

DEPARTMENT OF TRANSPORTATION**Federal Aviation Administration****14 CFR Parts 121, 125, and 135**

[Docket No. 28109, Notice No. 95-4]

Increased Flight Data Recorder Parameters**AGENCY:** Federal Aviation Administration, DOT**ACTION:** Notice of public meeting and request for comments.

SUMMARY: The FAA is soliciting comments from the public, aircraft manufacturers and operators, and manufacturers of flight data recorders (FDR's) on the recent recommendations issued by the National Transportation Safety Board (NTSB) on increased FDR parameters. The FAA seeks comment on any aspect of the NTSB recommendations, including the potential safety benefits and financial costs for each of the NTSB recommendations. Comments received on the recommendations will assist the Federal Aviation Administration (FAA) in preparing potential regulatory action and in analyzing specific exceptions or alternatives that should be considered.

DATES: Comments must be received on or before March 31, 1995.

A public meeting to discuss the NTSB recommendations will be held on April 20, 1995, starting at 9 a.m.

ADDRESSES: Comments on the NTSB recommendations discussed in this document should be mailed or delivered, in triplicate, to: Federal Aviation Administration, Attention: Rules Docket (AGC-200), 800 Independence Ave., SW., Washington, DC 20591. Comments must be marked: Docket No. 28109. Comments may also be sent electronically to the following Internet address: nprmcmts@mail.hq.faa.gov. Comments may be examined in room 915G weekdays between 8:30 a.m. and 5 p.m., except Federal holidays.

The public meeting will be held at the FAA National Headquarters, 800 Independence Ave., SW., Washington, DC 20591.

FOR FURTHER INFORMATION CONTACT: Requests to present a statement at the meeting or questions regarding the logistics of the meeting should be directed to Jeanne Trapani, Office of Rulemaking, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267-7624.

Questions concerning the subject matter of the meeting should be directed to Frank Rock, Technical Analysis

Branch (AIR-120), Aircraft Certification Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, Telephone (202) 267-9567.

SUPPLEMENTARY INFORMATION:**Participation at the Meeting**

Requests from persons who wish to present oral statements at the public meeting should be received by the FAA no later than April 15, 1995. Such requests should be submitted to Jeanne Trapani at the address listed in the section entitled **FOR FURTHER INFORMATION CONTACT** and should include a written summary of oral remarks to be presented. Requests received after the date specified above will be scheduled if time is available during the meeting; however, the name of those individuals may not appear on the written agenda for the public meeting.

The FAA will prepare an agenda of speakers who will be available at the meeting. Every effort will be made to accommodate as many speakers as possible. The amount of time allocated to each speaker may be less than the amount of time requested.

Background

On February 22, 1995, the NTSB issued three recommendations to the FAA as a result of its investigation of accidents and incidents that, in the opinion of the NTSB, have demonstrated that more information about flight control parameters should be recorded by FDR's. A copy of the NTSB Safety Recommendation letter of February 22, 1995, has been placed in the FAA docket. Contrasting accident/incident data involving airplanes with 5- and 128-parameter FDR's, the NTSB indicated that investigations were greatly aided by the availability of enhanced recorded information. The NTSB recommended that the FAA require operators to retrofit certain airplanes currently in operation with enhanced FDR's and require certain enhanced FDR's on newly-manufactured airplanes. The NTSB also issued recommendations to operators and manufacturers of aircraft operated under parts 121, 125, and 135. However, these recommendations will not be addressed at the public meeting. See attachment A of NTSB Safety Recommendation letter dated February 22, 1995.

The NTSB stated that among the additional flight control parameters that are needed are parameters that pertain to the flight control inputs and control surface positions. Acknowledging that

the cost of increasing the recorded parameters on FDR's would necessitate a significant monetary investment, the NTSB stated that public safety outweighs the costs.

With this notice, the FAA is soliciting comments on the following NTSB recommendations:

Require that each Boeing 737 airplane operated under 14 CFR parts 121 or 125 be equipped, by December 31, 1995, with a flight data recorder system that records, as a minimum, the parameters required by current regulations applicable to that airplane plus the following parameters (recorded at the sampling rates specified in "Proposed Minimum FDR Parameter Requirements for Airplanes in Service" [see Table 1 below]): lateral acceleration; flight control inputs for pitch, roll, and yaw; and primary flight control surface positions for pitch, roll, and yaw.

