



ISO/TC 197
Hydrogen technologies

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Liaison report from ISO TC 20 SC 14

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ISO/TC 20 / SC 14 Status Report

1 Title and Scope

Title: Space Systems and Operations

Scope: Standardization of manned and unmanned space vehicles that include management of space programs, design, test, production, launch, maintenance, operation, and disposal of space vehicles, and for the environment in which the space programs operate.

2 Chairman and secretary

Chairman:

Name (tenure): Paul Gill (ANSI/USA)
Organization/Country: NASA/USA
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Secretary:

Name (tenure): Nick Tongson (ANSI/USA)
Organization/Country: American Institute of Aeronautics and Astronautics - AIAA
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3 Meetings Held Since Last Report (SC and WG)

Meetings held

No.	Date	Place
26	2016-05-27	Beijing, China
27	2017-06-16	Paris, France
28	2018-06-15	Helsinki, Finland

Schedule of future meetings

29	2019-06-14	London, UK
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SC14 WGs will meet in October and November 2018 in various locations.

4 Participation and liaisons

4.1 P-member bodies

No.	Country	Member Body
1	USA (Secretariat)	ANSI
2	BRAZIL	ABNT
3	CHINA	SAC
4	FINLAND	SFS
5	FRANCE	AFNOR
6	GERMANY	DIN
7	INDIA	BIS
8	ITALY	UNI
9	JAPAN	JISC
10	NORWAY	SN
11	RUSSIAN FEDERATION	GOST R
12	UKRAINE	DSSU
13	UNITED KINGDOM	BSI

4.2 O-member bodies

No.	Country	Member Body
1	Argentina	IRAM
2	Iran, Islamic Republic of	ISIRI
3	Israel	SII
4	Kazakhstan	KAZMEMST
5	Korea, Republic of	KATS
6	Netherlands	NEN
7	Poland	PKN
8	Romania	ASRO
9	Slovakia	SUTN
10	Sweden	SIS

Total (Secretariat + P + O) = 22 Member Bodies

4.3 Liaisons (Contact)

TC/SC	Organization	Category	Person	Contact E-mail
	ASD-STAN	A	Andreas Jain	andreas.jain@asd-europe.org
	CCSDS	A	James Afarin	james.afarin@nasa.gov
	COSPAR	A		cospar@cosparhq.cnes.fr
	ECSS	A	Wolfram Knorr	wolfram.knorr@airbus.com
	ESA	A	Fabien Castanet	Fabien.Castanet@cnes.fr contactesa@esa.int

IAA	A
WCO	B

sgeneral@iaaweb.org

information@wcoomd.org

NAMES OF LIAISON BODIES:

- ASD-STAN: AeroSpace and Defense Industries Association of Europe – Standardization
- CCSDS: Consultative Committee for Space Data Systems
- COSPAR: Committee on Space Research
- ECSS: European Cooperation for Space Standardization
- ESA: European Space Agency
- IAA: International Academy of Astronautics
- WCO: World Customs Organization

4.4 Changes since last plenary meeting of ISO/TC 20

- New O-Member Netherlands (NEN)

4.5 Inactive P-member bodies

India, Italy (presence at meetings)

5 Constitution

5.1 Working Groups

WG 1: Design Engineering and Production

Convenor: Keiichiro Eishima
 Organization/Country: Japan
 E-mail: keiichiro.eishima@castle.ocn.ne.jp

WG 2: Interfaces, Integration and Test

Convenor: Stan Kennedy
 Organization/Country: USA
 E-mail: stanley.kennedy@oak-aero.com

WG 3: Operations and Ground Support

Convenor: Andre Lacroix
 Organization/Country: Germany
 E-mail: andre.a.lacroix@ariane.group

WG 4: Space Environment (Natural and Artificial)

Convenor: Mikhail Panasyuk
 Organization/Country: Russia
 E-mail: panasyuk@sinp.msu.ru

WG 5: Program Management

Convenor: Severin Drogoul
 Organization/Country: France
 E-mail: severin2.drogoul2@gmail.com

WG 6: Materials and Processes

Convenor: Naoko Baba
Organization/Country: Japan
E-mail: baba.naoko@jaxa.jp

WG 7: Orbital Debris

Convenor: Hedley Stokes
Organization/Country: UK
E-mail: hedley_stokes@msn.com

5.2 Changes since last plenary meeting of ISO/TC 20

- Extended for another 3-year term (2019-2021) of office for the convenors of WG1 (Eishima), WG4 (Panasyuk), and WG5 (Drogoul).

