I

117TH CONGRESS
2D SESSION

H. R. 6976

To improve technology and address human factors in aviation safety, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MARCH 8, 2022

Mr. DESAULNIER introduced the following bill; which was referred to the Committee on Transportation and Infrastructure, and in addition to the Committee on Science, Space, and Technology, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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A BILL

To improve technology and address human factors in aviation safety, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ''Safe Landings Act''.

SEC. 2. FINDINGS.

Congress finds the following:

(1) Given that the United States enjoys an exceptionally safe aviation system with an exceedingly low frequency of airline accidents, efforts to improve

aviation safety should examine nonaccident safety incidents for all possible insights.

(2) Aviation safety should not be taken for granted, and even with so few accidents, the U.S. Aerospace System should proactively address safety concerns that emerge from our dynamic and evolving economic conditions, technology, aviation industry, and other factors.

(3) Preventing accidents from occurring in the airport runway environment remains an objective requiring continued effort, and incidents of runway confusion, defined as the subset of runway incursions in which an aircraft unintentionally takes off or lands on a taxiway or incorrect runway, should be carefully monitored, reviewed, and studied for insights to improve safety.

(4) While technology continues to advance and new opportunities to use technology to address safety risks in aviation are examined and pursued, the evolving role of technology and the expanding use of automation should not be used as justification to diminish attention to and prioritization of the human contribution to aviation safety. The aviation industry and the Government must ensure that training programs for flight crews and other personnel are ap-

propriately evolving, that training standards and expectations remain rigorous, and that risks and concerns associated with the interaction between humans, technology, and automated systems are identified, studied, and addressed in a timely manner.

SEC. 3. IMPLEMENTATION OF NTSB RECOMMENDATIONS.

(a) NAVIGATIONAL RADIOS.—The Administrator shall implement the recommendation of the National Transportation Safety Board numbered as A–18–23 and issued on October 11, 2018, with respect to the tuning of navigational radios to assist flight crews in managing the flight path of aircraft on visual approaches. The Administrator shall work with part 121 air carriers on implementation of this recommendation, and, not later than 1 year after the enactment of this Act, the Administrator shall issue to Congress a report on air carrier compliance rate.

(b) NTSB RECOMMENDATION.—

(1) IN GENERAL.—The Administrator shall implement the recommendation of the National Transportation Safety Board numbered as A–18–25 and issued on October 11, 2018, and, not later than 1 year after the enactment of this Act, the Administrator shall issue to Congress a report on the status of the implementation.

(2) CONSIDERATION.—In implementing this recommendation, the Administrator shall consider any relevant findings identified pursuant to section 334 of the FAA Reauthorization Act of 2018 (Public Law 115–254).

(c) PILOT ALERTS.—The Administrator shall—

(1) collaborate with aircraft and avionics manufacturers, labor organizations representing pilots operating under part 121 of title 14, Code of Federal Regulations, and software developers to develop the technology for a cockpit system that provides an alert to pilots when an airplane is not aligned with the intended runway surface;

(2) once such technology described in paragraph (1) is available, establish a requirement for the technology to be installed on aircraft operating under part 121 of title 14, Code of Federal Regulations, landing at airports within Class B and Class C airspace and certified under part 139 of title 14, Code of Federal Regulations;

(3) in establishing the requirement as described in paragraph (2), consider any relevant findings identified pursuant to section 334 of the FAA Reauthorization Act of 2018 (Public Law 115–254); and

(4) not later than 1 year after the date of enactment of this Act, issue to Congress a report on the progress of the work described in paragraph (1).

(d) NTSB RECOMMENDATION.—

(1) IN GENERAL.—The Administrator shall implement the recommendation of the National Transportation Safety Board numbered as A–18–27 and issued on October 11, 2018, and, not later than 1 year after the enactment of this Act, the Administrator shall issue to Congress a report on the status of the implementation.

