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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 91, 121, 125, and 135

[Docket No.: FAA-2023-2270; Notice No. 24-04]

RIN 2120-AL92

25-Hour Cockpit Voice Recorder (CVR) Requirement, New Aircraft Production

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

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This rulemaking would increase the recording time of cockpit voice recorders from the mandated 2 hours to a proposed 25-hour recording time for all future manufactured aircraft. This rulemaking would provide accident investigators, aircraft operators, and civil aviation authorities with substantially more cockpit voice recorder data to help find the probable causes of incidents and accidents, prevent future incidents and accidents, and make the FAA's regulations more consistent with existing international requirements.

DATES: Send comments on or before **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Send comments identified by docket number FAA-2023-2270 using any of the following methods:

- Federal eRulemaking Portal: Go to 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, S.E., 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, S.E., 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 U.S.C. 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 www.regulations.gov/ at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Charisse Green, AFS-340, Aircraft Maintenance Division, Office of Safety Standards, Federal Aviation Administration, 800 Independence Ave SW, Washington DC 20591; telephone (202) 267-1675; e-mail Charisse.green@faa.gov.

SUPPLEMENTARY INFORMATION:

Authority for this Rulemaking

The FAA's authority to issue rules on aviation safety is found in title 49 of the United States Code. Subtitle I, section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the FAA's authority.

This rulemaking is issued under the authority described in subtitle VII, part A, subpart III, section 44701. Under that section, the FAA is charged with prescribing regulations providing minimum standards for other practices, methods, and procedures necessary for safety in air commerce. This regulation is within the scope of that authority since flight data recorders are the only means available to account for aircraft movement and flight crew actions critical to finding the probable cause of incidents or accidents, including data that could prevent future incidents or accidents.

I. Executive Summary

A. Overview of Proposed Rule

This rulemaking effort proposes to amend the cockpit voice recorder (CVR) regulations to increase the recording duration of CVRs. Currently, CVRs are required to retain the last two hours of recorded information. Once this 2-hour limit is reached, a

CVR overwrites the oldest data to maintain a rolling 2-hour recording. This proposal would increase the minimum duration of CVR recordings to 25 hours. The proposed change would affect all newly manufactured aircraft operating under title 14 of the Code of Federal Regulations (14 CFR) parts 91, 121, 125, and 135, one year after the effective date of the final rule.

B. Statement of the Problem

The current 2-hour recording duration requirement does not meet the NTSB's needs for investigations and subsequent safety recommendations. Since the NTSB issued Safety Recommendation A-18-030, it has investigated numerous accidents and incidents where CVR data relevant to the accident or incident has been overwritten because the relevant recording occurred earlier than the available two hours of recording.

C. Summary of the Costs and Benefits

Benefits of the proposed rule are expected to stem from a reduction in accident risk and time savings. Specifically, the additional audio of longer duration CVRs would provide authorities with more information on events and procedures undertaken in the flight deck in investigated incidents. This increased data may lead to new or more fully informed FAA recommendations or policy changes that could further enhance safety and reduce the risk that an incident becomes an accident. In addition, updated CVR models have also revamped the CVR interface tools, resulting in time-saving benefits. The simplified and more intuitive tools allow personnel to be trained quicker on operation, retrieve audio data faster, and perform additional diagnostic services to shorten

downtime. The FAA currently lacks data to predict the exact reduction in accident risk and labor hours and requests comments on the expected value of these benefits.

The FAA has assessed projected compliance costs using the incremental cost of equipping a 25-hour capable CVR over a comparable 2-hour unit to all applicable newly produced aircraft. Market research indicates that the difference between these units is minimal, ranging from near parity to an upper bound of approximately \$4,500. Using that upper bound, the total cost over 20 years is estimated to be \$102.42 million at 7 percent present value, with annualized costs of \$9.67 million. As operational procedures are expected to be similar between the older 2-hour and newer 25-hour capable models, the FAA anticipates no other notable costs. The FAA invites comments on the cost estimates and assumptions.

II. Background

A. CVRs: National Transportation Safety Board (NTSB) Recommendations and FAA Responses

The FAA previously has engaged in rulemaking to address past NTSB recommendations concerning CVRs.

In December 1996, the NTSB issued Safety Recommendation A-96-171 as a result of its investigation of an accident in January 1996.¹ In this accident, an aircraft touched down hard in the approach light area short of a runway at the Nashville International Airport, resulting in minor injuries to passengers and crew and substantial

¹ NTSB. Safety Recommendation A-96-171, December 11, 1996.

damage to the aircraft's tail section, nose gear, and engines. During the investigation, the NTSB was hampered by the fact that the 30-minute closed-loop CVR tape did not include recordings of the initial approach to the runway, the hard landing event, or the go-around because that information had been recorded over and permanently lost after the airplane safely stopped on the ground.² As a result, the NTSB recommended that the recording limitation for newly manufactured CVRs meet a minimum recording duration of two hours.³ The FAA adopted this recommendation in 2008.