6 Any other matters of importance to ISO/TC 20

SC 14 will continue to review and monitor the relationship with TC 20/SC 6 (Standard Atmosphere) to determine future steps, in consultation with the experts of SC 14/WG 4 (Space Environment [natural and artificial]).

7 Programme of work (since last ISO/TC 20 Plenary)

7.1 Published standards (Stage 60): 18

ISO 23041:2018	Space systems — Unmanned spacecraft operational procedures — Documentation	60.60	WG 3
ISO 23038:2018	Space systems — Space solar cells — Electron and proton irradiation test methods	60.60	WG 1
ISO/TS 21979:2018	Space environment (natural and artificial) — Procedure for obtaining worst case and confidence level of fluence using the quasi-dynamic model of earth's radiation belts	60.60	WG 4
ISO/TS 20991:2018	Space systems — Requirements for small spacecraft	60.60	WG 1
ISO 20930:2018	Space systems — Calibration requirements for satellite-based passive microwave sensors	60.60	WG 1
ISO 20892:2018	Space systems — Launch complexes modernization process — General requirements	60.60	WG 5
ISO 20780:2018	Space systems — Fiber optic components — Design and verification requirements	60.60	WG 1
ISO 20188:2018	Space systems — Product assurance requirements for commercial satellites	60.60	WG 5
ISO 19971:2018	Space systems — Spacecraft and launch vehicle combined operation plan (COP) at launch site -- General format	60.60	WG 2
ISO 19924:2017	Space systems — Acoustic testing	60.60	WG 2
ISO/TS 18667:2018	Space systems — Capability-based Safety, Dependability, and Quality Assurance (SD&QA) programme management	60.60	WG 5
ISO 18322:2017	Space systems — General management requirements for space test centres	60.60	WG 2
ISO 17763:2018	Space systems — Human-life activity support systems and equipment integration in space flight	60.60	WG 6
ISO 16726:2018	Space systems — Human-life activity support systems and equipment integration in space flight — Techno-medical requirements for space vehicle human habitation environments — Requirements for the air quality affected by harmful chemical contaminants	60.60	WG 6
ISO 16157:2018	Space systems — Human-life activity support systems and equipment integration in space flight — Techno-medical requirements for space vehicle human habitation environments	60.60	WG 6
ISO 16091:2018	Space systems — Integrated logistic support	60.60	WG 5
ISO 14620-1:2018	Space systems — Safety requirements — Part 1: System safety	60.60	WG 5
ISO 10794:2018	Space systems — Programme management — Material, mechanical parts and processes	60.60	WG 5

7.2 Registered Work items: 29

Approval stage (Stage 50): 2

ISO/FDIS 27875	Space systems — Re-entry risk management for unmanned spacecraft and launch vehicle orbital stages	50.00	WG 7
ISO/FDIS 21494	Space systems — Magnetic testing	50.00	WG 2

Enquiry stage (Stage 40): 10

ISO/DIS 26872	Space systems — Disposal of satellites operating at geosynchronous altitude	40.00	WG 3
ISO/DIS 24917	Space systems — General test requirements for launch vehicles	40.00	WG 2
ISO/DIS 24113	Space systems — Space debris mitigation requirements	40.00	WG 7
ISO/DIS 22137	Space systems — Program management — Test reviews	40.00	WG 5
ISO/DIS 14621-1	Space systems — Electrical, electronic and electromechanical (EEE) parts — Part 1: Parts management	40.00	WG 5
ISO/DIS 14621-2	Space systems — Electrical, electronic and electromechanical (EEE) parts — Part 2: Control programme requirements	40.00	WG 5
ISO/DIS 14620-2	Space systems -- Safety requirements -- Part 2: Launch site operations	40.00	WG 5
ISO/DIS 10795	Space systems -- Programme management and quality -- Vocabulary	40.20	WG 5
ISO/DIS 21886	Space systems -- Configuration management	40.99	WG 5
ISO/DIS 11231	Space systems -- Probabilistic risk assessment (PRA)	40.99	WG 5

