameters preceding the accident/incident preventing the recording or readout pertinent data. As a result, post-accident flight recorder examination cannot be relied upon to provide accident investigators with sufficient information to accurately assess the causal interrelationship between man, machine, and environment. The requirement of a digital flight recorder with additional data parameters is deemed the minimum standard necessary to ensure that all of the underlying causal factors of an accident are identified. The amendment also requires cockpit voice recorders on newly manufactured multiengine, turbine-powered airplanes certificated to carry six or more passengers, requiring two pilots by type certification or operating rules for those operations conducted under Part 135. The amendment also specifies that for those operators conducting operations under Part 91 and Part 125 that have installed approved cockpit voice recorders, the Administrator will not use the record in any civil penalty or certificate action. These amendments were based on recommendations from a study conducted by Trans Systems Corporation and a number of safety recommendations by the National Transportation Safety Board.

EFFECTIVE DATE: May 26, 1987.

FOR FURTHER INFORMATION CONTACT: Frank Rock, Federal Aviation Administration, Office of Airworthiness, Aircraft Engineering Division, Technical Analysis Branch, AWS-120, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267-9567.

SUPPLEMENTARY INFORMATION:

Regulatory History

These amendments are based on Notice of Proposed Rulemaking (NPRM) No. 85-1, published in the Federal Register on January 8, 1985 (50 FR 949). All comments received in response to NPRM No. 85-1 were considered in adopting these amendments.

Background

For those operations conducted under Parts 91 and 125 of the Federal Aviation Regulations (FAR), there are no requirements that either a flight recorder or a cockpit voice recorder (CVR) be installed. However, in the interest of safety, the Federal Aviation Administration (FAA) has always encouraged the installation of approved flight recorders and approved cockpit voice recorders in airplanes used in those operations.

Section 121.343 of the FAR requires operators to equip each turbine-powered airplane and each airplane certificated for operation above 25,000 feet with an approved flight recorder. For airplanes having an original type certificate issued through September 30, 1969, the flight recorder parameters must include time, altitude, airspeed, vertical acceleration, heading, and radio transmission keying. Airplanes having an original type certificate issued after September 30, 1969, are required to have additional flight recorder parameters indicating pitch attitude, roll attitude, side-slip angle or lateral acceleration, pitch-trim position, control column or pitch control surface position, control wheel or lateral control surface position, rudder pedal or yaw control surface position, thrust of each engine, position of each thrust reverser, trailing edge flap, or cockpit flap or cockpit flap control position.

The CVR provisions for Part 121 operators require a CVR for each large turbine-powered or large pressurized airplane with four reciprocating engines.

Part 135 does not require operators to have flight recorders but does require turbojet airplanes configured to carry ten passengers or more to have a cockpit voice recorder installed.

Since these provisions were adopted, there has been a dramatic change in the air carrier industry. Deregulation has contributed to that change by allowing existing Part 121 carriers to pull out of short-to-medium-range markets, thereby creating a demand being filled by a rapidly expanding commuter airline industry. To meet the equipment needs of the expanding commuter airline industry, manufacturers have developed new fuel-efficient airplanes, including derivatives of airplanes type certificated through September 30, 1969. These airplanes have an expected lifespan well into the next century.

The past rule allowed these derivative airlanes to operate with flight recorder technology that dates back to the 1950's. In the past, cockpit voice recorders and flight recorders were not required of the commuter airline industry based on the premise that the level of passenger service was not sufficient to justify installing these recorders. Increased operation of the short-to-medium-range airplanes by the commuter airline industry, however, has placed them actuarially in a more severe operational environment than airplanes type certificated through September 30, 1969, creating the need for additional data collection.

Discussion

This amendment revises § 91.35 and adds a new § 125.202 that specifies that the Administrator will not use the cockpit voice recorder record in any civil penalty or certificate action. The purpose is to encourage operators to voluntarily install cockpit voice recorders in airplanes that are used in those operations where they are not required. The installed equipment must be approved and must continue to meet the airworthiness requirements under which the airplane is type certificated and operated.

