Docket No. SA-530

Exhibit No. 8-A

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

Safety Recommendations
A-06-17 and A-06-18

(9 Pages)

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: March 7, 2006

In reply refer to: A-06-17 and A-06-18

Honorable Marion C. Blakey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On August 10, 2005, a Sikorsky S-76C+ helicopter, operated by Copterline under Finland registration OH-HCI, departed Tallinn, Estonia, for Helsinki, Finland. The helicopter experienced an upset and crashed into the Baltic Sea, killing all 12 passengers and 2 pilots.[1] This accident is the first time that the National Transportation Safety Board has participated in a helicopter accident investigation in which a flight data recorder (FDR) was on board. Importantly, without the FDR data,[2] investigators would not have been able to identify the airworthiness issue that resulted in three urgent safety recommendations made by the Safety Board on November 17, 2005 (A-05-33 through -35).

The Finnish Copterline S-76C+ accident helicopter was operating under European regulations,[3] which require FDRs on helicopters over 3,175 kilograms maximum certificated takeoff mass.[4] Clearly, the United States government should be the leader in promoting the safety of its own products, which would include ensuring that transport-category[5] helicopters are

[1] The Aircraft Accident Investigation Commission (AAIC) of Estonia is investigating the accident with the assistance of accredited representatives from the U.S. National Transportation Safety Board and the Finland Accident Investigation Board under the provisions of Annex 13 to the International Convention on Civil Aviation.

[2] The investigation to date has revealed that, based on FDR data, aerodynamic simulations, and wreckage examination, one of the hydraulic actuators that controlled the main rotor blades of the accident helicopter may have extended uncommanded during flight, resulting in the loss of control.

[3] European regulations for FDRs are contained in Joint Airworthiness Requirements (JAR)-OPS 3.715 and 3.720. The compliance dates for the FDR requirements vary by weight of the helicopter and airworthiness certificate date, but generally after January 1, 1989, helicopters with 9 or more passenger seats are required to be equipped with an FDR. The passenger seating stipulation is not part of the requirement for helicopters with individual airworthiness certificates dated after August 1, 1999.

[4] For example, the S-76A has a maximum certificated takeoff weight of 10,500 pounds (4,763 kilograms); the S-76 B/C has higher maximum takeoff weights (up to 11,700 pounds or 5307 kilograms). The Bell 212 has a maximum certificated takeoff weight of 11,200 pounds (5,080 kilograms).

[5] Per the FAA's website (www.faa.gov/aircraft/air_cert/design_approvals/rotorcraft/tran_cat/), giving a transport certification to an aircraft under 7000 pounds is "historically not done" and transport-category rotorcraft are the "bigger/heavier rotorcraft (above 7000 pounds)."

equipped with the flight recorders[6] necessary to gather data critical to diagnosing safety shortcomings in the passenger-carrying helicopter fleet. However, this is not the case.

Prior to 1988, Federal regulations required FDRs on large airplanes only; FDRs for smaller airplanes and rotorcraft[7] were not included. On June 19, 1987, the Safety Board issued several flight recorder recommendations (Safety Recommendations A-87-77 through -89) to the Federal Aviation Administration (FAA) citing the critical need for recorded data during Board investigations. These recommendations became the basis for the current flight recorder regulations (issued July 11, 1988, and effective October 11, 1991).[8] Current regulations require an FDR on multiengine, turbine-powered rotorcraft with 10 or more passenger seats.[9] However, in numerous accident investigations involving this category of helicopter, the Board has found that the helicopter was equipped with a cockpit voice recorder (CVR) only—if it was equipped with a recorder at all. Since October 11, 1991, the Board has investigated 2,751 helicopter accidents[10] and, as previously mentioned, found only one helicopter equipped with an FDR. The wording of the current flight recorder regulations, along with the FAA's policies of relieving helicopter operators from the regulations, allows transport-category helicopters to operate without flight recorders.

Flight recorders are critical for obtaining accident information on aircraft models used for transporting passengers. Flight recorders on transport-category helicopters are especially critical given the complex flight dynamics, transmission and rotor mechanics, stability and control systems, and other unique attributes of larger passenger-carrying helicopters. However, after several years of lobbying by the helicopter industry, the FAA amended the FDR regulations on July 18, 2003, permanently excepting several transport-category rotorcraft operating under 14 *Code of Federal Regulations* (CFR) Part 135, including the Sikorsky S-76A and the Bell 212

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[6] The term "flight recorders" refers to all crash-protected recording devices installed on aircraft, including but not limited to, flight data recorders (FDRs), cockpit voice recorders (CVRs), and onboard image recorders.