In August 2002, the NTSB issued a safety recommendation letter to the FAA, identifying delays or failures by the operator to deactivate CVRs after reportable events as a major factor in the systemic problem of retaining data, as information was overwritten in the remainder of a flight with an incident or accident.⁴ The NTSB recommended that the FAA require the CVR be deactivated immediately upon completion of flight after a reportable incident or accident has occurred. In response, the FAA issued Notice 8400.48, "Cockpit Voice Recorder Deactivation After a Reportable Event," on April 25, 2003. This notice advised air carriers to add a checklist item to deactivate the CVR, manually or automatically, immediately upon completion of a flight with a reportable accident or incident. On October 6, 2003, the NTSB considered Notice 8400.48 to have met the intent of Safety Recommendation A-02-24 for aircraft operating

² *Id.*

³ *Id.*

⁴ NTSB. Safety Recommendation A-02-24, August 29, 2002.

under parts 121 and 135 requirements, but not part 91 requirements as the notice did not address part 91 operators.⁵

On March 7, 2008, the FAA amended the CVR regulations in accordance with NTSB Safety Recommendation A-96-171.⁶ The final rule, “Revisions to Cockpit Voice Recorder and Digital Flight Data Recorder Regulations,” increased the duration of certain CVR recordings, increased the data recording rate for certain digital flight data recorder (DFDR) parameters, physically separated DFDRs and CVRs, improved power supply to both CVRs and DFDRs, and required certain datalink communications received on an aircraft to be recorded if datalink communication equipment was installed.⁷

On October 10, 2018, the NTSB published an Aviation Safety Recommendation Report titled “Extended Duration Cockpit Voice Recorders.” Within this safety report, Safety Recommendation A-18-030 recommended that the FAA require all newly manufactured aircraft that must have a CVR to be fitted with and operate a CVR capable of recording the last 25 hours of audio. This recommendation stemmed from an aircraft incident that occurred in July 2017 at San Francisco International Airport, in which the flight crew of an Airbus A320 was cleared to land on a set runway but instead lined up with a parallel taxiway. After descending to an altitude of 100 feet above ground level (AGL), the aircraft overflew an airplane on the taxiway. The incident aircraft subsequently overflew a second airplane on the taxiway before starting to climb.

⁵ NTSB. Safety Recommendation Report A-18-04 at 3, October 2, 2018.

⁶ 73 FR 12541 (2008).

⁷ *Id.*

During the investigation of the incident, the NTSB found it difficult to gather relevant information as the CVR data was overwritten before Air Canada officials learned of the severity of the event. The report stated that had the NTSB been able to obtain the overwritten data, investigators would have been able to assess the timing and content of the flight crew's conversations during final approach, conversations during and after the go-around, and the flight crew's crew resource management (CRM), workload, and fatigue based on verbalizations or flight deck sounds. In this instance, the NTSB identified several serious safety issues; however, this investigation lacked direct evidence of the flight crew's decision making, coordination, and perception of its environment.

B. FAA Aviation Safety Summit of 2023

On March 15, 2023, the FAA convened an aviation safety summit, where approximately 200 safety leaders from the aviation industry met to discuss safety improvements in response to several recent near-miss incidents and runway incursions.⁸ The summit focused on ways to enhance flight safety for commercial operations, the air traffic system, airport and ground operations, and general aviation operations.

As a result of discussions at the summit, the FAA committed to initiate rulemaking that would require CVRs to capture 25 hours of information for newly manufactured aircraft.

⁸ The FAA. Readout from the FAA Aviation Safety Summit Breakout Panels. March 15, 2023. Accessed from www.faa.gov/newsroom/readout-faa-aviation-safety-summit-breakout-panels.

C. ICAO and EASA Adoption of a 25-Hour Cockpit Voice Recorder Requirement

In 2013, the European Union Aviation Safety Agency (EASA) proposed an amendment that would have required large commercial aircraft manufactured after January 1, 2019, to carry a CVR capable of recording the last 15 hours of aircraft operation.⁹ In 2015, after considering the comments received on the proposed amendment and after technical review, EASA extended the recording duration requirement to 25 hours.¹⁰ The 25-hour mandate took effect on January 1, 2021. The regulation requires any aircraft with a maximum takeoff weight of 27,000 kg (60,000 pounds) or more, manufactured after January 1, 2021, to be equipped with a CVR with at least a 25-hour recording capability.¹¹

In 2016, the International Civil Aviation Organization (ICAO) also adopted a new standard calling for the installation of CVRs capable of recording the last 25 hours of aircraft operation on all aircraft manufactured after January 1, 2021, with a maximum certificated takeoff mass of over 27,000 kg and engaged in commercial transport.¹² In adopting this standard, ICAO emphasized the value of CVR recordings in analyzing human factors and other sounds.¹³ ICAO noted that extending the recording duration of CVRs was necessary to cover the longest flight duration, including pre- and postflight activities, delays, and the time required to secure the recordings.¹⁴

⁹ “Amendment of requirements for flight recorders and underwater locating devices,” Notice of Proposed Amendment 2013-26, European Union Aviation Safety Agency, December 20, 2013.

¹⁰ Commission Regulation 2015/2338, 2015 O.J. Amending Regulation (EU) No 965/2012 as regards requirements for flight recorders, underwater locating devices and aircraft tracking systems.

¹¹ *Id.*

¹² NTSB. Aviation Safety Recommendation Report. ASR-18-04 at 2. October 2, 2018.

¹³ *Id.*

¹⁴ *Id.*

Since September 2013, the CVR technical standard in European Organization for Civil Aviation Equipment (EUROCAE) ED-112A, “Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems,” used by all manufacturers¹⁵, already provides design standards for a 25-hour CVR.¹⁶

III. Discussion of the Proposal

Since the FAA updated the CVR regulations in 2008, the NTSB has reported issues with accessing relevant CVR data with existing 2-hour recording duration. Numerous aircraft incidents have occurred in which relevant CVR data was overwritten and thereby made unavailable because of the time it took to retrieve the CVR. The lack of relevant CVR data hampers NTSB investigations and its ability to provide appropriate safety recommendations that can help prevent future accidents and incidents.¹⁷

In response to Safety Recommendation A-18-030, the FAA proposes to amend all CVR operational regulations related to CVR recording time by expanding the recording duration from two hours to 25 hours for aircraft manufactured one year after the date of publication of the final rule.