This amendment substantively revises §§ 121.343 and 135.151. For operations conducted under Part 121, this rule requires retrofitting all airplanes type certificated through September 30, 1969 (currently using a six-parameter foil-type flight recorder), with a six-parameters digital flight recorder within 2 years from the effective date of the amendment. In addition, these flight recorders must be upgraded to 11-parameter digital flight recorders within 7 years after the effective date of this amendment. The 11 parameters consist of those currently required plus the following: (1) Pitch attitude; (2) roll attitude; (3) longitudinal acceleration; (4) control column or pitch control surface position; and (5) thrust of each engine. They are required to perform within the ranges, accuracies, and recording intervals specified in Appendix B of Part 121.

All newly manufactured airplanes having an original type certificate issued through September 30, 1969, are required to have 17-parameter digital flight recorders installed after 2 years from the effective date of this amendment.

The requirements for airplanes type certificated after September 30, 1969, do not change except for the substitution of

longitudinal acceleration for lateral acceleration.

For those operations conducted under Part 135, the amendment requires the installation of a CVR for all multiengine, turbine-powered airplanes certificated to carry six or more passengers and requiring two pilots by certification or operating rules, that are newly manufactured 2 years from the effective date of this amendment.

"Manufactured" means when the airplane inspection acceptance records reflect that the airplane is complete and meets the FAA-approved type design data. An airplane manufactured and then placed into storage prior to sale is considered manufactured on the date it is completed prior to being placed in storage.

Discussion of Comments

In response to NPRM No. 85–1, the FAA received comments from 29 interested persons. The majority of the comments received express opposition to the proposals based upon the costs involved in complying with the proposed requirements. More specifically, most of the opposition is directed to the digital flight data recorder proposals.

The proposals in NPRM No. 85–1 address three issues: (1) Recorder information to be used only for accident investigation purposes; (2) digital flight data recorders in specific airplanes operated under Part 121 of the FAR; and (3) cockpit voice recorders in specific newly manufactured airplanes operated under Part 135 of the FAR. For discussion and analysis purposes, each issue will be addressed separately.

In its comments on NPRM No. 85–1, the National Transportation Safety Board (NTSB) states that the FAA has not entirely satisfied the intent of all its safety recommendations made to the FAA concerning enhancement of flight recorder standards required to provide adequate data for accident and incident investigation purposes and identifies six specific shortcomings. All the issues raised by the NTSB in its comments to NPRM No. 85–1 had been forwarded previously to the FAA as NTSB safety recommendations. These issues were considered in the development of the NPRM and have been addressed by FAA formal responses to the recommendations, the NPRM, or the preamble to this rule.

Since 1967, the NTSB has issued a total of 53 recommendations regarding CVR's and flight recorders. Of this total, 38 recommendations were forwarded to the FAA. The remaining 15 recommendations were issued to industry groups such as U.S. air carriers, the Air Line Pilots Association, the Allied Pilots Association, airplane and rotorcraft manufacturers, etc. Of the 15 industry recommendations, 5 remain open (A–82–101 through –105).

Of the 38 NTSB recommendations issued to the FAA, 26 recommendations are "CLOSED" through FAA/NTSB staff coordination and 12 recommendations remain in an "OPEN" status. The FAA is continuing to address these remaining 12 "OPEN" recommendations. The following is a summary of the "OPEN" recommendations that are mentioned in the NTSB's comments to the docket.

Recommendations A–82–067 and –108 recommend requirements for improved CVR's and flight recorders for rotorcraft and are being dealt with under a separate rulemaking action.

Recommendation A–82–106 recommends the development of a technical standard order (TSO) for CVR's and flight recorders. Proposed TSO–C111, which contains standards for CVR and flight recorders and combined CVR's/flight recorders, was published in the Federal Register on April 12, 1985. The final version of the TSO is presently undergoing internal FAA coordination prior to issuance.

