

118TH CONGRESS
1ST SESSION

H. R. 3634

To direct the Administrator of the Federal Aviation Administration to issue regulations to improve flight recorder and aircraft crash location requirements on certain commercial passenger aircraft by requiring the installation of a second combination digital flight data and cockpit voice recorder system that enables data recovery without an underwater search and recovery.

IN THE HOUSE OF REPRESENTATIVES

MAY 24, 2023

Mr. COHEN (for himself and Mr. BURCHETT) introduced the following bill; which was referred to the Committee on Transportation and Infrastructure

A BILL

To direct the Administrator of the Federal Aviation Administration to issue regulations to improve flight recorder and aircraft crash location requirements on certain commercial passenger aircraft by requiring the installation of a second combination digital flight data and cockpit voice recorder system that enables data recovery without an underwater search and recovery.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “Safe Aviation and
3 Flight Enhancement Act of 2023”.

4 **SEC. 2. FINDINGS.**

5 Congress finds the following:

6 (1) Flight data recorder (referred to in this Act
7 as an “FDR”) data and cockpit voice recorder (re-
8 ferred to in this Act as a “CVR”) data, often re-
9 ferred to as “black box” data, on commercial pas-
10 senger aircraft is crucial in all aircraft crash inves-
11 tigation, providing vital information to determine
12 the cause of an accident and to prevent future
13 recurrences.

14 (2) Underwater locating device (referred to in
15 this Act as a “ULD”) beacons generate a low oper-
16 ating frequency to increase signal detection range
17 and improve signal transmissibility through aircraft
18 structures to aid in the identification of aircraft
19 wreckage. Airframe-mounted ULDs with a minimum
20 operating life of 90 days will improve the underwater
21 search for aircraft wreckage.

22 (3) Aircraft equipped with a tamper-resistant
23 method to broadcast to a ground station sufficient
24 information to establish the location within 6 nau-
25 tical miles (referred to in this Act as “nm”) of
26 where an aircraft terminates flight will facilitate a

1 quicker identification of an accident location, a fast-
2 er search and rescue response, and a more effective
3 search effort in remote locations and overwater acci-
4 dents. Use of an emergency locator transmitter (re-
5 ferred to in this Act as an “ELT”), whether as a
6 stand-alone unit or as part of an automatic
7 deployable flight recorder, can transmit the location
8 of an accident and provide a homing capability for
9 search and rescue personnel. In addition, more fre-
10 quent broadcasts from data link communication sys-
11 tems are capable of reporting an aircraft’s position
12 every minute to reduce the search area to a radius
13 of less than 6 nm.

14 (4) As the aviation environment grows more
15 complex, to include a surge in air traffic, the inte-
16 gration of new manned and unmanned aerial and
17 space vehicle activity, an increasingly dynamic na-
18 tional security environment, and the growth of ex-
19 tended overwater and remote location flight routes,
20 it is imperative for air safety investigators to quickly
21 locate a downed aircraft and survivors, and to have
22 rapid access to secure black box data to enable and
23 support the early identification of safety and secu-
24 rity issues, and the quick implementation of appro-

1 appropriate preventative actions to address potential risks
2 to the commercial aviation fleet.

3 (5) Air crash victim families deserve assurances
4 that search and rescue teams will have rapid access
5 to a crash location's site to speed survivor recovery
6 efforts, and that victim families will have access to
7 timely and factual information regarding the cause
8 of an accident and the fate of their loved ones.

9 (6) Hundreds of millions of dollars are unneces-
10 sarily expended, and significant time is wasted in ef-
11 forts to locate and recover traditional fixed "black
12 boxes" in underwater crash investigations.

13 (7) Existing, advanced flight recorder tech-
14 nologies are available today that will aid in the rapid
15 location of an aircraft and potential survivors, while
16 also providing safety investigators with timelier re-
17 covery of FDR/CVR data by avoiding accident inves-
18 tigation delays caused by prolonged underwater and
19 remote location search operations.