(2) CONSIDERATION.—In implementing this recommendation, the Administrator shall consider any relevant findings identified pursuant to section 334 of the FAA Reauthorization Act of 2018 (Public Law 115–254).

SEC. 4. INVESTIGATIONS FOR COVERED EVENTS.

(a) IN GENERAL.—Once implementation of section 3(b) of this Act is complete, the National Transportation Safety Board may initiate investigations of covered events to determine risk factors specific to the airport at which such an event occurred and other elements of the National Airspace System that may contribute to the cause of the event. The National Transportation Safety Board may also elect to consider multiple events in a single report

as part of a special investigation or study to examine safety factors contributing to these events.

(b) ADDITIONAL INVESTIGATIVE INFORMATION.—In addition to any investigation that the National Transportation Safety Board is conducting with respect to any specific covered event, the NTSB shall utilize voluntarily provided safety information in its evaluation of associated risk in the National Airspace System and protect such information from public release in accordance with section 1114(b)(3) of title 49, United States Code.

(c) CONTENT.—The review and analysis shall examine factors present at the time of any covered event at such airport, including—

(1) challenges pilots perceive when flying into and out of the airport;

(2) challenges that air traffic controllers face when working at the airport;

(3) characteristics of the communications among and between groups of personnel whose work relates to the movement of aircraft into and out of the airport including pilots, air traffic controllers, maintenance workers, dispatchers, and airline airport operations personnel; and

(4) physical characteristics of the airport and its facilities, such as the configuration of runways, runway lighting, and construction activity.

SEC. 5. TASK FORCE ON HUMAN FACTORS IN AVIATION SAFETY.

(a) IN GENERAL.—Not later than 6 months after the date of enactment of this Act, the Administrator shall convene an FAA Task Force on Human Factors in Aviation Safety.

(b) COMPOSITION.—The Task Force shall consist of members appointed by the Administrator and having expertise in an operational or academic discipline that is relevant to the analysis of human errors in aviation. The number of members shall be determined by the Administrator to ensure sufficient representation of relevant operational and academic disciplines.

(c) DURATION.—

(1) IN GENERAL.—Members of the Task Force shall be appointed for the length of the existence of the Task Force.

(2) LENGTH OF EXISTENCE.—

(A) IN GENERAL.—The Task Force shall have an initial length of existence of 2 years.

(B) OPTION.—The Administrator may exercise an option to lengthen the duration of the

existence of the Task Force for a period of 2 years.

(d) DISCIPLINES.—For purposes of subsection (b), disciplines may include air carrier operations, line pilot expertise, air traffic control, technical operations, aeronautical information, aircraft maintenance and mechanics psychology, linguistics, human-machine integration, general aviation operations, and organizational behavior and culture.

(e) EXPERTISE.—

(1) IN GENERAL.—No less than half of the members shall have expertise in aviation.

(2) ADDITIONAL EXPERTISE.—The Task Force shall include members with expertise on human factors but whose experience and training are not in aviation specifically and who have not previously been engaged in work related to the FAA or the aviation industry. The Task Force shall also include pilot labor organization, certificated mechanic labor organizations, and at least one member from an air traffic controller labor organization.

(f) FAA MEMBERS.—

(1) IN GENERAL.—Not more than 4 members may be employees of the FAA and NTSB, excluding representatives of the labor representatives of em-

ployees of the air traffic control system. Not more than 2 members may be employees of the NTSB. The FAA and the NTSB members shall be non-voting.

(2) FAA EMPLOYEES.—Any member who is an FAA employee shall have expertise in safety.