Recommendations A–82–064 through –066 recommend that flight recorders currently required on fixed-wing aircraft operated under Part 121 be improved and that such aircraft manufactured after a certain date be equipped for flight recorders with additional parameters.

Recommendations A–82–107 and –109 through –111 recommend that turbojet fixed-wing aircraft certificated for six or more passengers not now required to have CVR's or flight recorders be required to have CVR's and flight recorders with additional parameters.

In its comments to the docket regarding Recommendations A–82–064 through –066, the NTSB requested that the FAA reconsider its action on Recommendation A–82–066 and require 32 parameters for flight recorders on newly manufactured fixed-wing aircraft operated under Part 121. The FAA has determined that an increase in the required parameters to 17 represents an appropriate balance of costs and benefits.

In its comments to the docket on Recommendations A–82–107 and –109 through –111, the NTSB acknowledged that the FAA has satisfied its recommendation with respect to CVR requirements for aircraft operating under Part 135. The NTSB urged the FAA to require flight recorders for all multiengine turbine-powered aircraft operated under Part 135. The FAA agrees with the NTSB that requiring flight recorders on multiengine turbine-powered aircraft operated under Part 135 would provide helpful accident investigation information. However, the FAA continues to believe that the benefits of such regulation would not be commensurate with the associated costs.

In its comments to the docket, the NTSB states that the rule does not provide flexibility to accommodate advancing technology. The FAA agrees that changes in aeronautical technology may at some future date require changes to this rule. However, to issue a rule that includes the degree of flexibility necessary to accommodate future technology that is not presently defined is impracticable. When new design features are identified, the FAA can and will evaluate them during development of the type certification basis and take whatever actions are necessary to maintain the required safety level. If additional parameters or interfaces between electronic systems call for special requirements, they will be issued as appropriate. Consistent with rulemaking policy and as experience is gained with such future novel technologies, consideration will be given to revising the appropriate rules. In the new, fly-by-wire aircraft control system design, the one-to-one correlation from crew input to the resulting control system response does not exist. That, and other new design features, may require the FAA to propose and adopt additional parameters to be recorded, over those currently required by the operating rules.

The NTSB continues to urge that the FAA initiate further rulemaking to require flight recorders in multiengine, turbine-powered, fixed-wing airplanes operated under Part 91 or 125. A careful review of the benefits required to offset the cost of requiring flight recorders in the class of airplanes recommended by the NTSB operating under Part 91 or 125 shows that the anticipated benefits will not support such a requirement. The rule does encourage the installation of such equipment by stating that flight recorder records will not be used by the Administrator in any civil penalty or certificate action.

In its comments to the docket, the NTSB stated that it was disturbed that the FAA has not taken the initiative to propose rulemaking consistent with the standards recently adopted by the International Civil Aviation Organization (ICAO). This amendment is consistent with the recent Amendment 17 to ICAO Annex 6, Part I. The NTSB, in its comments, intermingles ICAO "requirements" and ICAO "recommendations." Requirements are

binding on the ICAO member states, while recommendations are not. This amendment is in full agreement with the ICAO requirements in § 6.3 of Annex 6 and in many respects is in agreement with the ICAO recommendations in that section. Attachment D to ICAO Annex 6, Part I, contains detailed flight recorder guidance to member states. In that attachment, ICAO recommends the 32-parameter flight recorders for certain types of airplanes. The FAA agrees with both ICAO and the NTSB that more data is always preferable and also agrees with the ICAO position that the increased data parameters be recommendations and not required parameters. The FAA believes that the parameters specified in this amendment are sufficient to identify accident probable cause and that the additional parameters (up to 32) have not been shown to be cost beneficial.

Recorder Information for Accident Investigation

One commenter supports the proposed amendments to §§ 91.35 and 125.202. A second commenter opposes the amendments, contending that the FAA should use the data as necessary to improve piloting skills. The FAA does not agree that the Administrator should use the cockpit voice recorder record in any civil penalty or certificate action. As stated in the notice, the purpose is to encourage operators to voluntarily install cockpit voice recorders in airplanes where they are not required. The information from the record is to determine the cause of the accident and not to place blame. Improvement of piloting skills can be obtained by current requirements, such as the biennial flight checks.