Amend, by December 31, 1995, 14 CFR 121.343, 125.225, and 135.152 to require that Boeing 727 airplanes, Lockheed L-1011 airplanes, and all transport category airplanes operated under 14 CFR parts 121, 125, or 135 whose type certificate applies to airplanes still in production, be equipped to record on a flight data recorder system, as a minimum, the parameters listed in "Proposed Minimum FDR Parameter Requirements for Airplanes in Service" plus any other parameters required by current regulations applicable to each individual airplane. Specify that the airplanes be so equipped by January 1, 1998, or by the later date when they meet Stage 3 noise requirements but, regardless of Stage 3 compliance status, no later than December 31, 1999.

Amend, by December 31, 1995, 14 CFR 121.343, 125.225, and 135.152 to require that all airplanes operated under 14 CFR parts 121, 125, or 135 (10 seats or larger), for which an original airworthiness certificate is received after December 31, 1996, record the parameters listed in "Proposed FDR Enhancements for Newly Manufactured Airplanes" [see Table 2 below] on a flight data recorder having at least 25-hour recording capacity.

The FAA requests that commenters be specific and provide as much factual detail in comments as possible. Cost information is also particularly requested.

Because of the time frame recommended by the NTSB and the date of the public meeting, the FAA requests that commenters be timely in their response. All comments received will be available, both before and after the closing date for comments, in the Rules Docket.

The FAA anticipates that comments provided in response to this notice will assist the agency in responding to the NTSB recommendations.

Meeting Procedures

The following procedures are established to facilitate the meeting:

(1) There will be no admission fee or other charge to attend or to participate in the meeting. The opportunity to speak will be available to all persons who have requested in advance to present statements or who register on the day of the meeting subject to availability of space in the meeting room.

(2) There will be morning, lunch, and afternoon breaks.

(3) The meeting may adjourn early if scheduled speakers complete their statements in less time than is scheduled for the meeting.

(4) An individual, whether speaking in a personal or a representative capacity on behalf of an organization, may be limited to a 10-minute statement. If possible, we will notify the speaker if additional time is available.

(5) The FAA will try to accommodate all speakers. If the available time does not permit this, speakers generally will be scheduled on a first-come-first-served basis. However, the FAA reserves the right to exclude some speakers if necessary to present a balance of viewpoints and issues.

(6) Sign and oral interpretation may be made available at the meeting, as well as an assistive listening device, if requested at least 10 calendar days before the meeting.

(7) Representatives of the FAA will preside over the meeting. A panel of FAA personnel involved in this issue will be present.

(8) The meeting will be recorded by a court reporter. A transcript of the meeting and any material accepted by the panel during the meeting will be included in the public docket. Any person who is interested in purchasing a copy of the transcript should contact the court reporter directly.

(9) The FAA will review and consider all material presented by participants at the meeting. Position papers or material presenting views or information related to the FDR's may be accepted at the discretion of the presiding officer and subsequently placed in the public docket. The FAA requests that persons participating in the meeting provide 10 copies of all materials to be presented for distribution to the panel members; other copies may be provided to the audience at the discretion of the participant.

(10) Statements made by members of the meeting panel are intended to facilitate discussion of the issues or to clarify issues. Any statement made during the meeting by a member of the panel is not intended to be, and should not be construed as, a position of the FAA.

(11) The meeting is designed to solicit public views and more complete information. Therefore, the meeting will be conducted in an informal and nonadversarial manner. No individual will be subject to cross-examination by any other participant; however, panel members may ask questions to clarify a statement and to ensure a complete and accurate record.

(12) Speakers are encouraged, before the meeting, to review the comments received in the docket, providing them an opportunity to express their view at the meeting on the comments in the docket, as well as present any additional comments.

Table 1.—Proposed Minimum FDR Parameter Requirements for Airplanes in Service (from Attachment A, NTSB Safety Recommendation, February 22, 1995)

Proposed Minimum Parameters:

1. Altitude
2. Airspeed
3. Vertical acceleration
4. Heading
5. Time of each radio transmission to air traffic control
6. Pitch attitude
7. Roll attitude
8. Longitudinal acceleration
9. Pitch trim position*
10. Yaw trim position**
11. Roll trim position**
12. Control column and pitch control surface position**
13. control wheel and lateral control surface position**
14. Rudder pedal and yaw control surface position**
15. Thrust of each engine
16. Position of each thrust reverser (or equivalent for propeller airplane)*
17. Trailing edge flap or cockpit flap control position*
18. Leading edge flap or cockpit flap control position*
19. Ground spoiler position/speed brake selection**
20. angle of attack (when information source is available)**
21. Lateral acceleration**
22. Autopilot engagement status**
23. Automatic Flight Control System (AFCS), modes and engagement status**
24. Outside or total air temperature**

(*) Indicates a new or changed parameter relative to the current 11-parameter requirement. (**) Indicates a new or changed parameter relative to the current 17-parameter requirement.