The NTSB’s Safety Recommendation also included the recommendation to retrofit the current fleet. While retrofitting the current fleet would more expeditiously increase the number of aircraft fitted with the newer 25-hour CVR units and, thereby, the

¹⁵ All manufacturers, regardless of US-based or foreign, are required to use this standard in order to meet the carriage requirements in §§ 91.609, 121.359, 125.227, and 135.151, which reference TSO-C123, which in turn specifies ED-112A.

¹⁶ GlobalSpec. “EUROCAE ED 112.” Accessible at standards.globalspec.com/std/1629860/EUROCAE%20ED%20112.

¹⁷ NTSB. (March 15, 2023). Transcript of NTSB Chair’s Remarks at the FAA Safety Summit. www.nts.gov/Advocacy/Activities/Pages/Homendy-20230315.aspx.

projected benefits to safety, the costs would be significant. Specifically, retrofitting the current fleet would increase by two-thirds the number of aircraft required to install 25-hour CVRs (estimated 29,561 aircraft in the current fleet added to the estimated 43,470 aircraft being built in the next 20 years). Further, the cost to retrofit existing aircraft with 25-hour CVRs would be several times higher than the cost to equip future-built aircraft with a 25-hour CVR instead of a 2-hour model. Assuming no replacement, applying a \$25,000 CVR unit cost spread across the estimated 29,651 current fleet would result in roughly \$741.28 million (undiscounted) in equipment cost compared to the \$195.62 million (undiscounted) in incremental upgrade costs from the proposed rule. Retrofitting current aircraft would also incur additional costs, such as aircraft downtime and labor hours required to replace the CVR unit, which would further increase the total cost. Therefore, in an effort to provide the increased benefit of making more substantive data available to accident investigators while maintaining the lowest economic impact on operators, this proposed rule would apply to newly manufactured aircraft only. For more information, please see the regulatory impact analysis in the docket.

The proposed change would affect the following regulations:

- Section 91.609(i)(2);
- Section 121.359(i)(2);
- Section 121.359(j)(2);
- Section 125.227(g)(2);
- Section 125.227(h)(2);
- Section 135.151(g)(1)(iii); and

- Section 135.151(g)(2)(iii).

Certificate holders operating under part 129 requirements would be affected because, in accordance with § 129.24, their CVRs are required to record as if the aircraft were operated under parts 121, 125, or 135.

A. Cockpit Voice Recorder Capabilities and Investigative Use

Aircraft operating under parts 91, 121, 125, and 135 are required to be equipped with a CVR that records radio transmissions and sounds in the flight deck to aid subsequent investigation should an accident or incident occur. The recorder's flight deck area microphone is usually located on the overhead instrument panel between the two pilots.

CVRs preserve the recent history of sounds in the flight deck and provide unique information such as engine noise, stall warnings, landing gear extension and retraction, and other clicks and pops. These sounds may help an investigator to determine parameters such as engine rpm, system failures, speed, and the time at which certain events occur. The CVR also records communications with Air Traffic Control, automated radio weather briefings, conversations between the pilots and ground or cabin crew, flight crew verbalizations of intentions and coordination, as well as the pilots' awareness of the aircraft and flight deck information.¹⁸ Access to this information allows investigators to more thoroughly investigate accident and incident factors. Incident factors include the

¹⁸ NTSB. (2023) "Cockpit Voice Recorders (CVR) and Flight Data Recorders (FDR)." www.nts.gov/news/Pages/cvr_fdr.aspx.

flight crew's procedural compliance, distraction, decision-making, workload, fatigue, and situational awareness.

A CVR starts recording when an aircraft is powered up and will continue to record until the aircraft is powered down or the CVR is deactivated. Once a CVR reaches the end of its recording limit, it will overwrite existing data with a new recording.

CVRs typically deactivate due to two forms of power loss. The first occurs when the CVR is deactivated after a major or catastrophic event causing a loss of electrical power. When this event occurs, the CVR preserves relevant audio recorded in the two hours prior to the accident. The second form occurs during less severe incidents, such as when the flight crew manually deactivates the CVR immediately upon landing in order to prevent the relevant audio from being overwritten.

After an accident or incident, the CVR data is transferred to an NTSB lab for retrieval. The NTSB will eventually receive a readout from the CVR software.

Since CVRs were implemented in 1966, recording capabilities have significantly increased from the original 30 minutes. The latest designs employ more easily expandable solid-state memory and use fault tolerant digital recording technique with an incorporated battery so that recording can continue until the end of flight, even when the aircraft's electrical system fails.

The technical limit for recording time has expanded such that 25 hours is now well within CVR capability. In addition, because both EASA and ICAO have adopted a 25-hour CVR recording duration minimum for aircraft manufactured after January 1, 2021, multiple manufacturers already produce CVRs capable of recording for 25 hours.

B. National Transportation Safety Board

Since 2008, the NTSB has expressed concerns regarding the availability of CVR information, the length of CVR recording time, and how to prevent relevant information from being overwritten after an incident or accident. The current 2-hour recording requirement has not fully resolved the issue of overwritten data, which continues to negatively impact NTSB investigations.

There are two common causes for CVR data to be overwritten. First, there may be a delay between a safety event and the flight crew recognizing that event to be a serious incident or accident, resulting in the relevant CVR data being overwritten as the CVR continued to record throughout the delay. Second, the recording of a safety event may be overwritten during the course of the flight itself (e.g., where flight duration exceeds the 2-hour CVR recording duration).