Digital Flight Data Recorder

The FAA received seven comments supporting the notice as it relates to the digital flight data recorder proposals.

One commenter contends that any airline retrofit requirement can be satisfied by equipment currently in production and agrees with the FAA's estimates of equipment costs. This commenter asserts that his estimate of maintenance cost savings to airlines which replace foil recorders with digital flight recorders reflects a savings of $600,000 annually based on a 100-airplane fleet.

Another commenter agrees with the requirement to replace metal foil-type recorders with digital types because accident investigation would be simplified and accomplished with greater accuracy but expresses concern that the 2-year period for replacement of existing metal foil-type recorders with digital types may not be realistic. The commenter asserts that the assumption was made that the new digital recorders would be directly interchangeable with existing foil-type recorders in all installations. Although many metal foil-type recorders in service are packaged in rectangular (standard ½ Air Transport Rated (ATR) long) containers, almost 1,400 Lockheed Model 109C metal foil-type recorders packaged in a spherical container have been delivered to customers, and many are still in service today. This commenter also recommends that the two-phase (2-year/7-year) plan be replaced with a single-phase program for incorporation of the 11 parameter recorder and that the time limit for completion be compatible with existing airline maintenance cycles. The FAA recognizes that the Lockheed Model 109C recorder is configured differently from the standard ½ ATR long container but still believes that the 2-year phase-in period, with proper planning, is sufficient to reconfigure the mounting rack for installation of the new recorder.

Two commenters, while supporting the proposed rule, believe that the requirements should be further expanded to maximize the information available from accident investigations and contend there is sufficient justification to require all airplanes operated under Part 121 and type certificated through September 30, 1969, to be upgraded to the 17-parameter digital recorder within 2 years from the effective date of the amendment. The FAA agrees that 17 parameters would derive more information from the accident. However, the 11 parameters required for the aircraft type-certificated through September 30, 1969, via the 2-step program will enhance the accident data available to investigators with minimum cost and out-of-service time for the airplane. The FAA does not believe that the additional 6 parameters will provide the safety benefit necessary to offset the additional cost. Both commenters are of the opinion that all airplanes involved in Part 135 operations should be required to carry the digital flight recorders within 2 years from the adoption of the amendment. One of the commenters also questions the use of a single parameter for measuring engine thrust and believes a more accurate method is to measure the N_1 speed and fuel flow for each engine. The FAA considers these issues to be outside the scope of this current rulemaking action.

One other commenter considers the 17-parameter digital recorder as being too limited and not consistent with recently adopted International Civil Aviation Organization (ICAO) requirements (32 parameters) applicable to airplanes over 60,000 pounds. The FAA evaluated these issues in the Trans Systems study while preparing the notice and concluded that based on the information available at that time, the proposals were the most cost beneficial in terms of accident prevention through accident investigations. It should also be pointed out that the final ICAO document addresses only new certificates of airworthiness issued after 1989. The comment is outside the scope of the notice, and there is insufficient justification by the commenter to issue a supplemental notice that addresses the recent ICAO standards. The FAA concludes that the existing air carrier fleet of 2,000 plus transport category airplanes do need the new digital type 11-parameter recorder, and this regulatory action should proceed.

Another commenter agrees with the proposals and believes they are necessary to ensure that adequate data is available for accident investigations. The commenter contends that in the affected airplanes, there will be adequate room, and little weight penalty for the digital flight recorder to be installed and serviced without difficulty. The FAA agrees with these comments.