[7] Title 14 *Code of Federal Regulations* (CFR) Part 1.1 states: "*Helicopter* means a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors." "*Rotorcraft* means a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors." "*Aircraft* means a device that is used or intended to be used for flight in the air."

[8] Several sections of the regulations were changed to upgrade the flight recorder requirements, including 14 CFR Parts 23, 25, 27, 29, 91, 121, 125, and 135 [see 53 *Federal Register* (FR) 26134]. The FDR carriage requirements are in 14 CFR Part 135.152 and the CVR carriage requirements are in 14 CFR Part 135.151. The recorder carriage requirements for 14 CFR Part 91 operations are contained in 14 CFR Part 91.609.

[9] Title 14 CFR 135.152(a) states the following:

> No person may operate under this part a multi-engine, turbine-engine powered airplane or rotorcraft having a passenger seating configuration, excluding any required crewmember seat, of 10 to 19 seats, that was either brought onto the U.S. registry after, or was registered outside the United States and added to the operator's U.S. operations specifications after October 11, 1991, unless it is equipped with one or more approved flight recorders that use a digital method of recording and storing data and a method of readily retrieving that data from the storage medium.

Paragraph (k) states the following:

> For aircraft manufactured before August 18, 1997, the following aircraft types need not comply with this section: Bell 212, Bell 214ST, Bell 412, Bell 412SP, Boeing Chinook (BV-234), Boeing/Kawasaki Vertol 107 (BV/KV-107-II), deHavilland DHC-6, Eurocopter Puma 330J, Sikorsky 58, Sikorsky 61N, Sikorsky 76A.

[10] The total includes all helicopters (both transport and non-transport-category).

helicopters.[11] Of the 1,112 transport-category rotorcraft currently on the FAA's aircraft registry, one-third—about 378—have been granted permanent exceptions under the 2003 rule change and are therefore not required to be equipped with FDRs.[12] The Safety Board is concerned that, by taking these actions, the FAA is not adequately addressing the need for flight recorders on board passenger-carrying helicopters and as a result, design and operational safety inadequacies may not be discovered due to the lack of recorded data.

The problem with the current flight recorder regulations lies in the passenger seating conditions stipulated for both CVR and FDR carriage requirements: aircraft with 6 or more passenger seats must be equipped with a CVR[13] and those with 10 or more passenger seats must be equipped with an FDR. The Safety Board made specific requests in the 1987 recommendation letter to require recorders on passenger-carrying aircraft per their certificated passenger capacity. However, the FAA chose language that avoided using certificated passenger capacity as part of the requirement, thereby allowing the requirements to be based on individual aircraft seating configuration. Although a particular helicopter model may have the capability for carrying 10 or more passengers, an individual helicopter can be customized to hold 9 or fewer passengers, thereby avoiding the FDR carriage requirement (and for 5 or fewer passengers, avoiding the CVR requirement, as well). As a result, aircraft that are designed to carry passengers are not always equipped with flight recorders. For instance, an accident involving an aircraft configured for 5 or fewer passengers can reveal safety issues that affect the same model aircraft that is configured for 10 or more passengers. Flight recorders play a critical role in identifying fleet-wide safety deficiencies, regardless of the seating capacity of an individual helicopter. The S-76 series[14] helicopter is a good case in point.

On the basis of its transport-category type certification, the S-76A/B/C model rotorcraft is certificated to carry 13 passengers. However, given the language of the regulation, an S-76 can be operated without any flight recorders—in both 14 CFR Part 91 and 135 operations. In fact, although the Safety Board has participated in 28 accident investigations involving the S-76 series helicopter since October 11, 1991 (9 of which resulted in fatalities),[15] the Finnish S-76C helicopter is the only accident helicopter that was equipped with both an FDR and a CVR. Of the remaining investigations, only 7 helicopters had a CVR—that is, over 70 percent of the accident helicopters did not carry recorders of any kind. The Estonian accident investigation clearly shows the value of FDR data, which, in that case, revealed an airworthiness issue that affects all S-76s, not just those configured to carry 10 or more passengers, as stipulated in the Federal regulations.