The NTSB reported that, in 2017, approximately 56 percent of U.S. block times¹⁹ consisted of long and medium flights with durations longer than two hours, including some international flights lasting over 12 hours.²⁰ When ICAO adopted the standard for the installation of 25-hour CVRs in 2016, it noted that extended duration of CVRs is necessary to cover the longest duration of flights, including pre- and postflight activities, delays, and the time required to secure the recordings.²¹

¹⁹ ICAO defines block time to include the moment an aircraft is pushed back from the gate to the moment it comes to a final stop at a gate or parking stand after landing.

²⁰ NTSB. Aviation Safety Recommendation Report. ASR-18-04 at 5. October 2, 2018.

²¹ *Id.* NTSB Report, citing “Minimum Operational Performance Specification for Crash Protected Airborne Recorder Systems,” ED-112A, European Organization for Civil Aviation Equipment.

Since the 2-hour standard came into effect in 2008, numerous accidents and incidents have occurred where the CVR data was overwritten and, had it been available, would have positively contributed to NTSB investigations. Notable incidents include the following:

Table 1. Safety Events for Which Pertinent CVR Data Were Overwritten (Up to 2018)

Date	Event Type	NTSB#	Location	Event Description
6/21/2018	Incident	OPS18IA015	Chicago, IL	Runway excursion
4/18/2018	Accident	DCA18LA163	Atlanta, GA	Engine fire
7/07/2017	Incident	DCA17IA148	San Francisco, CA	Taxiway line-up and overflight of 4 air carrier airplanes by an Airbus A320 (46-hour notification delay)
5/09/2014	Accident	CEN14LA239	Columbus, OH	Ground engine fire
9/12/2013	Incident	CEN13IA563	Austin, TX	Loss of pitch control during takeoff (4-day notification delay)
7/31/2012	Incident	CEN12IA502	Denver, CO	Bird strike
12/1/2011	Accident	WPR12LA053	Oakland, CA	Enroute turbulence
6/21/2011	Incident	ENG11IA035	Atlanta, GA	Engine fire
2/09/2011	Incident	ENG11IA016	Minneapolis, MN	Tailpipe fire following push back
11/23/2010	Accident	WPR11LA058	Salt Lake City, UT	On ground collision with tow tractor
6/28/2010	Accident	CEN10LA363	Pioneer, LA	En route turbulence
12/31/2009	Incident	DCA10IA015	Charlotte, NC	Wing tip strike during landing
6/29/2007	Incident	LAX07IA198	Los Angeles, CA	Blown tires on takeoff
3/21/2006	Incident	DEN06IA051	Denver, CO	Tail strike on landing
10/16/2003	Accident	MIA04LA004	Tampa, FL	Taxiway excursion
6/03/2002	Accident	DCA02MA039	Subic Bay, Philippines	Abrupt maneuver due to ground proximity warning system alert and elevator damage
6/02/2002	Accident	DCA02MA042	Subic Bay, Philippines	Flight control malfunction during approach

In addition to the incidents noted by the NTSB, CVR data overwrites have hampered several other investigations. For example, on October 21, 2009, an incident occurred on a 4-hour flight where the flight crew did not communicate with air traffic control for about 1 hour and 17 minutes, during which time the airplane overflew its

intended location at a cruise altitude of 27,000 ft.²² The flight crew later reported that “cockpit distractions” led to the event. The airplane’s CVR had a 30-minute recording duration; upon review, the NTSB discovered that all pertinent information had been overwritten by the remaining two hours and 11 minutes of the 4-hour flight.²³ Even if the airplane had been equipped with a CVR recording for two hours, the information still would have been overwritten. Having lost this CVR data to overwriting, the NTSB was unable to determine the nature of the flight crew’s distraction, the events that led to the distraction, why the distraction lasted for as long as it did, and what mitigating procedures or actions could have prevented that distraction.

More recently, on January 13, 2023, a runway incursion incident occurred at John F. Kennedy (JFK) Airport in New York, New York. The incursion involved a taxiing Boeing 777-200 and a Boeing 737-900ER cleared for takeoff. The Boeing 777-200 accessed a taxiway without Air Traffic Control (ATC) clearance, crossing the runway that the Boeing 737-900ER was utilizing for takeoff. ATC was notified of the potential conflict, cancelled the Boeing 737-900ER’s takeoff clearance, and the flight crew aborted the flight. Because the incident did not result in any damage or injuries, the two flights eventually took off to their respective destinations. During its investigation, the NTSB discovered the CVR data for both flights had been overwritten.

On February 4, 2023, a runway incursion occurred at Austin Bergstrom International Airport (AUS) when a Boeing 767F freighter attempted to land on a runway

²² *Id.* at 4.

²³ *Id.*

from which a Boeing 737-700 was also cleared to depart.²⁴ Due to poor weather conditions, the Boeing 767F crew did not see the conflict until late in the approach, and the two planes came close to colliding; specifically, the Boeing 767F needed to overfly the Boeing 737-700 to avoid a collision. There were no injuries reported to the 128 passengers and crew onboard the Boeing 737-700 or to the 3 crew members onboard the Boeing 767F. During its investigation, the NTSB discovered the CVR data for both flights had been overwritten.

The FAA had sought to prevent such recording issues by creating the retention requirements found in §§ 91.609(g), 121.343(i), and 135.152(e), where an operator must remove the recording media following an accident or incident and keep the recorded data for at least 60 days, or longer if necessary. The FAA also provided guidance in Advisory Circular 20-186, “Airworthiness and Operational Approval of Cockpit Voice Recorder Systems,”²⁵ which recommended the operator to address CVR recording retention after an accident or incident in its maintenance and operational programs, such as inclusion in a flight crew checklist, or in the company standard operating procedures or emergency procedures. However, since recording issues continue to occur, the FAA agrees with the NTSB that an extension to the CVR recording duration requirement to 25 hours is warranted.