One commenter states that the requirement for converting to a 6-parameter digital recorder should be deleted as it is unlikely to enhance accident investigation to any extent and recommends requiring the 11-parameter recorder in 7 years. The FAA does not agree because adequate time has been allotted for foil-type recorders to be replaced and then expanded to the 11-parameter recorder without undue hardship in the airline industry. Research of the National Transportation Safety Board (NTSB) records indicates that 48 percent of the recorders recovered from accidents or incidents were not functioning. The foil-type recorder would likely increase in failure rate over the 7-year period, resulting in increased inspections, decreased time between overhaul, and possible increase in FAR maintenance violations, as well as not having the data available in the event of an accident or incident. There is a definite need to replace the foil recorders as soon as possible.

In addition to the above, the FAA received 18 responses to the notice expressing opposition to the digital flight recorder proposals on the basis of the economic impact of complying with the proposed requirements. Five commenters provided estimated cost figures for retrofitting their CV-580 turbopropeller airplanes to comply with

the proposed requirements. These estimates ranged from $14,000 to $50,000 per airplane modification. Estimated cost figures that were provided for other models of airplanes came within the above low and high estimates per airplane modification. In addition, one commenter notes that the FAA estimated costs in the notice did not consider the loss of value on currently owned flight recorders, and this commenter estimates this value at $6,000 per recorder. With the loss of $6,000 per recorder added to his estimate, this brings the total estimated cost to approximately $9,500 below the average of the low and high estimates above. Another commenter states that he has observed a price increase per flight recorder of approximately $5,000 to $6,000 since the issuance of NPRM No. 85-1. To properly respond to these comments, the FAA has prepared a detailed cost estimate using the latest available information in its Regulatory Evaluation, and the FAA considers these costs the most realistic in determining the cost of compliance with the final rule.

The NTSB suggests the addition of longitudinal acceleration as a parameter. The NTSB contends that longitudinal acceleration is vital for determining the effect of wind shear, braking, and airplane performance and is a much more significant parameter than some others presently recorded. The NTSB is responsible for determining the probable cause of and contributing factors to an accident and is the prime user of the flight recorder data. The FAA agrees with the NTSB that the longitudinal accelerometer is necessary in identifying the contributing factors to an accident or incident, and has changed the requirements for the 11-parameter recorder by substituting longitudinal acceleration for pitch trim for the post-September 30, 1969, certificated airplanes. In addition, the FAA has substituted longitudinal acceleration in place of lateral acceleration for newly manufactured airplanes. The FAA has reviewed type design data for airplanes affected and finds that other than the reconnection of wiring at the tri-axis accelerometers in the post-September 30, 1969 airplane, and the substitution of a longitudinal accelerometer for pitch trim synchro or a potentiometer in the 11-paramater airplane type certificated through September 30, 1969, these changes are not significant.

Another commenter opposes the digital flight recorder proposal but does not operate any airplanes that require modification to comply with the proposal. This commenter did not provide any information or data to support this opposition. The FAA does not agree with this commenter.

One commenter contends the foil-type flight recorders are satisfactory for the older turbopropeller-driven airplanes because their design and operating environment is sufficiently different from that of turbojet-powered airplanes. The FAA does not agree that the foil-type recorder is adequate in the current accident investigation environment because of the inaccuracies that can occur between the routine maintenance times and the operations check before flight. A recent review of NTSB accident files has found the inservice failure rate of the foil recorders to be unacceptable.

Several commenters state that many of the older affected airplanes will likely be retired shortly after the anticipated effective date in early 1987. The FAA does not agree that the older airplanes should be exempted because of a supposed early retirement from service. Certain operators may retire their affected airplanes from their fleets, but these airplanes most likely will be in service with other operators, and the requirements will continue to be applicable. Because the airplanes comply with the new rules, the operator has a more marketable and valuable airplane at the time the airplane is placed on the market. The FAA does agree that an airplane in service for a considerable length of time may be considered to have a low probability of operational and mechanical "surprises." However, unanticipated events such as fatigue may still occur and human factor information is relevant in accident investigations involving old and new airplanes alike. A digital flight recorder as an investigative tool will provide insight into these issues.

