[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 121, 125, and 135

[Docket No. FAA–2015-0289]

Policy Regarding Datalink Communications Recording Requirements

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Policy update and clarification; request for comments.

SUMMARY: This policy statement updates and clarifies how the FAA determines when datalink communications must be recorded as a function of the cockpit voice recorder operational regulations. This policy update eliminates unneeded limitations in current policy, and restates the FAA's intent that the requirement function as a performance-based regulation.

DATES: Effective [Insert date of publication in the Federal Register]. Comments must be received by [insert date 90 days after date of publication.]

ADDRESSES: Send comments identified by docket number FAA-2015-0289 using any of the following methods:

- Federal eRulemaking Portal: Go to http://www.regulations.gov and follow the online instructions for sending your comments electronically.
- Mail: Send comments to Docket Operations, M–30; U.S. Department of Transportation (DOT), 1200 New Jersey Avenue SE., Room W12–140, West Building Ground Floor, Washington, DC 20590–0001.

- Hand Delivery or Courier: Take comments to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: Fax comments to Docket Operations at (202) 493–2251.

Privacy:

In accordance with 5 USC 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to www.regulations.gov, as described in the system of records notice (DOT/ALL-14 FDMS), which can be reviewed at www.dot.gov/privacy.

Docket:

Background documents or comments received may be read at http://www.regulations.gov at any time. Follow the online instructions for accessing the docket or Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 .m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT:

For technical questions concerning this action contact Tim Shaver, Flight Standards Service, Aircraft Maintenance Division-Avionics Maintenance Branch, AFS-360, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone: (202) 267-1675, Fax: (202) 267-1813, email: tim.shaver@faa.gov.

For legal questions concerning this action contact Karen Petronis, Senior Attorney, Regulations Division, AGC-200, Office of the Chief Counsel, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC 20591; telephone: (202) 267-8018, email: Karen.Petronis@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

In 2008, the FAA promulgated several amendments to the flight recorder regulations of Title 14 of the Code of Federal Regulations (73 FR 12542, March 7, 2008; Docket No. FAA–2005–20245). Those regulations amended the requirements for cockpit voice recorders (CVR) and digital flight data recorders (DFDR) and affected certain air carriers, operators, and aircraft manufacturers. In amending the regulations, the FAA increased the duration of certain CVR recordings; increased the data recording rate for certain DFDR parameters; required the physical separation of the DFDR and CVR; required improved reliability of the power supplies to both the CVR and DFDR; and required that datalink communications to or from an aircraft be recorded if datalink communication (DLC) equipment is installed. The changes were based on recommendations issued by the National Transportation Safety Board (NTSB) following its investigations of several accidents and incidents, and included other revisions the FAA determined necessary. These changes to CVR and DFDR systems were intended to improve the quality and quantity of information recorded and retained for accident and incident investigations.

When the rule was promulgated, the FAA recognized that emergent DLC technology was changing the equipment and means used by pilots to communicate. While the 2008 regulations did not mandate the installation of datalink communication equipment, the FAA recognized the value of the data communications on the aircraft equipped with DLC, and the need for communicated data to be recorded.

In the preamble to the 2008 final rule, the FAA discussed a range of comments received about datalink communications, including compatibility with international standards, compliance

time, recording capacities, and the application of the requirement to existing datalink capabilities. Many of the FAA's responses to those comments indicated that the requirement to record would depend on the dates of certification, whether the certification was at manufacture or was a retrofit, the extent of equipment installation and functionality, the scope of the message set and changes made to it. In retaining the installation of DLC as optional, but making recording mandatory at installation, the FAA expected that the expansion of datalink technology and its increasing value to operators would result in routine recordation of the communications.

Since 2010, implementation of the Controller Pilot Data Link Communications (CPDLC) recording requirement has become more complex than anticipated. The FAA has been presented with a greater number of discrete aircraft equipment installations than expected when the rule was promulgated. As such, individual decisions on whether the recording rule applied have become difficult to make consistently within the scope of our original guidance. At issue are aircraft that were manufactured before the effective date of the rule (December 6, 2010) that require widely varying levels of additional CPDLC equipment or software to be fully functional.

Regulatory basis

The regulation requires recordation of the data on the CVR, and was added to the CVR sections of various operating rules in 14 CFR. These regulations were linked to the certification regulations for the particular aircraft, which refer to an approved data message set that must be recorded from the communications unit that translates the signal into data usable by the flight crew (in most cases the flight management system). Rather than define a specific message set, the FAA intended that the requirement be performance based to account for the differing needs and equipage of operators and the evolution of data capabilities.