²⁴ NTSB. Aviation Investigation Preliminary Report No. DCA23LA149. Feb. 4, 2023.

²⁵ Advisory Circular 20-186, Paragraph 3.2.4. July 22, 2016.

www.faa.gov/documentLibrary/media/Advisory_Circular/AC_20-186.pdf.

C. Privacy Concerns

The FAA acknowledges that pilot-focused organizations may have concerns regarding how the NTSB or the FAA would use the CVR data collected for investigative purposes.

This issue previously arose when the FAA increased the CVR recording duration from 30 minutes to 2 hours. At that time, the FAA determined that the investigative need and benefit of this information outweighed these privacy concerns.²⁶ The FAA maintains this stance. The proposed increase to a 25-hour CVR recording duration would further improve current investigative capabilities. It would also provide investigating bodies, such as the NTSB, with more complete context surrounding the accidents and incidents under investigation and support their safety analyses.

Importantly, this proposed increase is designed to provide more context for any flight deck activity that might be pertinent to an investigation. Specifically, this increase expands the possible range of data available to investigators. This proposal does not alter or modify the existing processes for requesting or use of this data. Sections 91.609(g), 121.359(h), 121.227(f), and 135.151(c) specify that the information obtained from the CVR recording is to be used for investigation purposes and that the FAA will not use the CVR record in any civil penalty or certificate action. This proposal does not modify these regulations.

²⁶ Revisions to Cockpit Voice Recorder and Digital Flight Data Recorder Regulations. 73 FR 12541, 12544 (March 7, 2008).

D. International Requirements

ICAO and EASA both require the carriage of CVRs with 25-hour recording duration on airplanes with a maximum certificated takeoff mass of more than 27,000 kg. These are aircraft that have the capability to fly transatlantic or international flights, i.e., long-haul flights that can last ten or more hours. In contrast, the FAA requirement would apply to all newly manufactured aircraft required to carry a CVR, based on existing operating rules. This distinction reflects differences between the FAA and ICAO/EASA regulatory schemes: the FAA's existing regulatory scheme differentiates aircraft by operation type, not by weight. This rulemaking would not change that regulatory scheme.

With both EASA and ICAO amending their CVR rules to require 25 hours of audio recording time, this proposed change also presents an opportunity to ensure U.S. regulations are consistent in intent with international authorities. This should lead to a reduction of risk for some operators who would otherwise face conflicting requirements and the cumbersome task of ascertaining guidance for the appropriate authorities in an attempt to satisfy differing regulations. Historically, the FAA has implemented CVR regulations by operation unlike ICAO and EASA, which put forth their standards and regulations by aircraft weight. As a result, the FAA's proposal would encompass more aircraft than international requirements would because newly manufactured aircraft with less than a maximum takeoff weight of 27,000 kg would be affected.

E. Conclusion and Compliance

The FAA concurs with the NTSB's recommendation and believes that extending CVR recording duration to 25 hours would increase aviation safety by providing

investigative bodies with more thorough context and background surrounding accidents and incidents. This proposal would also make FAA regulations more consistent with ICAO recommendations and EASA requirements.

Given that the technology already exists to implement this proposal, the FAA proposes a compliance deadline for newly manufactured aircraft of one year after the effective date of the final regulation. Any aircraft with a newly issued airworthiness certificate dated on or after that compliance date would be required to be equipped with a CVR with 25-hour recording duration.

In addition, the FAA will update the version of the technical standard order (TSO) referenced in the regulatory text from TSO-C123a to the latest version, TSO-C123c, for newly manufactured aircraft.

IV. Regulatory Notices and Analyses

Federal agencies consider impacts of regulatory actions under a variety of Executive orders and other requirements. First, Executive Order 12866 and Executive Order 13563, as amended by Executive Order 14094 (“Modernizing Regulatory Review”), direct that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify the costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96-354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96-39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires agencies to prepare a

written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100 million or more (adjusted annually for inflation) in any one year. The current threshold after adjustment for inflation is \$177 million using the most current (2022) Implicit Price Deflator for the Gross Domestic Product. The FAA has provided a detailed Regulatory Impact Analysis (RIA) in the docket for this rulemaking. This portion of the preamble summarizes the FAA's analysis of the economic impacts of this proposed rule.

In conducting these analyses, the FAA has determined that this proposed rule: will result in benefits that justify costs; is not an economically “significant regulatory action” as defined in section 3(f)(1) of Executive Order 12866; will not have a significant economic impact on a substantial number of small entities; will not create unnecessary obstacles to the foreign commerce of the United States; and will not impose an unfunded mandate on State, local, or tribal governments, or on the private sector.

A. Summary of the Regulatory Impact Analysis

Benefits for the proposed rule were assessed qualitatively as the FAA currently lacks data to make projections on the benefit totals. The primary expected benefit is changes in safety from a potential reduction in accident risk. The expanded available audio from this proposed rule would provide authorities with more information on events and procedures undertaken in the flight deck in investigated incidents. This increased data may lead to new FAA recommendations or policy changes that could further enhance safety and reduce the risk that a future incident becomes an accident. The

reduction in the risk of one fatality generates benefits equal to the value of statistical life (VSL), approximately \$12.5 million in 2022 according to the Department of Transportation (DOT).²⁷ Given the annualized costs of \$9.67 million from this proposed rule, reducing the risk of a single fatality in any year due to effective safety measures resulting from the ability to gather additional CVR data would generate benefits greater than the expected costs.

Additionally, there are some potential time-saving benefits associated with the updated CVR model deployment. In updating their CVR models, manufacturers also have revamped the CVR interface tools. These simplified and more intuitive tools allow personnel to be trained quicker on operation, retrieve audio data faster, and perform additional diagnostic services to shorten downtime. The FAA does not currently have enough data to predict the value of these benefits and invites public comments on the expected totals.

