

ANSI Space Industry Standardization Informational Meeting – AIAA Background Material

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Virtual

Overview

AIAA Standards Program has various committees and published documents that are relevant to the commercial space industry on the topic of Space Situational and Domain Awareness, Space Traffic Coordination and Management, and Orbital Debris Mitigation

AIAA: Standards Program

- AIAA has a domestic/national program and an international program
 - Domestic program develops ANSI and AIAA documents
 - Domestic program is also responsible for administering the U.S. Technical Advisory Groups (TAGs) that provides the U.S. position and comments on ISO projects and activities
 - International program is responsible for administering ISO secretariats

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AIAA Activities

- Relevant Committees Administered by AIAA
 - International Secretariat for ISO/TC 20/SC 14 (Space Systems and Operations)
 - ISO/TC 20/SC 14/WG 3 (Operations and Support Systems)
 - ISO/TC 20/SC 14/WG 7 (Orbital Debris)
 - U.S. Technical Advisory Group (TAG) for ISO/TC 20/SC 14
 - AIAA Aerospace Pressure Vessels Committee on Standards (CoS)
 - AIAA Atmospheric and Space Environments CoS
 - AIAA Public Policy Committee

AIAA Activities

- Relevant Committees Administered by AIAA (Cont'd)
 - AIAA Space Traffic Management (STM) Working Group
 - **Task Group 1:** Define the STM eco-system into fundamental functional components, outline issues and current activities.
 - **Task Group 2:** Execute a user test case to illustrate the impact of assumptions, data types and analytical methods on calculating conjunctions.
 - **Task Group 3:** Assemble a body of knowledge of best practices, standards and guidelines from across the community.
 - **Task Group leads briefed key congressional committees, recommending 1) selection of lead agency for civil and commercial STM and 2) funding for lead agency.**

AIAA Domestic Program

➤ Published Docs: [Aerospace Research Central \(ARC\)](#)

■ Relevant documents:

- Space Systems—Metallic Pressure Vessels, Pressurized Structures, and Pressure Components (ANSI/AIAA S-080A-2018)
- Space Systems—Composite Overwrapped Pressure Vessels (ANSI/AIAA S-081B-2018)
- Criteria for Explosive Systems and Devices on Space and Launch Vehicles (AIAA S-113A-2016)
- Special Report: Orbital Debris Mitigation: Technical, Legal, and Economic Aspects (AIAA SP-016-1992)
- Guide to the Serviceable Spacecraft Grasping/Berthing/Docking Interfaces (AIAA G-056-1992)

AIAA Standards: International Program

➤ ISO/TC 20/SC 14: Space Systems and Operations

- Has two Working Groups (WG3 and WG7) that are relevant to Space Traffic Management and Orbital Debris.
- WG3 (Operations and Support Systems) - Various relevant projects include:
 - New Work Item Proposal (NWIP) on ***Space systems — Space traffic coordination and management*** with an ISO ballot deadline of 4 December 2020.
 - Space systems — Estimation of orbit lifetime (ISO 27852)
 - Space systems — Rendezvous and Proximity Operations (RPO) and On Orbit Servicing (OOS) — Programmatic Principles and Practices (ISO/CD 24330)
- WG7 (Orbital Debris) - Various relevant projects include:
 - Space systems — Space debris mitigation requirements (ISO 24113)
 - Space systems — Test procedures to evaluate spacecraft material ejecta upon hypervelocity impact (ISO 11227)
 - Space systems — Prevention of break-up of unmanned spacecraft (ISO 16127)

International Program (Continued)

Other relevant projects in other Working Groups

■ **Working Group 1: Design Engineering and Production**

- *Space systems — Cube satellites (CubeSats) (ISO 17770)*
- *Space systems — Explosive systems and devices (ISO 26871)*
- *Space systems — Design qualification and acceptance tests of small spacecraft and units (ISO 19683)*

■ **Working Group 2: System Requirements, Verification and Validation, Interfaces, Integration, and Test**

- *Space systems — Early operations — Part 1: Spacecraft initialization and commissioning (ISO 10784-1)*
- *Space systems — General test requirements for launch vehicles (ISO 24917)*

International Program (Continued)

■ Working Group 4: Space Environment (Natural and Artificial)

- *Space environment (natural and artificial) — Guide to process-based implementation of meteoroid and debris environmental models (orbital altitudes below GEO+2000km) (ISO 14200)*
- *Space environment (natural and artificial) — Modeling of space environment impact on nanostructured materials — General principles (ISO 22295, Draft Technical Specification)*

■ Working Group 6: Materials and Processes

- *Space systems — Determination of test methods to characterize material or component properties required for break-up models used for Earth re-entry (ISO/DIS 23020)*

➤ ISO/TC 20/SC 14 [Work Program](#) (Published Docs and Projects Under Development)

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