(g) DUTIES.—In coordination with the Research, Engineering, and Development Advisory Committee established under section 44508 of title 49, United States Code, the Task Force shall—

(1) not later than the date on which the Task Force is no longer in existence, produce a written report that—

(A) to the greatest extent possible, identifies the most significant human factors and their relative contribution to aviation safety risk;

(B) identifies new research priorities for research in human factors in aviation safety;

(C) reviews existing products by other working groups related to human factors in aviation safety including the Commercial Aviation Safety Team (CAST)'s work pertaining to flight crew responses to abnormal events;

(D) provides recommendations on potential revisions to any FAA regulations and guidance pertaining to the certification of aircraft under part 25 of title 14, Code of Federal Regulations, including sections related to presumed pilot response times and assumptions about the reliability of pilot performance during unexpected, stressful events;

(E) reviews rules, regulations, or standards regarding flight crew rest and fatigue, as well as maintenance personnel rest and fatigue, that are used by a sample of international air carriers, including those deemed to be more stringent and less stringent than the current standards pertaining to United States air carriers, and identify risks to the National Airspace System from any such variation in standards across countries;

(F) reviews pilot training requirements and recommend any revisions necessary to ensure adequate understanding of automated systems on aircraft;

(G) reviews approach and landing misalignment and make any recommendations for improving these events; and

(H) identifies ways to enhance instrument landing system (ILS) maintenance schedules; determines how a real-time smart system should be developed that informs the Air Traffic Control System, Airlines, and Airports about any changes in the state of runway and taxiway lights; and identifies how this system could be connected to the FAA's maintenance system;

(2) produce a written report to Congress not less than once every 2 years that—

(A) summarizes new research developments on human factors in aviation safety;

(B) to the greatest extent possible, identifies the most significant human factors and their relative contribution to aviation safety risk; and

(C) provides any recommendations for policy or regulatory action; and

(3) if the Secretary exercises the option described in subsection (c)(2)(B), not later than the date that is 2 years after the date of establishment of the Task Force, produce an interim report containing the information described in paragraph (1).

(h) APPLICABLE LAW.—The Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to the Task Force.

SEC. 6. RESEARCH AND DEVELOPMENT PROGRAM ON NEW APPROACHES TO DATA ANALYSIS FOR AVIATION SAFETY.

(a) IN GENERAL.—The Secretary shall establish a new research and development program to be undertaken by the FAA's Consortium in Aviation Operations Research (NEXTOR II) to investigate and develop new approaches to data analysis for understanding the factors in aviation safety incidents and identifying emerging risks of future safety incidents.

(b) APPROACHES.—The approaches described in subsection (a) include the use of new algorithms for analyzing the text and audio of communications between flight crews and air traffic controllers and the use of machine learning or artificial intelligence methods for analyzing a variety of data sets, including, data on weather, performance of communication, navigation and surveillance equipment and facilities, flight delays, safety incidents, flight crew work schedules, and air traffic and crew member communications for detecting anomalies in the National Airspace System.

(c) COLLABORATION.—In carrying out the research program established in this section, member institutions of the Consortium shall collaborate in the sharing of data for the purpose of testing and demonstrating the potential effectiveness of new approaches to analysis—

(1) with each other;

(2) with aviation industry partners;

(3) with units within the FAA including groups within the Air Traffic Organization, NextGen Office, Office of Airports, and Aviation Safety; and

(4) with the National Aeronautics and Space Administration's Aviation Safety Reporting System.

(d) RESEARCH.—

(1) IN GENERAL.—The research undertaken pursuant to this section shall prioritize understanding the ways that various forms of human factors contribute to aviation safety risk.

(2) FACTORS.—The factors described in paragraph (1) may include fatigue and distraction during critical phases of work among pilots or other aviation personnel, tasks and workload, organizational structure and culture, communication among personnel, adherence to safety procedures, and any other relevant factors that are the cause or potential cause of human error in aviation operations.

(3) HIGHLY AUTOMATED AIRCRAFT.—Research should seek ways to improve the design of highly automated aircraft to reduce instances of mode confusion and to combat problems of reduced awareness of basic flight parameters resulting from complacency about automated systems.