The FAA assessed the costs for the proposed rule as the incremental cost increase of equipping a 25-hour capable CVR instead of a comparable 2-hour unit to all applicable new aircraft being produced. The total aircraft that will be built and equipped with the 25-hour CVR includes projected new aircraft needed to handle future demand increases as well as estimated replacements for the current fleet. Market research indicates the cost increase between comparable 2 and 25-hour CVRs to be minimal, ranging from near parity to an upper bound of approximately \$4,500. Using that upper bound as the

²⁷ DOT. Treatment of the Value of Preventing Fatalities and Injuries in Preparing Economic Analyses. Office of the Secretary of Transportation. 2022.

incremental cost to equip all applicable projected new aircraft with a 25-hour capable CVR, the estimated highest total cost over 20 years, at seven percent present value, is \$102.42 million with an annualized cost of \$9.67 million (table 2). At three percent present value, the total cost is \$144.77 million with an annualized cost of \$9.73 million.

Table 2. Summary of Costs over 20 Years (Millions of 2021\$)

14 CFR Operational Part	7% Present Value		3% Present Value	
	Annualized Costs	Total Costs	Annualized Costs	Total Costs
Part 91 ¹	\$3.55	\$37.57	\$3.56	\$52.98
Part 121	\$3.18	\$33.66	\$3.19	\$47.41
Part 125	\$0.16	\$1.65	\$0.16	\$2.32
Part 135	\$2.79	\$29.55	\$2.83	\$42.06
Total ²	\$9.67	\$102.42	\$9.73	\$144.77
¹ Consists of Part 91 turbine powered and Part 91K aircraft				
² Total reflects combined costs of each CFR part				

Note: Columns may not sum to total due to rounding

The FAA does not anticipate other costs besides the incremental costs of forward fitting 25-hour capable CVRs to comply with the proposed rule. Based on the technical standards for CVRs, market research indicates that 25-hour models tend to match the older 2-hour variants in a manner that allows them to be swapped without much difficulty. This compatibility implies that other operational procedures and costs should be similar and not result in notable change. The FAA invites comments on the expected costs for this proposed rule.

Please see the RIA available in the docket for more details.

B. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980, Public Law 96–354, 94 Stat. 1164 (5 U.S.C. 601–612), as amended by the Small Business Regulatory Enforcement Fairness

Act of 1996 (Pub. L. 104–121, 110 Stat. 857, Mar. 29, 1996) and the Small Business Jobs Act of 2010 (Pub. L. 111–240, 124 Stat. 2504 Sept. 27, 2010), requires Federal agencies to consider the effects of the regulatory action on small business and other small entities and to minimize any significant economic impact. The term “small entities” comprises small businesses and not-for-profit organizations that are independently owned and operated and are not dominant in their fields, and governmental jurisdictions with populations of less than 50,000.

The proposed rule affects CVR manufacturers by requiring the development and certification of 25-hour capable models. A major change to the CVR components, such as in this case, would require a manufacturer to go through the development and certification of a new model, which could involve extra cost and time. However, due to EASA and ICAO standards for 25-hour capability taking effect in 2021, market research shows that manufacturers already have developed 25-hour compliant variants that meet FAA TSO-C123 compliance. Therefore, the proposed regulation is not expected to result in new or significant impacts on CVR manufacturers. The FAA invites comments on the expected effects of the proposed rule on CVR manufacturers.

As described in the RIA, the FAA identified six U.S. manufacturers that would be affected by the proposed rule. Based on the Small Business Administration (SBA) 2023 size standard for Other Aircraft Part and Auxiliary Equipment Manufacturing (NAICS 336413),²⁸ and on publicly available data on employment for these entities, all

²⁸ Small Business Administration (SBA) Size Standards, effective March 17, 2023, can be found at www.sba.gov/document/support-table-size-standards.

six identified manufacturers are large businesses that exceed the 1,250-employee size maximum for a small business. Therefore, the FAA certifies that the proposed rule will not have a significant economic impact on a substantial number of small entities because the proposed rule does not impact any small entity. The FAA welcomes comments on the number of U.S. CVR manufacturers and this certification.

C. International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96-39), as amended by the Uruguay Round Agreements Act (Pub. L. 103-465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this proposed rule and determined that it promotes the safety of the American public and does not exclude imports that meet the recording length requirement. As a result, the FAA does not consider this proposed rule as creating an unnecessary obstacle to foreign commerce.

D. Unfunded Mandates Assessment

The Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final

rules that include a Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100 million or more (adjusted annually for inflation) in any one year. The current threshold after adjustment for inflation is \$177 million using the most current (2022) Implicit Price Deflator for the Gross Domestic Product.

The FAA determined that the proposed rule will not result in the expenditure of \$177 million or more by State, local, or tribal governments, in the aggregate, or the private sector, in any one year.

E. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. According to the 1995 amendments to the Paperwork Reduction Act (5 CFR 1320.8(b)(2)(vi)), an agency may not collect or sponsor the collection of information, nor may it impose an information collection requirement unless it displays a currently valid Office of Management and Budget (OMB) control number.

This action contains the following proposed amendments to the existing information collection requirements previously approved under OMB Control Number 2120-0700. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has submitted these proposed information collection amendments to OMB for its review.

Summary: This notice proposes to amend parts 91, 121, 125, and 135 requirements so aircraft manufactured on or after [ONE YEAR THE EFFECTIVE DATE

OF THE FINAL RULE] that are required to be installed with a cockpit voice recorder would be required to have a recording limit of 25 hours, expanded from the current requirement of 2 hours.