20 (8) Recent commercial passenger aircraft crash-
21 es involving United States and international manu-
22 factured aircraft have demonstrated the significant
23 challenges and unnecessary delays safety investiga-
24 tors face in trying to locate and recover traditional

1 fixed black boxes from the bottom of the ocean, in-
2 cluding the following:

3 (A) On March 8, 2014, Malaysia Airlines
4 Flight 370, B-777-200ER, disappeared with
5 239 passengers and crew. International search
6 and recovery efforts for the aircraft and black
7 boxes have involved 29 nations and hundreds of
8 millions of dollars in resources, becoming the
9 most expensive search and recovery mission in
10 aviation history. Nine years later, the aircraft is
11 still missing, and the cause of the crash is still
12 unknown.

13 (B) On June 1, 2009, Air France Flight
14 447 crashed into the Atlantic Ocean with 216
15 passengers and 12 crewmembers. Despite locat-
16 ing aircraft wreckage within 5 days, it still took
17 nearly 2 years and an estimated cost of over
18 \$160,000,000 to recover the FDR and CVR
19 from the bottom of the Atlantic Ocean at a
20 depth of 12,000 feet.

21 (C) On October 29, 2018, Lion Air 610
22 became the first of two fatal B-737 Max 8
23 crashes. Despite being in only 100 feet of
24 water, it took investigators 77 days to locate

1 and recover the CVR, which provided critical in-
2 formation.

3 (D) On July 2, 2021, Transair Flight 810,
4 B-737-200, crashed off the coast of Mamala
5 Bay, Oahu. While investigators knew the loca-
6 tion of the aircraft, it took 4 months to recover
7 the FDR and CVR from the bottom of the
8 ocean.

9 (E) On January 9, 2021, Sriwijaya Air
10 Flight 182, B-737-500, crashed into the Java
11 Sea in a depth of only 89 feet, yet the recovery
12 of the CVR still took 81 days.

13 (F) On June 30, 2009, Yemenia Airlines
14 IY626 crashed off of the coast of Comoros, with
15 152 passengers and aircrew. The sole survivor,
16 a 12-year-old girl, was found clinging to wreck-
17 age after floating in the ocean for 13 hours.
18 Her accounts shared that more passengers sur-
19 vived the crash but succumbed to hypothermia
20 due to the delay in locating the downed aircraft.
21 The FDR and CVR were not recovered until
22 nearly 2 months later, at a depth of 3,900 feet.

23 (G) On January 1, 2007, Adam Air Flight
24 574, carrying 102 passengers and aircrew,
25 crashed off the coast of Indonesia. The FDR

1 and CVR were located within 1 month, but
2 could not be recovered until 7 months later due
3 to the difficulty of the underwater environment.
4 The FDR and CVR were found at a depth of
5 6,600 feet and 4,600 feet apart.

6 (9) In 2012, the International Civil Aviation
7 Organization (referred to in this Act as the
8 “ICAO”) adopted a standard requiring all aircraft
9 with a maximum certificated takeoff mass over
10 15,000 kilograms (kg) for which a type certificate is
11 issued on or after January 1, 2016, and which are
12 required to be equipped with both a CVR and FDR,
13 to be equipped with two combination FDR/CVR re-
14 corder systems.

15 (10) In 2016, ICAO issued an additional ruling
16 that as of January 2021, all new commercial aircraft
17 types must be equipped with a means to recover
18 flight recorder data in a timely manner. The intent
19 for this standard is to enable authorities to recover
20 at least one set of FDR/CVR data without the need
21 for underwater searches or prolonged terrain
22 searches.

23 (11) On October 7, 2014, following the dis-
24 appearance of MH370 and the nearly 2-year search
25 and recovery effort required to retrieve the black

1 boxes from Air France Flight 447, the National
2 Transportation Safety Board (referred to in this Act
3 as the “NTSB”) convened the “Emerging Flight
4 Data and Locator Technology Forum”. The forum
5 included government, industry, and investigative ex-
6 perts to discuss technologies that could be used to
7 improve the location of aircraft wreckage and the
8 timely recovery of flight data following accidents in
9 remote locations or over water.