Table 2.—Proposed FDR Enhancements for Newly Manufactured Airplanes (from Attachment B of the NTSB Safety Recommendation, February 22, 1995).

Acceleration Parameters:

- Vertical
- Lateral
- Longitudinal

Airplane Performance/Position Parameters

- Altitude
- Airspeed
- Air/ground sensor (primary airplane systems reference, nose or main gear)
- Brake pressure and pedal position
- Drift angle (when an information source is installed)
- Ground speed (when an information source is installed)
- Wind speed and direction (when an information source is installed)
- Outside air temperature or total air temperature
- Radio altitude (when an information source is installed)
- Latitude and longitude (when an information source is installed)

Airplane Attitude Parameters:

- Angle of attack left and right (when an information source is installed)
- Pitch
- Roll
- Magnetic heading
- True heading (when an information source is installed, sampled 1 per 4 seconds)
- Yaw or sideslip angle (when an information source is installed)

Flight Controls Position and Input Parameters:

- All control surface positions—primary controls (pitch, roll, and yaw)
- All cockpit flight control input positions and forces (control wheel, control column, rudder pedal) (sidestick controllers on fly-by-wire systems)
- All trim surface positions—primary controls (pitch, roll, and yaw)
- All cockpit trim control input positions—primary controls (pitch, roll, and yaw)
- Thrust/power—primary flightcrew reference (may require multiple parameters for all phases of flight)
- Throttle/power lever position
- Thrust reverser status (i.e., stow, transit, deployed, reverse pitch)
- Thrust command (when an information source is installed)
- Thrust target (when an information source is installed)
- Engine bleed valve position (when an information source is installed)

Airplane Configuration Parameters:

- Flap position (trailing and leading edge)
- Spoiler position (ground and speed brake)
- Spoiler/speed brake cockpit selection/status (armed—ground spoiler)
- Flap cockpit control selection
- Landing gear position
- Landing gear cockpit control selection
- De-icing or anti-icing system selection (when an information source is installed, sampled 1 per 4 seconds)

Table 2.—Proposed FDR Enhancements for Newly Manufactured Airplanes (from Attachment B of the NTSB Safety Recommendation, February 22, 1995).—Continued

Fuel quantity in CG trim tank (when an information source is installed)
 Computed center of gravity (when an information source is installed)
 AC electrical bus status
 DC electrical bus status
 APU bleed valve position
 Hydraulic pressure (all systems)
 Navigation Aids:
 Localizer deviation
 Glideslope deviation
 DME 1 and 2 distances
 Nav 1 and 2 selected frequency
 GPS position data (when an information source is installed)
 Marker beacon passage
 Autopilot Parameters:
 Engagement status (all systems)
 AFCS modes and engagement status
 Timing:
 Radio transmitter keying
 UTC (when an information source is installed)

Table 2.—Proposed FDR Enhancements for Newly Manufactured Airplanes (from Attachment B of the NTSB Safety Recommendation, February 22, 1995).—Continued

Recorder elapsed time (frame counter, 0 to 4095)
 CVR/DFDR synchronization reference (when an information source is installed)
 Event marker
 Warning Parameters:
 GPWS
 Hydraulic pressure low (each system)
 Master warning
 Loss of cabin pressure
 TCAS—TA, RA, and sensitivity (as selected by crew)
 Icing (when an information source is installed)
 Engine warnings each engine—
 Vibration (when an information source is installed)
 Over temp. (when an information source is installed)
 Oil pressure low (when an information source is installed)

Over speed (when an information source is installed)
 Windshear (when an information source is installed)
 Computer failure
 Stick shaker/pusher (when an information source is installed)
 Manual/Automatic Selected Parameters:
 Selected barometric setting
 Selected speed
 Selected vertical speed
 Selected heading
 Selected flight path
 Selected decision height
 EFIS display format
 Head-up display (when an information source is installed)
 Para-visual display (when an information source is installed)
 Multi-function/engine/alerts display format

Issued in Washington, DC on March 8, 1995.

Anthony J. Broderick,

Associate Administrator for Regulation and Certification.

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