Use: Such a record would provide additional information to accident and incident investigators to determine flight crew's procedural compliance, distraction, decision-making, workload, fatigue, and situational awareness. The expansion to 25 hours would address the issue in which data is overwritten because the relevant recording occurred earlier than the available two hours of recording.

Respondents (including number of): The respondents all would be certificate holders operating the above-referenced U.S.-registered aircraft under parts 91, 121, 125, 129, and 135. Certificate holders operating under part 129 requirements would be affected because, in accordance with § 129.24, a cockpit voice recorder would be required to record as if the aircraft were operated under parts 121, 125, or 135.

Frequency: The 25 hours of recorded data would be overwritten on a continuing basis and would only be accessed following an accident or incident.

Annual Burden Estimate: This proposed requirement would not change the current information collection activity; therefore, it does not contain a measurable hour burden.

The FAA is soliciting comments to—

(1) Evaluate whether the proposed information requirement is necessary for the proper performance of the functions of the FAA, including whether the information will have practical utility;

(2) Evaluate the accuracy of the FAA's estimate of the burden;

(3) Enhance the quality, utility, and clarity of the information to be collected; and

(4) Minimize the burden of collecting information on those who are to respond, including by using appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Individuals and organizations may send comments on the information collection requirement to the address listed in the ADDRESSES section at the beginning of this preamble by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Comments also should be submitted to the Office of Management and Budget, Office of Information and Regulatory Affairs, Attention: Desk Officer for FAA, New Executive Office Building, Room 10202, 725 17th Street, N.W., Washington, DC 20053.

F. International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified the following differences with these proposed regulations. The proposed rule would harmonize with ICAO regarding the required length of the CVR recordings at 25 hours. However, the U.S. does not regulate carriage requirements of CVRs based on the aircraft gross weight, as do the ICAO and EASA, and the proposed rule change would

not change this. If this proposal is adopted, the FAA intends to amend its currently filed difference on this topic with ICAO.

G. Environmental Analysis

FAA Order 1050.1F identifies FAA actions that are categorically excluded from the preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act (NEPA) in the absence of extraordinary circumstances. The FAA has determined this proposed rulemaking action qualifies for the categorical exclusion identified in paragraph 5-6.6f for regulations and involves no extraordinary circumstances.

V. Executive Order Determinations

A. Executive Order 13132, Federalism

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order (E.O.) 13132, Federalism. The FAA has determined that this proposed action would not have a substantial direct effect on the States, or the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government and, therefore, would not have federalism implications.

B. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

Consistent with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments,²⁹ and FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures,³⁰ the FAA ensures that Federally Recognized Tribes (Tribes) are given the opportunity to provide meaningful and timely input regarding proposed Federal actions that have the potential to affect uniquely or significantly their respective Tribes. At this point, the FAA has not identified any unique or significant effects, environmental or otherwise, on tribes resulting from this proposed rule.

C. Executive Order 13211, Regulations that Significantly Affect Energy Supply, Distribution, or Use

The FAA analyzed this proposed rule under E.O. 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). The FAA has determined that it would not be a “significant energy action” under the Executive order and would not be likely to have a significant adverse effect on the supply, distribution, or use of energy.

D. Executive Order 13609, Promoting International Regulatory Cooperation

Executive Order 13609, Promoting International Regulatory Cooperation, promotes international regulatory cooperation to meet shared challenges involving health,

²⁹ 65 FR 67249 (Nov. 6, 2000).

³⁰ The FAA. (Jan. 28, 2004). *FAA Order No. 1210.20*. www.faa.gov/documentLibrary/media/1210.pdf.

safety, labor, security, environmental, and other issues and to reduce, eliminate, or prevent unnecessary differences in regulatory requirements. The FAA has analyzed this proposed action under the policies and agency responsibilities of E.O. 13609 and has determined that this proposed action would have no effect on international regulatory cooperation.

VI. Additional Information

A. Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. The FAA also invites comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should submit only one time if comments are filed electronically, or commenters should send only one copy of written comments if comments are filed in writing.

The FAA will file in the docket all comments it receives, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. Before acting on this proposal, the FAA will consider all comments it receives on or before the closing date for comments. The FAA will consider comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. The FAA may change this proposal in light of the comments it receives.

B. Confidential Business Information

Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to the person in the **FOR FURTHER INFORMATION CONTACT** section of this document. Any commentary that the FAA receives that is not specifically designated as CBI will be placed in the public docket for this rulemaking.

C. Electronic Access and Filing

A copy of this NPRM, all comments received, any final rule, and all background material may be viewed online at www.regulations.gov using the docket number listed above. A copy of this proposed rule will be placed in the docket. Electronic retrieval help and guidelines are available on the website. It is available 24 hours each day, 365 days each year. An electronic copy of this document may also be downloaded from the Office of the Federal Register's website at www.federalregister.gov and the Government Publishing Office's website at www.govinfo.gov. A copy may also be found at the FAA's Regulations and Policies website at www.faa.gov/regulations_policies.

Copies may also be obtained by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue S.W., Washington, DC 20591, or by calling (202) 267-9677. Commenters must identify the docket or notice number of this rulemaking.

All documents the FAA considered in developing this proposed rule, including economic analyses and technical reports, may be accessed in the electronic docket for this rulemaking.

D. Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires the FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. A small entity with questions regarding this document may contact its local FAA official or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of the preamble. To find out more about SBREFA on the Internet, visit www.faa.gov/regulations_policies/rulemaking/sbre_act/.

List of Subjects

14 CFR Part 91

Aircraft, Aviation safety.

14 CFR Part 121

Air carriers, Aircraft, Aviation safety, Charter flights, Safety, Transportation.