One commenter, an all-cargo carrier operating under Part 121 with nine CV-580 airplanes, states that the additional cost to comply with the proposed requirements would create a serious financial hardship on the company. This commenter contends that: The recent accident data for CV-50 airplanes does not justify any need to change the type of flight recorder in use; the CV-580 airplane design and operating environment has not changed in the past 25 years; and, the additional parameters and significant additional cost have not been justified on a cost versus flight safety benefit basis. Furthermore, this commenter contends that the cost to retrofit the digital flight recorder in his CV-580 airplanes could easily run as high as $450,000. The FAA recognizes that this commenter's contention of $50,000 per airplane for complying with the proposed requirement would be significant. However, no information or data was provided to show how this figure was derived. Most prudent operators will not incur these extremely high costs to comply with this final rule. The basis for this conclusion is explained in the section of the regulatory evaluation discussing FAA's response to these comments. A pilot-induced accident can occur any time with any airplane, and the accident history of a specific airplane type should not be a basis for exclusion from this regulation. Every accident must be evaluated to determine the probable cause and related events, and these types of airplanes are operated in sufficient numbers in passenger service to require the same accident investigation tools as other Part 121 airplanes.

One commenter recommends that airplanes type certificated prior to January 1, 1958, be exempt from the proposed requirements. The FAA does not agree with this recommendation, because every accident must be adequately investigated to determined the probable cause and identify actions to prevent accidents of that nature.

One commenter contends that the estimated nonrecurring cost for the proposed 2-phase retrofit of digital flight recorders on its association's member fleet is $49.5 million for 2,000 airplanes, not counting cash loss due to out-of-service time, and contends that the FAA's cost estimates are inconsistent. Furthermore, this commenter asserts that the FAA's stated basis for the proposed rule is based upon erroneous information and speculative estimates of future "unknown hazards" that would be identified by the expanded parameter digital recorders; that the FAA did not present any data that conclusively shows that the probable cause of any U.S. air carrier accident could not be determined because of the use of 6-parameter foil-type recorders; and that properly maintained 6-parameter flight recorders have not served the industry and Government well in developing accident prevention measures. This commenter recommends the notice be withdrawn because of the lack of adquate justification presented by the FAA. In addition, this commenter recommends that if the FAA decides to require the improve flight recorders regardless of the airline safety record, a single-step program that provides at least 7 years for accomplishment would minimize the impact on the airlines. Furthermore, the FAA should reevaluate its cost versus benefit estimates using

economic data presented in this response and by other commenters. The FAA has reevaluated the cost data, and the Regulatory Evaluation reflects these changes. With respect to the basis for this rule change, experience has shown that unexpected accident scenarios and unusual combinations of circumstances will occur.

Another commenter, while not opposing the proposal, recommends deleting the 6-parameter step in the program and recommends going directly to the 11-parameter digital flight recorder requirements, because the 2-year implementation period for retrofit is considered unrealistic. This would permit installations to coincide with maintenance schedules. This commenter also states that the notice assumed that foil-type recorders are apparently interchangeable with digital types in all cases and states that the digital flight recorders and the spherical configured foil-type are not, in fact, directly interchangeable as assumed. As previously stated, the FAA does not agree that the implementation program should be lengthened or that the 2-year implementation program is unrealistic. This commenter presented no information to support this assertion. The FAA has reevaluated the time frames for implementation against the availability of modification kits and/or digital recorders necessary for complying with these requirements and continues to find them achievable and realistic. Further, a slight additional cost for replacing the spherical foil recorder with the rectangular digital recorder is reflected in the revised Regulatory Evaluation.

One commenter recommends that § 121.343(c)(6) and (d)(6) be changed to indicate that radio communication either to or from Air Traffic Control (ATC) is acceptable. The FAA the intent was to record the airplane transmitter keying which would be *to* ATC. The rule has been changed accordingly. This commenter also recommends that the word "large" be added before the words "turbine engine powered" in § 121.343(b) to clarify that the requirement applies only to large airplanes. The FAA does not agree this change is necessary, because all airplanes operated under Part 121 must be type certificated in the transport category and the FAA is not aware of any small airplanes, weighing less than 12,500 pounds maximum certificated takeoff weight, being operated under Part 121. If small airplanes do in the future operate under Part 121, the FAA sees no reason to treat them differently from large airplanes.

