National Aeronautics and Space Administration (NASA) Fiscal Year 2023 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.

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. These activities facilitate selection and use of VCS in lieu of NASA technical standards or other government agency standards in compliance with OMB Circular No. A-119. NASA directly cites OMB Circular 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). Proven, consensus-based standards are critical in defining engineering, safety and mission assurance, and health and medical requirements for NASA missions. These technical standards include, but are not limited to, voluntary consensus standards (VCS) cited in NASA directives and technical standards, other government agency standards, NASA technical standards, and NASA-endorsed standards. As NASA technical standards are developed and revised, more VCS are incorporated where appropriate. Many examples of NASA Technical Standards citing use of VCS, and access to those VCS, can be found on the NASA Technical Standards System Web site at https://standards.nasa.gov. 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 tailored 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 follows the process required for VCS specified in OMB Circular A-119: openness, balance, due process, appeals process, and consensus

NASA encourages participation in VCS developing bodies and collects data on participation in development and revision of VCS. During this reporting period, 124 NASA representatives participated in 860 VCS development/revision activities in 30 Standards Developing Bodies. NASA's participation in VCS development/revision activities remained consistent from FY2022 to FY2023, although some participants and documents in work changed.

A NASA representative chaired the ISO TC20/SC14 Subcommittee for Space Systems and Operations in support of promoting use of VCS. The committee's scope of work is the standardization for manned and unmanned space vehicles, their design, production, maintenance, operation, and disposal, and the environment in which they operate. Six working groups provide an international forum for addressing the standardization needs and concerns of organizations and personnel involved with the development and operation of space systems. NASA currently supports the development/revision of over 13 ISO TC20/SC14 international consensus standards.

NASA-STD-6016C, Standard Materials and Processes Requirements for Spacecraft, cites as requirements for test methods 4 ASTM standards, 10 American Welding Society (AWS) standards, 26 SAE International (SAE) standards, 2 Government Electronics and Information Technology Association (GEIA) (SAE International) standards, 2 National Aerospace Standards (NAS) standards, and 1 Battelle Memorial

Institute standard. As new revisions are developed, more VCS are incorporated where appropriate. NASA-STD-6012A, recently revised, cites 1 AWS, 14 ASTM, and 10 SAE standards.

NASA is well represented on AIAA committees to promote development/revision and use of VCS, as these standards are applied on many NASA programs and projects in lieu of NASA standards. Some examples are the AIAA Aerospace Pressure Vessels Committee; AIAA S-080, Space Systems - Metallic Pressure Vessels, Pressurized Structures, and Pressure Components; AIAA S-081, Space Systems - Composite Overwrapped Pressure Vessels (COPVs); AIAA S-082 202x, Space Systems - Composite Overwrapped Pressure Vessels with a Composite Liner; AIAA S-110, Space Systems - Structures, Structural Components, and Structural Assemblies; AIAA-S-113, Criteria for Explosive Systems and Devices on Space and Launch Vehicles; AIAA-S-136 -202x, Battery Safety Standard for Space Applications; AIAA-S-144-202X, Code Verification in Computational Fluid Dynamics; AIAA G-095, Guide to Safety of Hydrogen and Hydrogen Systems; and AIAA R-091A-2020, Calibration and Use of Internal Strain-Gage Balances with Application to Wind Tunnel Testing.

NASA serves as the secretariat for Consultative Committee for Space Data Systems (CCSDS) leading the Spacecraft Onboard Interface Services (SOIS) committee with multiple standards development activities. The SOIS approach is to standardize the interfaces between items of spacecraft equipment by specifying well-defined standard service interfaces and protocols which allow standardized access to sensors, actuators, and generic spacecraft functions, allowing spacecraft applications to be developed independently of the mechanisms that provide these services.

2. Please list the government-unique standards (GUS) your agency began using in lieu of voluntary consensus standards during FY 2023. 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 categorical basis.