There are two guidance documents that apply to datalink communications. First, Advisory Circular, AC 20-160 - Onboard Recording of Controller Pilot Data Link Communication (CPDLC) in Crash Survivable Memory, identifies CPDLC messages that may be approved for inclusion in an approved message set. We regularly review this document as new DLC systems and capabilities are developed, the need for specific information changes, and coordination with other international regulating entities occurs.

The second guidance document is an FAA information bulletin, InFO 10016, released August 16, 2010, which was intended to present in more detail the circumstances that make the recordation requirement applicable to a specific aircraft. When applied to individual aircraft, however, the guidance documents raised unanticipated questions regarding when the requirement would apply, including the effect of equipment changes, and whether the timing of certain changes could alter the applicability of the recording requirement.

For example, while the FAA recognized that there were aircraft with DLC system design approvals established before the effective date of the rule, the question arose whether simple activation of the same system (such as by a software modification) would make recording mandatory. Since the system designs were approved prior to the rule, they would not have included DLC recording as part of the initial certification requirements, either for the system or the message set. The InFO included guidance on upgrading existing aircraft with DLC recording capability, which included a decision process requiring consideration of multiple factors, such as the date of manufacture of the aircraft, whether installation of both a CVR and a flight data recorder were required, the date of installation of any datalink equipment on the aircraft, whether the datalink equipment had an approved message set, whether a supplemental type certificate

was required to install or activate the datalink equipment, and whether a software change alone was sufficient to make the data link recording requirement applicable to a particular aircraft.

Current operating environment

Since the 2008 rules were promulgated, domestic CPDLC has expanded and evolved, and is poised to become a significant means to enhance safety, efficiency and capacity in the domestic national airspace system (NAS). The FAA is now actively promoting the use of this technology, and has invested in the Data Communications Program (Data Comm) to provide more robust DLC services between pilots and air traffic controllers. Data Comm will provide a data link between the ground and flight deck avionics for safety-of-flight air traffic control clearances, instructions, traffic flow management messages, flight crew requests, and reports. Data Comm has also become a core component of NextGen, as Data Comm provides needed enhancements for communication infrastructure. Data Comm is expected to reduce the impact of ground delays that result from airport reconfigurations, weather, and congestion; reduce communication errors; improve controller and pilot efficiency through automated information exchange; enable broader use of NextGen services (e.g., enhanced re-routes, trajectory operations); and increase controller productivity, leading to increased NAS capacity.

The FAA is developing data communications capability in two phases. Segment 1 Phase 1 (S1P1) will deploy the CPDLC departure clearance capability in the tower domain. Segment 1 Phase 2 (S1P2) will deliver data communications services to the en route domain (such as airborne reroutes, transfer of communications/initial check-in, and direct-to-fix routing). A second segment enhancing these services is also planned. Collectively, these services will contribute to a reduction in flight delays, reduced environmental impacts, and more efficient routes for aircraft resulting in increased operational efficiency, added flexibility, and enhanced

safety. In order to realize the benefits of Data Comm in the NAS domestically, additional aircraft beyond those that currently support Data Comm in the Oceanic airspace are needed.

As part of the equipage initiative to support Data Comm, operators seeking to incorporate DLC equipment through the FAA-sponsored Data Comm program have reported that current interpretations of the rule and the guidance materials have resulted in an inconsistent determination of when DLC recordation is required on individual aircraft. The resulting uncertainty has delayed the installation of DLC equipment, with operators reporting significant costs to modify aircraft to record this data if the aircraft is not already equipped with the necessary wiring and upgraded information management systems. The difficulties and inconsistencies in application of the recordation criteria are reducing industry participation in the Data Comm program. As part of the NexGen Implementation Working Group (NIWG) activities in 2014, industry representatives noted that their declining participation in the Data Comm program was the result of the additional cost of the recording equipment, further delaying the goal of the fleet size needed to make the system effective.

In 2014, the NIWG recommended that the Performance-based Operations Rulemaking Committee (PARC) develop a recommendation on the recording rule and present it to the FAA. The PARC is an FAA-sponsored rulemaking committee that has both the FAA and aviation community at large among its members, and which makes recommendations to FAA management on the issues it addresses. Since 2005, the PARC has maintained a Communications Working Group (CWG) to address the implementation of aeronautical communications systems. In 2012, the PARC CWG began a review of airborne datalink recording capabilities.