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[11] See 68 FR 42932. Of the aircraft listed within 14 CFR Part 135.152, paragraph (k), all are rotorcraft, except the deHavilland DHC-6, which is an airplane.

[12] For clarification, all rotorcraft from the exception list, 14 CFR Part 135.152(k), were incorporated into the tally, including all Boeing-Chinook models (BV-234 and BV-234LR), all Sikorsky S-58 variations (S-58T, S-58BT, S-58DT, S-58ET, S-58HT, S-58JT), and all models identified as "S-76," which were determined to be S-76A models through the manufacturer's records.

[13] The CVR carriage requirement is contained in 14 CFR Part 135.151(a), which states the following:

> No person may operate a multiengine, turbine-powered airplane or rotorcraft having a passenger seating configuration of six or more and for which two pilots are required by certification or operating rules unless it is equipped with an approved cockpit voice recorder.

[14] The S-76 series helicopters include the following model designations: S-76, S-76A, S-76B, S-76C. Certain helicopters have had upgraded engines and are designated with a "+" or "++" (for example, S-76A++).

[15] These accidents involved rotorcraft operating under 14 CFR Parts 91 and 135 and foreign operations.

The March 23, 2004, accident involving an S-76A++ helicopter operated by Era Aviation, N579EH, illustrates how the lack of recorders on accident helicopters has affected Safety Board investigations. The aircraft crashed into the Gulf of Mexico 30 minutes after departing Galveston, Texas,[16] and the two crewmembers and eight passengers on board were killed. The helicopter carried no FDR—the FAA had exempted it from the FDR requirement—and the CVR had been installed incorrectly and failed to record the crew audio stations. The only recorded information was from the helicopter's cockpit area microphone channel, which, because of the high background noise level of the cockpit, was inadequate. Given the distance that the aircraft had traveled from Galveston, radar data were limited and did not include the final descent into the water. The lack of recorded data significantly hampered the investigation.

Flight Recorders on Helicopters

The Safety Board has found that the FAA has been less than demanding in enforcing its helicopter recorder requirements, beginning in 1988 with the issuance of the final rule requiring recorders on certain rotorcraft. At that time, the FAA noted, "some of the most vigorous comments adverse to the proposed requirements were received from helicopter operators" who believed that "the potential costs for helicopter operators far exceeded any potential benefits to the overall aviation industry." For several years thereafter, helicopter operators submitted numerous requests for exemptions from the FDR carriage requirements. For example, in 1998, a petitioner requested exemption from 14 CFR Part 135.152 for his Bell 212, arguing that—

- The Safety Board had demonstrated little difficulty in determining the probable cause of helicopter accidents in the absence of an FDR.
- Installing FDRs in helicopters would not significantly improve safety because the presence of an FDR does not prevent accidents.
- FDRs did not necessarily increase the amount of information available to accident investigators and the same information could be derived from other sources.
- FAA's economic analysis of the FDR rule did not consider the unique characteristics of helicopters or the helicopter industry and the FAA admitted that the analysis was derived from airline-specific cost information.
- FDR retrofit costs for helicopters were inordinately high because most helicopters were not designed to accommodate FDRs and no engineering data existed to support FDR installation.

The first three points made by the petitioner are without merit and should have been refuted by the FAA. However, the FAA not only granted this exemption, its response (Exemption No. 6785 issued on June 12, 1998) became the basis for several helicopter operator exemptions that followed.

[16] The Safety Board meeting to address this investigation is scheduled for March 7, 2006.

This petitioner failed in several ways to understand the critical role of FDRs in accident investigations. More disturbingly, by granting the exemption and further using it as the basis for other exemptions, the FAA ignored the longstanding benefits of recorded data for aviation safety. (Contradicting themselves, the FAA is on record supporting the benefits of recorded data, as stated throughout the preambles to the flight recorder final rules issued in 1987 and 1988.[17]) Undeniably, the amount and type of data available to an investigation can greatly affect the specificity of the probable cause. Additionally, the type of information obtained from an FDR is not available through any other means, despite the petitioner's contention that it is. It is extremely significant that the only accident helicopter FDR available to Safety Board investigators revealed crucial information that would otherwise have been unavailable.