(e) AUTHORIZATION OF APPROPRIATIONS.—There is authorized to be appropriated $20,000,000 for carrying out the program described in this section for each fiscal year from 2022 through 2027, including grants to participating research institutions, including the academic institutions that make up the FAA's Consortium in Aviation Operations Research, the National Aeronautics and Space Administration, the FAA's Office of Safety, the NextGen office, and units within the FAA's Air Traffic Organization that work on safety issues.

(f) SUNSET.—The program shall terminate on the date that is 6 years after the date on which the program is established.

SEC. 7. USING INSTRUMENT APPROACH PROCEDURES AS BACKUPS TO VISUAL APPROACHES.

(a) REPORT.—Not later than 120 days after the date of enactment of this Act, the Administrator shall issue a report to the Committee on Transportation and Infrastructure of the House of Representatives and the Com-

mittee on Commerce, Science, and Transportation of the Senate that uses a representative sample of part 121 and part 129 air carriers to review the current range of air carrier practices in requiring the use of instrument approach procedures as a backup system for visual approaches and the extent to which operators require pilots to use approach procedures.

(b) ISSUANCE OF GUIDANCE.—Not later than 1 year after the date of enactment of this Act, the Administrator shall review and analyze the collected data from the report described in subsection (a) and issue guidance to air carriers on the most effective techniques and procedures to use instrument approach procedures as a backup system for visual approaches. Such guidance shall encourage the use of instruments to provide vertical and lateral guidance to mitigate the potential for a wrong surface alignment and to provide flight crews with more precise vertical and lateral deviation information.

SEC. 8. NOTAM MODERNIZATION INITIATIVE.

(a) IN GENERAL.—The Administrator shall lead an effort to reform and update the ''notices to airmen'' (NOTAM) system to harmonize with International Civil Aviation Organization (ICAO) Annexes and Standards and Recommended Practices (SARPS), including the existing methods of writing, formatting, and disseminating

information under this system, for the purposes of improving these notices' clarity, user-friendliness, and effectiveness in conveying priority, safety-related concerns.

(b) REQUIREMENTS.—In carrying out this initiative, the Administrator shall—

(1) collaborate with airlines and labor organizations representing pilots operating under part 121 of title 14, Code of Federal Regulations, organizations representing general aviation, air traffic controllers, airport operations personnel, and the military on developing recommendations for improving the user-friendliness of the content, style, and formatting of NOTAMs, including any changes to existing conventions for such items as abbreviations, punctuation, font, and font size;

(2) collaborate with avionics manufacturers and software developers in considering hardware and software options for sending, accessing, and displaying NOTAMs; and

(3) take appropriate actions within the International Civil Aviation Organization (ICAO) to adopt recommended standards on the writing, formatting, and disseminating of NOTAMs.

(c) REPORT TO CONGRESS.—The Administrator shall issue a report to Congress not later than 1 year after the

date of enactment of this Act, and no less than every 6 months thereafter, until new standards for the writing, formatting, and dissemination of NOTAMs have been adopted by the FAA. This report shall include an update on the progress of the work described in this section, including an explanation of how any new recommendations that have been developed will improve safety and an explanation of any obstacles remaining to achieving consensus for new international standards for the NOTAM system.

SEC. 9. GAO STUDY ON RISKS ASSOCIATED WITH THE USE OF CVR DATA IN FOREIGN COUNTRIES.

(a) IN GENERAL.—The Comptroller General shall take the lead in carrying out a study on the risks associated with the use of CVR data in investigations led by foreign governments or units of foreign governments.