The interplay of the recording regulation and the implementation of NextGen were confirmed by the findings of the PARC in its report it submitted to the FAA in October 2014. The FAA met with the PARC CWG and the Data Comm program participants and came to the conclusions already discussed – that determining whether datalink recording is required on individual aircraft manufactured before the effective date of the rule is difficult, resulting in confused and inconsistent decision making; and that the Datalink Recording (DLR) equipage policy defined in the current InFO 10016 leaves questions as to whether certain equipment changes and revisions to DLC systems and certification documentation caused the recordation requirement to apply.

Cost of Modification

Since datalink recording itself was still optional under the 2008 regulation, and the use of datalink communication was still limited, neither the recording requirement nor the guidance focused on the cost of the installing recording equipment or on the safety benefits of DLC use. The optional installation and varied use on in-service aircraft left the FAA unable to estimate whether, when, or how many existing aircraft would install DLC systems with CPDLC functionality. The FAA anticipated that the economic benefits of DLC to an operator would be the determining factor in a decision whether to install it at all. With the recent input of the NIWG and the PARC, the economic impact of installing a required DLC recording system is becoming better understood. Cost data have been collected from the airline partners that are participating in the Data Comm program and the PARC. The reported cost for installing the recording functions is $135,000 per aircraft. The costs associated with equipping an aircraft manufactured before 2010 with datalink recording were approximated as follows:

- CVR Hardware - $18,000

- CVR Control Panel - $7,000
- Non-Recurring Engineering (CVR) - $10,000
- New Communications Management Unit (CMU) (recording capable) - $35,000
- New CMU software that enables datalink recording - $10,000
- Non-recurring Engineering (CMU) - $10,000
- Installation Kits (CVR/CMU combined) - $10,000
- Installation Labor - $15,000
- Aircraft out of service costs (wiring run and access required) - $20,000

Datalink Communication Safety Benefits*:*

While the efficiency benefits of CPDLC had been projected and quantified in several studies that were available at the time of the rulemaking, the safety benefits had not been the subject of similar study. In 2012, the FAA began a preliminary analysis on the potential safety benefits arising from the implementation of two systems, the Future Air Navigation System (FANS 1/A) CPDLC and Automatic Dependent Surveillance – Contract (ADS-C), and presented the results to the North Atlantic Safety Analysis Reduced Separation Implementation Group (NAT SARSIG) in 2012. As the summary of discussions and conclusions of the meeting states, "These preliminary results indicated a significant potential for enhancing safety in the International Civil Aviation Organization North Atlantic Region (ICAO NAT) Region, particularly in the vertical dimension." (See Appendix L to the *Summary of Discussions of the NAT SARSIG Sixteenth Meeting*, October 2012, included in the docket for this notice). The NAT SARSIG indicated that projected safety benefits include improved conformance monitoring and intervention capability through early detection and resolution of errors via integrated FANS 1/A CPDLC and ADS-C; a reduction in errors associated with manual pilot data entry of

clearances resulting from the ability to load data link clearances directly into the Flight Management System (FMS); and a reduction in the duration of loss of communication between aircraft and air traffic control (ATC) when transferring ATC contact by using a reviewable message.

The ability to send reviewable messages is expected to significantly reduce several communications errors, such as read-back and hear-back errors, lack of read-back and hear-back, and audio interruptions. These types of communications errors impact ATC operations. As an example, failure to comply with an assigned altitude may result from not hearing the communication, hearing it incorrectly, or ATC not hearing a reply.

In its report, the PARC recommended first that the FAA clarify its guidance material to indicate that the recordation requirement does not apply to certain cases of datalink retrofit including those aircraft 1) that have an existing certified datalink capability; 2) that can activate a datalink capability that was certified before the effective date of the rule; and 3) that modify installation modifications to certified data link capability that do not change the FANS 1/A or ATN B1 interoperability. The PARC also recommended that the FAA go further and revise the regulations to exclude any aircraft manufactured before the effective date of the rule from the requirement to record datalink communications messages, regardless of the date of installation of the DLC equipment. Finally, the PARC recommended that the FAA work with the European Aviation Safety Agency and ICAO to continue harmonizing data link recording rules, their applicability, and timelines.

