I

117TH CONGRESS
2D SESSION

H. R. 7447

To direct the Administrator of the National Aeronautics and Space Administration to conduct a study on the modernization of aeronautical standards, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

APRIL 7, 2022

Mr. BROWN of Maryland introduced the following bill; which was referred to the Committee on Science, Space, and Technology

---

A BILL

To direct the Administrator of the National Aeronautics and Space Administration to conduct a study on the modernization of aeronautical standards, 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 ''Modernizing Aeronautical Standards Act''.

SEC. 2. MODERNIZING AERONAUTICAL STANDARDS.

(a) FINDINGS.—Congress finds the following:

(1) The work of the U.S. Committee on Extension to the Standard Atmosphere, established in 1953, led to the 1958, 1962, 1966, and 1976 versions of the U.S. Standard Atmosphere.

(2) These models were published in book form jointly by the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, and the U.S. Air Force.

(3) The U.S. Standard Atmosphere is widely used as a basis for the design, testing, and operation of aircraft and other equipment.

(4) The Department of Defense has supplemented the standard atmosphere with data models of climatic extremes, most recently with MIL–HDBK–310, Climatic Information to Determine Design and Test Requirements for Military Systems and Equipment, which was published in 1997 and ''provides climatic data primarily for use in engineering analyses to develop and test military equipment and materiel''.

(5) The most recent standard atmosphere published in 1976 assumed a standard sea-level temperature of 59 degrees Fahrenheit in continuation of the assumption established in 1924 by Resolution

192 of the International Commission for Air Navigation.

(6) Between 1924 and 1976, the average global sea-level temperature rose by 0.5 degree Fahrenheit.

(7) Since 1976, the average global sea-level temperature has risen by more than 1.5 degrees Fahrenheit, the five warmest years in the modern record have all occurred since 2015, and nine of the 10 warmest years have occurred since 2005.

(8) Under the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (AR5 IPCC), all scenarios considered result in an average global temperature rise in 2040 by more than 2.5 degrees Fahrenheit since 1976, with the most extreme scenario resulting in a temperature rise of 3.5 degrees Fahrenheit.

(9) By 2100, the IPCC projects that the global mean temperature will increase by more than 4 degrees Fahrenheit under moderate scenarios, with the potential to exceed 7.5 degrees Fahrenheit under the most extreme scenarios.

(10) Aircraft performance is negatively affected by increased temperatures, resulting in lower payload capacity, increased runway requirements, re-

duced range, slower climb out speeds, and negative impacts to environmental performance.

(11) For existing aircraft and engine designs, the increase to ambient temperature will result in impacts to operations to account for the lower engine and aircraft performance, which may include increased noise exposure, increased operations, increase to emissions, and degradation of air quality.

(12) For new aircraft and engine designs, the increase to ambient temperature will require improved engine designs that provide required thrust at higher ambient temperatures to meet mission requirements, which may result in de-rating at airports with excess runway length, resulting in lower operational noise compared to current levels.

(13) The military and commercial aircraft being designed today are expected to be in operation for thirty to fifty years, with an expected end of life between 2050 to 2070.

(b) STUDY ON AERONAUTICAL STANDARDS.—

(1) STUDY REQUIRED.—The Administrator of the National Aeronautics and Space Administration, in consultation with the Secretary of Defense, the Administrator of the Federal Aviation Administration, and the Administrator of the National Oceanic

and Atmospheric Administration, shall conduct a study on the modernization of aeronautical standards.

(2) DESIGNATION.—The study conducted under paragraph (1) shall be known as the ''Modernization of Aeronautical Standards and Aircraft Performance Study''.

(3) ELEMENTS.—The study conducted under paragraph (1) shall include the following:

(A) An assessment of differences between the current atmospheric conditions and the baseline atmospheric conditions, to include both the mean and extreme values.

(B) An analysis of the impacts to operation, maintenance, and sustainment costs of covered commercial aircraft due to the differences identified in subparagraph (A).

(C) An estimation of the number of weight restriction hours for the covered commercial aircraft at the covered commercial airports under the baseline, current, and projected atmospheric conditions.

(D) An assessment of the required infrastructure investment at the covered commercial airports such that the number of weight restric-

tion hours under the projected atmospheric conditions is equivalent to the number of weight restriction hours with the current infrastructure and route structure under the baseline and current atmospheric conditions.

(E) Recommendations for atmospheric and climatic design requirements for future commercial aircraft to account for projected atmospheric conditions.

(F) An analysis of the impacts to operation, maintenance, and sustainment costs and aircraft performance of military aircraft due to the differences identified in subparagraph (A).

(G) Atmospheric and climatic design requirements for military aircraft, or other equipment, which should be updated to account for current and projected atmospheric conditions.

(H) Recommended updates or supplements to the atmospheric standards due to current atmospheric conditions.

(I) Criteria under which future updates or supplements to the atmospheric standards should be made.

(4) TRANSMITTAL.—The Administrator shall transmit the results of the study to the Committee

on Science, Space, and Technology and the Committee on Transportation and Infrastructure of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the congressional defense committees not later than 18 months after the date of enactment of this Act.

(5) DEFINITIONS.—In this section:

(A) The term ''atmospheric standards'' means—

(i) the United States Standard Atmosphere of 1976;

(ii) MIL–HDBK–310, Climatic Information to Determine Design and Test Requirements for Military Systems and Equipment; and

(iii) any other standard as determined by the Administrator.

(B) The term ''baseline atmospheric conditions'' means the atmospheric conditions referred to in the most recent release of an atmospheric standard.

(C) The term ''current atmospheric conditions'' means the atmospheric conditions ob-

served in the 5 most recent calendar years ending before the date of enactment of this Act.

(D) The term ''projected atmospheric conditions'' means the mean atmospheric conditions projected by the International Panel on Climate Change under the Sixth Assessment Report in scenarios—

(i) SSP1–1.9;

(ii) SSP1–2.6;

(iii) SSP2–4.5;

(iv) SSP3–7.0; and

(v) SSP5–8.5.

(E) The term ''aircraft performance'' includes—

(i) range;

(ii) payload capacity;

(iii) runway length requirement;

(iv) climb rate;

(v) turn rate;

(vi) operating altitude; and

(vii) acceleration.

(F) The term ''covered commercial airports'' means—

(i) the 30 commercial service airports (as defined in section 47102(7) of title 49,

United States Code) with the most passenger boardings in the most recent calendar year ending before the date of enactment of this Act; and

(ii) the 5 public airports (as defined in section 47102(21) of title 49, United States Code) not covered by clause (i) with the highest all-cargo landed weight in the most recent calendar year ending before the date of enactment of this Act.

(G) The term ''covered commercial aircraft'' means the 10 aircraft types still in production with the highest number of operations at covered commercial airports in the most recent calendar year ending before the date of enactment of this Act.

(H) The term ''commercial aircraft'' means an air carrier operating under part 121 of title 14, Code of Federal Regulations.

(I) The term ''passenger boardings'' has the meaning given the term in section 47102(15) of title 49, United States Code.

(J) The term ''military aircraft'' means an aircraft that—

(i) is currently being developed, procured, or operated by the Department of Defense; and

(ii) is a bomber, fighter, attack helicopter, transport helicopter, strategic transport, tactical transport, or surveillance aircraft.

(K) The term ''weight restriction day'' means a day when the daily maximum temperature matches or exceeds the weight-restriction temperature threshold for a specific aircraft.

(L) The term ''congressional defense committees'' has the meaning given that term in section 101(a)(16) of title 10, United States Code.

○