10 (12) The NTSB has stated its highest concern
11 is for aircraft that fly extended overwater operations
12 outside of radar coverage because timely response
13 and recovery of data are more challenging when an
14 accident occurs in a remote area. Currently, aircraft
15 that fly extended overwater operations must carry
16 additional survival equipment, such as liferafts and
17 survival-type emergency locator transmitters to miti-
18 gate the risks, and would benefit from the addition
19 of safety technology outlined in this Act.

20 (13) As a result of the 2014 safety forum, the
21 NTSB formally issued safety recommendations to
22 the Federal Aviation Administration (referred to in
23 this Act as the “FAA”), aligning with the ICAO
24 regulations, to require that all newly manufactured
25 aircraft operating extended overwater operations and

1 operating under part 121 or part 135 of title 14,
2 Code of Federal Regulations, that are required to
3 have a CVR and a FDR, be equipped with a tamper-
4 resistant method to broadcast sufficient information
5 to establish the location where an aircraft terminates
6 flight within 6 nm (A-15-001), an airframe low-fre-
7 quency ULD that will function for at least 90 days
8 (A-15-002), and a secondary FDR/CVR system
9 that enables the recovery of mandatory flight data
10 parameters without the need for an underwater re-
11 trieval (A-15-003).

12 (14) In support of commercial passenger safety
13 and national security, it is in the public's best inter-
14 est that the FAA initiate a formal rulemaking proc-
15 ess to implement the NTSB's Safety Recommenda-
16 tions A-15-001 through A-15-003 in order to—

17 (A) provide aviation safety investigators
18 with critical FDR and CVR data without the
19 delays and cost of underwater search and recov-
20 eries;

21 (B) achieve redundancy and maximize sur-
22 vivability of the most important crash investiga-
23 tion tool equipped on commercial passenger air-
24 craft;

1 (C) ensure rapid recovery of the FDR and
2 CVR data for timely safety and security anal-
3 ysis in all crash scenarios; and

4 (D) improve timely location of the aircraft,
5 accident site, and survivors.

6 (15) The NTSB safety recommendations do not
7 dictate the technology that must be used to achieve
8 these safety goals but does cite at least two accept-
9 able technologies to meet the requirement, to include
10 automatic deployable flight recorder systems and
11 transmission of flight recorder data systems.

12 (16) Automatic deployable flight recorder sys-
13 tems combine a FDR, CVR, and ELT into one
14 crash-hardened, survivable “black box”, which re-
15 leases from the aircraft upon crash impact with
16 land, or water, and in the event of in-air explosion,
17 enabling it to avoid the crash impact site and float
18 indefinitely in overwater accidents. The floating
19 deployable recorder sends a distress alert tracking
20 signal to the free, global constellation of Search and
21 Rescue (SAR) satellite transponders known as
22 COSPAS–SARSAT, immediately providing the posi-
23 tion of the downed aircraft at point of impact to as-
24 sist in the location of survivors and the location of

1 the floating deployable FDR and CVR black box for
2 rapid recovery and analysis.

3 (17) Transmission of flight recorder data in-
4 volves monitoring aircraft flight parameters and
5 triggering satellite transmission of critical flight
6 data when the parameters deviate from their normal
7 operating envelope and can also assist in identifying
8 the location of a downed aircraft.

9 (18) Use of either the automatic deployable
10 flight recorder or transmission of flight recorder
11 data technologies, when used to supplement the cur-
12 rent mandatory onboard fixed FDR and CVR, will
13 provide investigators more timely access to informa-
14 tion, offering valuable insight into the circumstances
15 at the end of an accident flight while helping to
16 focus an investigation during the search for sur-
17 vivors, and recovery of traditional fixed recorders
18 and wreckage from underwater crash sites.

19 (19) CVRs provide unique information with
20 which the NTSB can conduct more thorough inves-
21 tigation to target safety recommendations more ef-
22 fectively. The current 2-hour CVR standard record-
23 ing duration has hampered safety investigations be-
24 cause relevant portions of the recordings were over-
25 written. In 2018, the NTSB issued Recommendation

1 (A-18-30) calling for the CVR recording require-
2 ment to be extended to 25 hours, which will bring
3 the U.S. into compliance with European Aviation
4 Safety Agency (EASA) and International Civil Avia-
5 tion Organization (ICAO) standards.