14 CFR Part 125

Aircraft, Aviation safety.

14 CFR Part 135

Air taxis, Aircraft, Aviation safety.

The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend chapter I of title 14, Code of Federal Regulations as follows:

PART 91—GENERAL OPERATING AND FLIGHT RULES

1. The authority citation for part 91 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40101, 40103, 40105, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 46306, 46315, 46316, 46504, 46506–46507, 47122, 47508, 47528–47531, 47534, Pub. L. 114–190, 130 Stat. 615 (49 U.S.C. 44703 note); articles 12 and 29 of the Convention on International Civil Aviation (61 Stat. 1180), (126 Stat. 11).

2. Amend § 91.609 by revising paragraph (i)(2) to read as follows:

§ 91.609 Flight data recorders and cockpit voice recorders.

* * * * *

(i) * * *

(2) Retains at least—

(i) The last 2 hours of recorded information using a recorder that meets the standards of TSO–C123a, or later revision; or

(ii) If manufactured on or after [ONE YEAR AFTER THE EFFECTIVE DATE OF THE FINAL RULE,] the last 25 hours of recorded information using a recorder that meets the standards of TSO–C123c, or later revision.

* * * * *

PART 121—OPERATING REQUIREMENTS: DOMESTIC, FLAG, AND SUPPLEMENTAL OPERATIONS

3. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40103, 40113, 40119, 41706, 42301 preceding note added by Pub. L. 112–95, sec. 412, 126 Stat. 89, 44101, 44701–44702, 44705, 44709–44711, 44713, 44716–44717, 44722, 44729, 44732; 46105; Pub. L. 111–216, 124 Stat. 2348 (49 U.S.C. 44701 note); Pub. L. 112–95, 126 Stat. 62 (49 U.S.C. 44732 note); Pub. L. 115–254, 132 Stat. 3186 (49 U.S.C. 44701 note).

4. Amend § 121.359 by revising paragraphs (i)(2) and (j)(2) to read as follows:

§ 121.359 Cockpit voice recorders.

* * * * *

(i) * * *

(2) Retains at least—

(i) The last 2 hours of recorded information using a recorder that meets the standards of TSO–C123a, or later revision; or

(ii) If manufactured on or after [ONE YEAR AFTER THE EFFECTIVE DATE OF THE FINAL RULE], the last 25 hours of recorded information using a recorder that meets the standards of TSO–C123c, or later revision; and

* * * * *

(j) * * *

(2) Retains at least—

(i) The last 2 hours of recorded information using a recorder that meets the standards of TSO–C123a, or later revision; or

(ii) If manufactured on or after [ONE YEAR AFTER THE EFFECTIVE DATE OF THE FINAL RULE], the last 25 hours of recorded information using a recorder that meets the standards of TSO–C123c, or later revision; and

* * * * *

PART 125—CERTIFICATION AND OPERATIONS: AIRCRAFT HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE; AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

5. The authority citation for part 125 continues to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701–44702, 44705, 44710–44711, 44713, 44716–44717, 44722.

6. Amend § 125.227 by revising paragraphs (g)(2) and (h)(2) to read as follows:

§ 125.227 Cockpit voice recorders.

* * * * *

(g) * * *

(2) Retains at least—

(i) The last 2 hours of recorded information using a recorder that meets the standards of TSO–C123a, or later revision; or

(ii) If manufactured on or after [ONE YEAR AFTER THE EFFECTIVE DATE OF THE FINAL RULE], the last 25 hours of recorded information using a recorder that meets the standards of TSO–C123c, or later revision; and

* * * * *

(h) * * *

(2) Retains at least—

(i) The last 2 hours of recorded information using a recorder that meets the standards of TSO–C123a, or later revision; or

(ii) If manufactured on or after [ONE YEAR AFTER THE EFFECTIVE DATE OF THE FINAL RULE], the last 25 hours of recorded information using a recorder that meets the standards of TSO–C123c, or later revision; and

* * * * *

PART 135—OPERATING REQUIREMENTS: COMMUTER AND ON DEMAND OPERATIONS AND RULES GOVERNING PERSONS ON BOARD SUCH AIRCRAFT

7. The authority citation for part 135 continue to read as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 41706, 44701–44702, 44705, 44709, 44711–44713, 44715–44717, 44722, 44730, 45101–45105; Pub. L. 112–95, 126 Stat. 58 (49 U.S.C. 44730).

8. Amend § 135.151 by revising paragraphs (g)(1)(iii) and (g)(2)(iii) to read as follows:

§ 135.151 Cockpit voice recorders.

* * * * *

(g) * * *

(1) * * *

(iii) Retains at least—

(A) The last 2 hours of recorded information using a recorder that meets the standards of TSO-C123a, or later revision; or

(B) If manufactured on or after [ONE YEAR AFTER THE EFFECTIVE DATE OF THE FINAL RULE], the last 25 hours of recorded information using a recorder that meets the standards of TSO-C123c, or later revision.

* * * * *

(2) * * *

(iii) Retains at least—

(A) The last 2 hours of recorded information using a recorder that meets the standards of TSO-C123a, or later revision; or

(B) If manufactured on or after [ONE YEAR AFTER THE EFFECTIVE DATE OF THE FINAL RULE], the last 25 hours of recorded information using a recorder that meets the standards of TSO-C123c, or later revision.

* * * * *

Issued under authority provided by 49 U.S.C. 106(f) and 44701(a) in Washington, DC.

Lawrence Fields,

Acting Executive Director,

Flight Standards Service.

[FR Doc. 2023-26144 Filed: 12/1/2023 8:45 am; Publication Date: 12/4/2023]