Another commenter suggests replacement of the foil-type recorders with digital types on an attrition basis and contends that the price increase of 100 percent in the last 3 years for the foil medium will achieve this objective. The FAA does not agree, because there is no assurance of attrition as suggested, and no assurance that digital flight recorders will be installed within a reasonable period of time. Furthermore, the FAA has no way of controlling flight recorder prices.

These amendments are based on a number of NTSB recommendations and a study conducted by Trans Systems Corporation, completed in May 1983 for the FAA Office of Aviation Safety, entitled "Cockpit Voice and Flight Data Recorder Evaluation." The study evaluated a number of CVR/flight recorder equipment requirements and options, one of which was the adoption of all NTSB recommendations. The Trans Systems study is available in the Public Docket for review. Copies of the FAA replies to NTSB safety recommendations concerning CVR's/flight recorders are available from the FAA Office of Aviation Safety.

Cockpit Voice Recorder

The FAA received 16 comments in response to the cockpit voice recorder proposal, with 9 commenters opposing the proposal and 7 commenters expressing support.

Three commenters contend that the requirements should apply only to those turbined-powered airplanes with a seating configuration of ten or more, excluding pilot seats. One commenter states that no rationale is given to reduce the number to six and that, historically, the dividing line has been ten passenger seats. The FAA does not agree with the increase to ten because of the large number of small airplanes that operate with between six and nine passengers and that are required by Part 135 to have two pilots for conducting Instrument Flight Rules operations with those airplanes.

The NTSB's recommendation, which was used as the basis of the Trans Systems Corporation study, was about the number of accidents involving six-passenger turbine-powered, multiengine airplanes in air taxi and corporate/executive operations in which the accidents circumstances remain unknown.

One commenter asserts that the increased fuel consumption to carry these recorders should be considered in the economic evaluation. The FAA agrees that the increased fuel cost should be added in the analysis, and the economic evaluation addresses the increase.

Another commenter contends that the purpose of cockpit voice recorders is to fix the blame for an accident or incident. The FAA does not agree because the purpose of the recorder is to determine the probable cause of the accident, and this should not be construed to mean "fix the blame." The same commenter asserts that some 80 percent of all accidents are caused by pilot error but provides no basis for this assertion. The FAA does not agree with the 80 percent figure recognizes that a significant number of accidents can be attributed to pilot error. Finding a pilot's action or inaction as a causal factor in an accident or incident is not intended to be the same as "fixing the blame."

One commenter contends that most of the airplanes to which this rule would apply operate in a very limited environment or portion of the airspace and that there is insufficient time to record much voice communication when a problem arises. The commenter further contends that the cause of most accidents in this area is probably pilot error during takeoff and landing and doubts that the addition of CVR's would shed any new light on the cause or circumstances surrounding any accident. The FAA does not agree that there is insufficient time to record meaningful voice communications. It is not the quantity but rather the quality of such data that may determine the cause in the relationship between the pilots, the airplane, and the operating environment at the time of an accident. Also, it is not just the voice communications that are useful in determining a cause but all recorded noise, i.e. switch actuation, engine revolution, aural warnings, etc.

One commenter asserts that the cockpit voice recorder would not add to the level of safety of a flight, and its only benefit, that of aiding accident investigation, is abstract and unproven. The FAA agrees that the CVR does not add to the level of safety of a specific flight but does not agree that the usefulness is abstract and unproven. There are years of experience with cockpit voice recorders in Part 121 aircraft that attest to the benefits to be derived from the recorders.

Another commenter contends the proposed rule is discriminatory since many small multiengine airplanes that not turbine powered are certificated to carry more than six passengers. The FAA does not agree that the rule is discriminatory.

One commenter asserts that an operator should be given the option of

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