(b) CONTENTS.—At minimum, this study shall—

(1) review past incidents in which CVR data was used by foreign governments or units of foreign governments in such a way that the National Transportation Safety Board found to depart from the National Transportation Safety Board's standards and procedures for a safety investigation, including the use or circulation of CVR data for purposes other than determining the causes of an accident or safety incident, inappropriate release of data con-

tained on a CVR, or the dissemination of information or conclusions based on a misinterpretation of data contained on a CVR;

(2) document the protections provided for cockpit voice recordings and transcripts by ICAO and other countries where United States-based air carriers operate;

(3) identify and assess the risks to United States flight crews, air carriers, manufacturers, and other stakeholders in the aviation industry associated with CVRs capable of recording more than 2 hours of data; and

(4) provide recommendations on measures to adopt to mitigate against such risks and ensure that any use of CVR data serves the sole purpose of a safety investigation, including recommendations for the United States to make to ICAO to mitigate these risks.

SEC. 10. TRANSPARENCY IN AIRCRAFT MAINTENANCE AND REPAIR WORK.

(a) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Administrator shall update the guidelines of the FAA for part 121 certificate holders in implementing a Continuing Analysis and Surveillance System (CASS) for their air carrier maintenance

programs to include reporting no less than once every 6 months by certificate holders to the FAA of any failure to follow procedures in aircraft maintenance as well as any major alteration, complete overhaul, or repair of mechanical irregularities of each airframe, engine, propeller, and appliance.

(b) ADVISORY.—Not later than 1 year after the date of enactment of this Act, the Administrator shall issue an advisory with formatting guidelines for air carriers to report information as required under subsection (a).

(c) INCLUSION.—For each instance of a failure to follow procedures and for each major alteration, overhaul, or repair reported under the requirements of this section, the Administrator shall require certificate holders to include any name and any physical address where the work is carried out for each maintenance provider that performs work.

(d) DEFINITIONS.—In this section, the terms ''major alterations'', ''airframe'', ''propeller'', and ''appliance'' have the meanings given such terms in part 1 of title 14, Code of Federal Regulations.

SEC. 11. REVIEW OF FAA'S AVIATION SAFETY INSPECTION PROGRAM.

(a) AUDIT BY THE DEPARTMENT OF TRANSPORTATION INSPECTOR GENERAL.—Not later than 6 months

after the date of enactment of this Act, the Inspector General of the Department of Transportation shall initiate a review of the FAA's August 2017 Flight Standards reorganization and its aviation safety inspection program.

(b) REVIEW.—The review shall include an evaluation of—

(1) the FAA Flight Standards reorganization from a geographic-based system to a functional-based system;

(2) the implementation of the FAA's Compliance Philosophy as it relates to safety inspections and enforcements;

(3) the FAA's new oversight system known as the Safety Assurance System (SAS);

(4) training for aviation safety inspector and operational research analysts on the Compliance Philosophy and SAS; and

(5) the impact of the FAA's reorganization and SAS on the FAA's ability to produce reliable estimates of aviation safety inspector and operational research analyst staffing needs.

(c) REPORT.—The Inspector General shall submit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report

on the results of its review and any recommendations to improve the aviation safety inspection program of the FAA.

SEC. 12. DEFINITIONS.

In this Act:

(1) ADMINISTRATOR.—The term ''Administrator'' means the Administrator of the Federal Aviation Administration.

(2) COVERED EVENT.—The term ''covered event'' means—

(A) a category A or B runway incursion, as defined in Order 7050.1B of the Federal Aviation Administration (dated November 3, 2013);

(B) a landing on a taxiway, incorrect runway, or other area not designed as a runway at a public-use airport on land;

(C) descent by an aircraft below 300 feet above ground level on approach to a taxiway, incorrect runway, or other area not designed as a runway at a public-use airport on land; or

(D) a landing by an aircraft notwithstanding an instruction by air traffic control that the aircraft perform a missed approach or go-around.

(3) FAA.—The term ''FAA'' means the Federal Aviation Administration.

(4) PART 121 AIR CARRIER.—The term ''part 121 air carrier'' means an air carrier that holds a certificate issued under part 121 of title 14, Code of Federal Regulations.

(5) PART 129 AIR CARRIER.—The term ''part 129 air carrier'' means an air carrier that holds a certificate issued under part 129 of title 14, Code of Federal Regulations.

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