An example of the FAA's lack of resolve in the face of strong industry pressure is the January 24, 2006, release of the Helicopter Emergency Medical Service (HEMS) fact sheet.[18]

> Flight Data Recorders are not required for HEMS operations. FDRs offer value in any accident investigation by providing information on aircraft system status, flight path and attitude. The weight and cost of FDR systems are factors. Research and development is required to determine the appropriate standards for FDR data and survivability in the helicopter environment, which typically involves substantially lower speeds and altitudes than airplanes. Funds are currently best invested in preventive training.

Although the FAA notes that FDRs offer critical information in an investigation, its statement that the helicopter environment "typically involves substantially lower speeds and altitudes than airplanes" implies that helicopter recorders require less-stringent survivability standards than currently imposed. However, the Safety Board has evidence that helicopters experience the same crash environment as airplanes. For example, on November 27, 1999, a Bell 212, N8144M, crashed near Philadelphia, Mississippi. The CVR on board that helicopter sustained significant heat damage from the crash, substantially damaging the recorder's memory boards. Although the CVR, an older solid-state model (Universal CVR30), was manufactured to an older survivability standard (FAA's TSO C-84) that was less stringent than the current standard for CVRs (TSO123a), the audio was retrieved from the individual memory modules after significant effort, and the data proved valuable in determining the operational events leading to the crash. Given this experience, the Safety Board notes that crash-protected flight recorders that meet current survivability standards will be more likely to withstand a helicopter crash and yield reliable flight data.

As for the FAA's statement that "funds are currently best invested in preventive training," the Safety Board maintains that preventive training is most beneficial when the circumstances of an accident can be fully ascertained, and the information provided by flight recorders is essential in obtaining an accurate picture of the complex events of a helicopter accident for subsequent use in that training. Training cannot address design deficiencies that have yet to be discovered.

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[17] For the issuance of the 1987 final rule, see 52 FR 9622, and for 1988 final rule, see 53 FR 26134.

[18] Per the FAA's website: www.faa.gov/news/news_story.cfm?contentKey=3803

FDR Retrofit Costs

The Safety Board acknowledges that the cost associated with retrofitting an aircraft with an FDR can be substantial. Nevertheless, the FAA has granted exemptions to helicopters with FAA-approved FDR supplemental type certifications (STCs)—Sikorsky Aircraft, for example, was issued an STC for an FDR installation on S-76A/B/C model helicopters in November 1991. With the availability of an STC for the S-76A, it is unclear why the FAA granted exemptions for the S-76A or put it on the exception list in the 2003 rule change; in any case, the cost associated with certifying an FDR for an S-76A retrofit was not the reason.

Additionally, helicopters in the United Kingdom and Europe, especially those operating in the North Sea, regularly operate with both a CVR and an FDR. Clearly, the retrofit costs were considered reasonable and the technical aspects of a retrofit were available to those operators, yet helicopter operators in the U.S. repeatedly claim that the technical capability of performing an FDR retrofit does not exist.[19] However, since October 11, 1991 (the effective date of the FDR carriage requirements), all U.S.-operated multi-engine, turbine-powered rotorcraft designed to seat 10 or more passengers should have had the technical capability to be equipped with an FDR (either as an original installation or a retrofit).

Nevertheless, several options should be considered in evaluating the cost of retrofitting helicopters with FDRs, such as image recorders, combination flight data/cockpit voice recorder units, and units coupled with Health and Usage Monitoring Systems (HUMS). Image recorders, which are estimated to cost $10,000,[20] provide both parametric data from the aircraft instruments and operational information, such as environmental conditions. Recognizing their investigative and economic value on smaller aircraft, the Safety Board in 2003 issued recommendations to the FAA regarding the equipping of aircraft with image recorders (Safety Recommendations A-03-64 through -65). However, the Board notes that although an image recorder would provide investigators with valuable data (and operators with a less costly FDR substitute), large transport-category helicopters are highly complex, and onboard image recorders may not capture all of the critical information that is captured by an FDR.

Combination flight data/cockpit voice recorder units are another alternative to traditional stand-alone CVRs and FDRs; the data retrieved from the Estonian S-76 accident were recorded by a combination CVR/FDR single box recorder.[21] Although the Safety Board has supported the FAA's longstanding policy advising operators to carry separate CVR and FDR units on their airplanes,[22] a single combination CVR/FDR unit may be better suited to helicopters due to weight and space restrictions. A single combination unit may also require less maintenance than separate recorders, reducing the overall cost still more. The Safety Board notes that the FAA

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[19] For example, Exemption No. 6785 and every helicopter exemption granted thereafter that referenced Exemption No. 6785.