FAA Analysis

The FAA has reviewed the PARC report and discussed the issue with various aviation organizations. Based on the data and recommendations received, the FAA concluded that a

significant need for clarification and revision of current policy exits. The agency and the industry have made significant investment in data communications. These systems are expected to reduce communication errors and improve safety in the NAS as they enhance NAS efficiency and capacity.

The FAA better understands the cost of installing DLR systems on aircraft that were designed and manufactured before the regulation was promulgated and no provisions for DLC recording were available. Most aircraft produced after the effective date of the rule have the base mechanisms for DLC already installed at manufacture, which significantly decreases the cost and impact of incorporating a recording component. Accordingly, the policy changes announced in this document are applicable to aircraft that were manufactured before December 6, 2010 (or April 6, 2012, if complying with part 91).

The FAA agrees that the complexity of the current guidance has resulted in inconsistent application of the rule. The recording regulation was not intended to discourage the installation of datalink capability, and its applicability should not depend on the subjective interpretation of factors as minor as the day a previously installed system was turned on or the scope of changes to a previously approved DLC system. In order to maximize the safety and efficiency benefits of DLC use in the NAS, the FAA is simplifying its guidance regarding the applicability of the recording requirement for aircraft that were manufactured before the effective date of the rule.

The target aircraft for this policy change represent approximately 30% of the current U.S. fleet operating under parts 121 and 135, as reported by the PARC. These 2,116 aircraft were manufactured prior to 2010 and had a certified DLC system that was available before the recordation rule became effective. This number will gradually decrease as these older aircraft are retired and replaced. Since DLC recordation was not required when these aircraft were

manufactured, none of the messages associated with those certified systems were identified, making application of the regulation difficult and inconsistent. The FAA forecasts that by 2020, 34% of the U.S. fleet (approximately 2,200) will consist of aircraft manufactured after 2010 that have DLC recording capability.

Comments requested

While this policy update is effective on publication, the FAA seeks comment from interested persons regarding the application of the policy to affected operators. We are particularly interested in comments identifying the make/model/series of aircraft that had a certified DLC design approval prior to the effective date of the rule, and any information regarding the economic impacts of the prior and revised polices, and descriptions of circumstances for which application of the regulation remains unclear following this policy update.

Updated Policy

Datalink recording requirements are found in the operating regulations of Title 14 of the Code of Federal Regulations (14 CFR), specifically in § 91.609, effective April 6, 2012; and in §§ 121.359, 125.227 and 135.151, effective December 6, 2010. These regulations each require that the subject airplanes or rotorcraft that install datalink communication equipment on or after [the effective date of the rule], must record all datalink messages as required by the certification rule applicable to the aircraft.

This policy statement clarifies how the FAA defines the phrase "install datalink communication equipment" for purposes of the recordation requirement. Clarification of this policy and FAA guidance material is intended to assist FAA personnel and aircraft operators in determining when datalink recording is required.

Definition of Datalink Communication Equipment:

The term "datalink communication equipment" as used in these regulations, means all of the components installed on the aircraft that are necessary to complete data communications.

The equipment may vary for individual aircraft, but could include the Flight Management Computer; Communications Management Unit (CMU), or equipment with an equivalent function that hosts an approved message set (e.g., CPDLC application), the datalink router (e.g., hosted in the CMU) that routes the messages to the radios, any radios (e.g., VHF, HF Datalink, Satcom) that are used to transmit the messages using an approved message set, and any antennas associated with these radios.

Applicability:

In applying this regulation, aircraft are divided into two groups: those manufactured on or after the effective date of the rule, and those manufactured before that date.

Those airplanes or rotorcraft manufactured on or after the effective date, must record all datalink communications when both of the following conditions are met:

- The aircraft is required to have both a cockpit voice recorder and a flight data recorder; and
- The aircraft has datalink equipment installed that uses an approved message set (see FAA Advisory Circular 20-160).

Those airplanes or rotorcraft manufactured before the effective date of the rule must record all datalink communications when both of the following conditions are met:

- The aircraft is required to have both a cockpit voice recorder and a flight data recorder; and
- The MAKE/MODEL/SERIES of the aircraft did not have any certified DLC equipment installation design approval (providing one or more of the messages identified in AC 20-160) prior to the effective date of the rule.

The FAA InFO 10016 dated August 16, 2010 is cancelled. A revised InFO reflecting the policy changes noted here is under development and will be posted on the FAA website when completed.

Issued in Washington, DC on February 23, 2015.

John S. Duncan

Director, Flight Standards Service

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