6 **SEC. 3. REGULATIONS REQUIRING ADDITIONAL FLIGHT RE-**
7 **CORDER SYSTEM AND OTHER PURPOSES.**

8 (a) IN GENERAL.—Not later than 1 year after the
9 date of enactment of this Act, the Administrator of the
10 Federal Aviation Administration shall issue such regula-
11 tions as are necessary to require that all newly manufac-
12 tured aircraft used in extended overwater operations and
13 operating under part 121 or part 135 of title 14, Code
14 of Federal Regulations, that are required to have a CVR
15 and a FDR—

16 (1) be equipped with a means to recover, at a
17 minimum, mandatory flight data parameters that
18 does not require underwater retrieval;

19 (2) be equipped with a tamper-resistant method
20 to broadcast to a ground station sufficient informa-
21 tion to establish the location where an aircraft ter-
22 minates flight as the result of an accident within 6
23 nm of the point of impact; and

24 (3) be equipped with an airframe low-frequency
25 ULD that will function for at least 90 days and that

1 can be detected by equipment available on military,
2 search and rescue, and salvage assets commonly
3 used to search for and recover wreckage.

4 (b) 25-HOUR REQUIREMENT.—Not later than 1 year
5 after the date of enactment of this Act, the Administrator
6 of the Federal Aviation Administration shall issue such
7 regulations as are necessary to require that all newly man-
8 ufactured aircraft operating under part 121 or part 135
9 of title 14, Code of Federal Regulations, that are required
10 to have a CVR and a FDR be equipped to retain at least
11 the last 25 hours of recorded information.

12 (c) SCHEDULE FOR COMPLIANCE.—In issuing regu-
13 lations under subsections (a) and (b), the Administrator
14 shall require the installation of the additional recorder sys-
15 tem required under this section on commercial aircraft
16 that are ordered by an air carrier on or after January
17 1, 2027.

18 (d) COMPLIANT ADDITIONAL FLIGHT RECORDER
19 SYSTEM.—Compliant technologies must enable safety in-
20 vestigators to recover mandatory flight data parameters
21 without requiring underwater recovery of the recording de-
22 vice. This requirement does not require a third combina-
23 tion FDR/CVR recording mechanism to satisfy the regula-
24 tion. Compliant technologies can include an automatic

1 deployable flight recorder system, transmission of flight
2 recorder data, and other technologies.

3 (e) DEFINITIONS.—In this Act:

4 (1) AUTOMATIC DEPLOYABLE FLIGHT RE-
5 CORDER SYSTEM.—The term “automatic deployable
6 flight recorder system” means a flight data recorder,
7 cockpit voice recorder, and emergency locator trans-
8 mitter housed in one crash-protected, floatable unit
9 that meets the performance specifications for a
10 deployable recorder system under United States
11 Federal Aviation Administration Technical Standard
12 Order 123c (CVR), Technical Standard Order 124c
13 (FDR), and Minimum Operational Performance
14 Specifications for Deployable Recorders under
15 EUROCAE ED–112A, and all subsequent updates
16 to such requirements.

17 (2) COMMERCIAL PASSENGER AIRCRAFT.—The
18 term “commercial passenger aircraft” means all air-
19 planes of a maximum certificated takeoff mass of
20 over 27,000 kg and authorized to carry more than
21 19 passengers as referenced in ICAO Annex 6, Part
22 I, Chapter 6, Paragraph 6.3.6.1.

23 (3) TRANSMISSION OF FLIGHT RECORDER
24 DATA.—The term “transmission of flight recorder
25 data” means a system capable of monitoring aircraft

1 parameters and providing continuous satellite trans-
2 mission or the triggering of satellite transmission of
3 critical flight data when the parameters deviate from
4 their normal operating envelope and can also assist
5 in identifying the location of a downed aircraft. Data
6 should be captured from a triggering event until the
7 end of the flight and for as long a time period before
8 the triggering event as possible.

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