[20] Physical Optics Corporation, which was contracted to install its image recorders on U.S military aircraft, made this statement at the Safety Board's Aviation Image Recording Public Hearing (held July 27-28, 2004, at Safety Board Headquarters in Washington, D.C.).

[21] The European regulations are specifically intended solely for helicopter operations and allow for a combination CVR/FDR unit. Reference JAR-OPS 3.700, 3.705, 3.715, 3.720.

[22] From the FAA's Advisory Circular on the airworthiness and operational approval of digital flight data recorder systems, issued October 5, 1999 (AC 20-141).

issued a notice of proposed rulemaking (NPRM) on February 28, 2005,[23] which provided for rotorcraft to be equipped with a single CVR/FDR combination unit (if it was required to be equipped with both) for 14 CFR Part 91 and 135 operations. The Safety Board supports the use of a single combination CVR/FDR unit for all rotorcraft operations.

Further, many helicopters operate with HUMS, which comprises a combination of sensors, data acquisition technology, and software algorithms—both on board and ground-based.[24] In general, HUMS information is used to monitor helicopter vibration to help detect mechanical failures, which can reduce maintenance costs and improve safety. Most of the sensors used in HUMS could also be used in an FDR system, and the cost of installing an FDR on a helicopter with HUMS would be significantly lower if the FDR were coupled to the HUMS. (Manufacturers often sell FDRs as supplements to the HUMS.) Given these options for capturing critical accident data, the cost of retrofitting helicopters with crash-protected recorders is likely to be far less than the industry has claimed.

FAA Actions Regarding FDRs on Airplanes vs. Helicopters

The Safety Board recognizes that the FAA has shown its general support for FDRs on passenger-carrying aircraft by increasing the stringency of FDR requirements over the past 19 years through a series of regulation changes. However, the FAA has historically been less exacting about FDR use in helicopter operations. For example, on June 11, 2001, Era Aviation petitioned the FAA to exempt two of its recently imported S-76A helicopters, including the accident helicopter, N579EH, from 14 CFR Part 135.152. In seeking relief, the letter noted several previous exemptions and stated that Era operated 37 other rotorcraft with a passenger-seating configuration of 10–19 seats without FDRs installed. Using this rationale to exempt the two additional helicopters is troubling because the STC that was available for the S-76A would have reduced the FDR retrofit cost (especially if the retrofit cost were spread over several aircraft). However, the FAA granted the exemption in August 2001,[25] remarking that the request did not differ in circumstances from those of the petitioner of Exemption No. 6785 (for a Bell 212). The FAA further stated that exempting certain helicopters from the FDR requirement "would not adversely affect safety." The Era accident investigation, which has been hampered by the absence of FDR data, proves otherwise.

In contrast, the FAA's response to airplane operators has not been as generous. In June 2005, in response to a petitioner seeking relief from installing an FDR on an imported airplane (a CASA 212),[26] the FAA chastised the petitioner, stating that the regulation from which the petitioner sought relief "has been on the books for 17 years, so it cannot claim it did not have notice of the requirement.... The petitioner knowingly made the decision to import an aircraft that would be prohibitively expensive to bring to current Part 135 operational standards...." The FAA also stated that the intent of 14 CFR Part 135.152 was that "the FAA, with the significant

[23] See 70 FR 9752; Regulatory Docket No. FAA-2005-20245. The Safety Board commented on the NPRM on April 29, 2005.

[24] In June 1999, the United Kingdom mandated HUMS for transport-category rotorcraft seating nine or more passengers.

[25] Exemption No. 7605 to Era Aviation; Regulatory Docket No. FAA-2001-10007

[26] Exemption No. 8584; Regulatory Docket No. FAA-2005-21652

support of the National Transportation Safety Board, was seeking to halt the importation of old aircraft that did not have flight recorders." Notably, Era Aviation made its request to exempt its imported S-76A in May 2001—only 4 years earlier, when 14 CFR part 135.152 had been "on the books" for 13 years—but the FAA's response to Era Aviation was not nearly as critical.

