National Aeronautics and Space Administration (NASA) Fiscal Year 2020 Agency Report

1. Please provide a summary of your agency's activities undertaken to carry out the provisions of OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities" and the National Technology Transfer and Advance Act (NTTAA). The summary should contain a link to the agency's standards-specific website(s) where information about your agency's standards and conformity assessment related activities are available.

OMB Circular A-119 facilitates selection and use of voluntary consensus standards (VCS) in lieu of NASA technical standards or other government agency standards. NASA requires, prior to proposing development, revision, or revalidation of a NASA technical standard, a determination be made whether a VCS exists or is in development that meets or can be adapted to meet NASA's needs. NASA technical discipline experts also evaluate the opportunity to replace an existing NASA technical standard with a VCS or propose conversion to a VCS, thereby reducing duplicate standards. NASA directly cites Office of Management and Budget (OMB) Circular No. A-119 and the preference for use of VCS and participation in VCS bodies' activities in NASA directives (NASA Policy Directive (NPD) 7120.4, NASA Engineering and Program/Project Management Policy, and NASA Procedural Requirements (NPR) 7120.10, Technical Standards for NASA Programs and Projects). NASA promotes the use of VCS by identifying and approving NASA-endorsed technical standards, a "pick list" of technical standards to consider first when selecting program and project requirements.

NASA encourages participation in VCS developing bodies and collects data on participation in development and revision of VCS. During this reporting period, 81 NASA representatives participated in 254 VCS development/revision activities in 33 VCS bodies. NASA's participation in VCS development/revision increased from 70 participants in FY2019 to 81 in FY2020, an increase of over 15 percent. NASA representatives participated in 179 VCS bodies' development/revision activities in FY2019 and in 254 development/revision activities in FY2020, an increase of over 40 percent.

NASA expertise and experience will or is expected to be used in the assessment of national and international commercial human spaceflight standards, though the maturity of these standards is still in early stages of development. Current NASA documentation exists as commercial crew and cargo program requirements documents.

An example of NASA's use of VCS is that NASA participates in the revision of ISO 14624-1, Space systems— Safety and compatibility of materials — Part 1: Determination of upward flammability of materials; ISO 14624-2, Space systems — Safety and compatibility of materials — Part 2: Determination of flammability of electrical-wire insulation and accessory materials; and ISO 14624-3, Space systems — Safety and compatibility of materials — Part 3: Determination of offgassed products from materials and assembled articles and tailors those test procedures to meet NASA's needs in NASA-STD-6001, Flammability, Offgassing, and Compatibility Requirements and Test Procedures. The following VCS are also cited in NASA-STD-6001 as requirements, with exceptions, for test methods: ASTM D240, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter; ASTM D2863, Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index); ASTM D3294, Standard Specification for Polytetrafluoroethylene

(PTFE) Resin Molded Sheet and Molded Basic Shapes; ASTM D4809, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method); ASTM E502, Standard Test Method for Selection and Use of ASTM Standards for the Determination of Flash Point of Chemicals by Closed Cup Methods; ASTM E1354, Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter; ASTM G72, Standard Test Method for Autogenous Ignition Temperature of Liquids and Solids in a High-Pressure Oxygen-Enriched Environment; ASTM G74, Standard Test Method for Ignition Sensitivity of Nonmetallic Materials and Components by Gaseous Fluid Impact; ASTM G86, Standard Test Method for Determining Ignition Sensitivity of Materials to Mechanical Impact in Ambient Liquid Oxygen and Pressurized Liquid and Gaseous Oxygen Environments; ASTM G124-10, Standard Test Method for Determining the Combustion Behavior of Metallic Materials in Oxygen-Enriched Atmospheres; ASTM G125, Standard Test Method for Measuring Liquid and Solid Material Fire Limits in Gaseous Oxidants; and SAE AS4373, Test Methods for Insulated Electric Wire (Method 508, Dry Arc Propagation Resistance only). As new revisions are developed, more VCS are incorporated where appropriate.

NASA subject matter experts also support IPC—Association Connecting Electronics Industries to ensure that the technical and training requirements in the Space Addendums to IPC documents (e.g., IPC-6012xS, J-STD-001xS, and IPC/WHMA-A-620xS) continue to meet or exceed the baseline requirements of equivalent NASA specifications. NASA continues to participate in re-registration audits for ISO 9001 Quality Management System, in ISO 14001 Environmental Management System inspections and compliance activities, and in OSHA's Voluntary Protection Program (VPP) assessments. Various other audits and follow-ups included internal quality, safety, environmental, and health inspections, including those for explosives, propellants, pyrotechnics, environmental compliance, and occupational health.

Standards are critical in defining engineering, safety and mission assurance, and health and medical requirements for NASA missions. These technical standards include VCS, other government agency standards, NASA technical standards, NASA-endorsed standards, and related standards information such as lessons learned and application notes relative to specific standards. Access to authorized personnel Agency-wide is provided to over 167 VCS Standards Developing Bodies.

NASA is currently leading the revision of AWS D17.1/D17.1M, Specification for Fusion Welding for Aerospace Applications.

2. Please list the government-unique standards (GUS) your agency began using in lieu of voluntary consensus standards during FY 2020. Please note that GUS which are still in effect from previous years should continue to be listed, thus the total number in your agency's report will include all GUS currently in use (previous years and new as of this FY):

This agency reports voluntary consensus standards usage on a category basis