European regulators have approached the issue of FDRs on helicopters differently from the FAA. Rather than grouping helicopter and airplane flight recorder operational requirements together, European regulators separate the two, recognizing that helicopters have unique operational and airworthiness requirements, and that the costs associated with these requirements differ vastly from those of airplanes or airlines. In contrast, the FAA incorporated the operational helicopter requirements into the flight recorder regulations that were originally intended for large airplane and airline operations. As a result, the FAA encountered serious opposition from the helicopter industry upon the rule's issuance, and reacted by issuing exemptions and making them permanent with the 2003 regulation change.

The overall need for data during accident investigations is perhaps even greater for helicopters than it is for airplanes. The flight dynamics and flight control systems for helicopters are orders of magnitude more complicated than that of many of the smaller transport-category airplanes, and reconstructing the accident sequence without a recorder is more problematic. It is highly likely that safety deficiencies have gone unnoticed due to the lack of recorded data.

Impact of the 2003 Flight Recorder Rule Change

The Safety Board notes that the FAA did not provide an opportunity for comment on the 2003 FDR rule change regarding the rotorcraft exceptions to the FDR requirement in 14 CFR 135.152. [27] The Safety Board now offers its comments on the impact of the rule change on its investigations, using two of the excepted-status rotorcraft as examples. Under the revised rule, neither of these helicopter models is required to carry an FDR.

- For the S-76A:
  - Current number of aircraft on the FAA registry: 95
  - The Safety Board has participated in a total of 44 accident investigations; 11 (or 25 percent) included fatalities.
  - Since the inception of the FDR carriage requirements in October 11, 1991, 17 accidents have occurred, 7 of which (or over 40 percent) were fatal.
- For the Bell 212:
  - Current number of aircraft on the FAA registry: 106

[27] The Safety Board provided comments (on October 15, 2001, and June 13, 2003) for the Airbus/Boeing 14 CFR Part 121 FDR parameter accuracy issues, which comprised the bulk of the 2003 rule change (see 68 FR 42932), but the FAA did not provide prior notice that the rotorcraft exceptions would be specifically included in the July 18, 2003 final rule (which was issued without comment); Regulatory Docket Nos. FAA-2003-15682 and FAA-2001-10428.

- The Safety Board has participated in a total of 40 accident investigations; 19 (or nearly 50 percent) included fatalities.

- Since the inception of the FDR carriage requirements in October 11, 1991, 24 accidents have occurred, 8 of which (or about 33 percent) were fatal.

These statistics are alarming because the accident rate since 1991 might have been significantly reduced had these model aircraft been equipped with FDRs. Since October 11, 1991, the Safety Board has investigated 176 accidents involving transport-category helicopters and, as stated previously, has found only one instance in which an FDR was on board the accident helicopter—and that was a foreign-registered aircraft. Additionally, 71 accidents (or over 40 percent of the transport-category helicopter accidents) have involved helicopters that were included in the 14 CFR Part 135.152(k) exception list. By granting permanent exception status to several helicopter models, the FAA has compromised the safety of helicopter passengers by removing the opportunity to acquire valuable performance data during accident investigations.

Although the FAA attempted to recognize the critical need for flight recorders in 1988, the current regulations are inadequate. The Safety Board has learned through its involvement with the Estonian investigation of the Finnish S-76C+ helicopter that data recorded on board transport-category rotorcraft are extremely important. The Safety Board therefore recommends the following to the FAA:

> Require all rotorcraft operating under 14 *Code of Federal Regulations* Parts 91 and 135 with a transport-category certification to be equipped with a cockpit voice recorder (CVR) and a flight data recorder (FDR). For those transport-category rotorcraft manufactured before October 11, 1991, require a CVR and an FDR or an onboard cockpit image recorder with the capability of recording cockpit audio, crew communications, and aircraft parametric data. (A-06-17)
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> Do not permit exemptions or exceptions to the flight recorder regulations that allow transport-category rotorcraft to operate without flight recorders, and withdraw the current exemptions and exceptions that allow transport-category rotorcraft to operate without flight recorders. (A-06-18)

In your response to the recommendations in this letter, please refer to Safety Recommendations A-06-17 and A-06-18.

Acting Chairman ROSENKER and Members ENGLEMAN CONNORS, HERSMAN, and HIGGINS concurred in these recommendations.

By:

[Original Signed]

Mark V. Rosenker
Acting Chairman