Committee Stage (Stage 30): 7

ISO/CD 15390	Space environment (natural and artificial) — Galactic cosmic ray model	30.00	WG 4
ISO/CD 15388	Space systems — Contamination and cleanliness control	30.00	WG 6
ISO/CD 14624-4	Space systems — Safety and compatibility of materials — Part 4: Determination of upward flammability of materials in pressurized gaseous oxygen or oxygen-enriched environments	30.00	WG 6
ISO/CD 20893	Space systems — Prevention of break-up of orbital launch stages	30.00	WG 7
ISO/DTR 20891	Space systems — Space batteries — Guidelines for easing in-flight health assessment	30.20	WG 1
ISO/CD 21442	Space systems — General requirements for control engineering	30.92	WG 1
ISO/CD 21980	Space systems — Evaluation of radiation effects on Commercial-Off-The-Shelf (COTS) parts for use on low-orbit satellites	30.99	WG 4

Preparatory Stage (Stage 20): 10

ISO/AWI 23569	Space systems — Spacecraft system level radiating frequency (RF) performance test in compact range	20.00	WG 2
ISO/AWI 23312	Space systems — Detailed space debris mitigation requirements for spacecraft	20.00	WG 7
ISO/AWI 23230	Space systems — Paint materials — Processes, procedures, requirements	20.00	WG 6
ISO/AWI 23135	Space systems — Verification program and management process	20.00	WG 2
ISO/AWI 23020	Space systems — Determination of test methods to characterize material or component properties required for break-up models used for earth re-entry	20.00	WG 6
ISO/AWI 22893	Space systems — Software Product Assurance	20.00	WG 5
ISO/AWI 22772	Space systems — Requirements of launch vehicle (LV) to electrical ground support equipment (EGSE) interfaces	20.00	WG 2
ISO/AWI 22639	Space systems — Design guidelines for multi-GEO satellites collocation	20.00	WG 3
ISO/AWI 22591	Space systems — Satellite-based service for a snowplow support system	20.00	WG 1
ISO/AWI TS 22295	Space environment (natural and artificial) — Modeling of space environment impact on nanostructured materials — General principles	20.00	WG 4

7.3 Possible new work items: 10

Proposal Stage (Stage 10): 10

ISO/NP 14624-5	Space systems — Safety and compatibility of materials — Part 5: Determination of reactivity of system/component materials with aerospace propellants	10.00	WG 1
ISO/NP 14624-6	Space systems — Safety and compatibility of materials — Part 6: Determination of reactivity of processing materials with aerospace fluids	10.00	WG 1
ISO/NP 14624-7	Space systems — Safety and compatibility of materials — Part 7: Determination of permeability and penetration of materials to aerospace fluids	10.00	WG 1
ISO/NP TR 23689	Space environment (natural and artificial) — Space weather information for use in space systems operations	10.20	WG 4
ISO/NP TS 23677	Space systems — Requirements for software reliability predictions	10.20	WG 5
ISO/NP 23670	Space systems — Vibration testing	10.20	WG 2
ISO/NP 26871	Space systems — Explosive systems and devices	10.99	WG 1
ISO/NP 24638	Space systems — Pressure components and pressure system integration	10.99	WG 1
ISO/NP 23129	Space systems — Thermal control coatings for spacecraft — Atomic Oxygen Protective Coating on polyimide film	10.99	WG 6
ISO/NP TR 17400	Space systems — Space launch complexes, integration sites and other facilities — General testing guidelines	10.99	WG 3

Preliminary Stage (Stage 00): 0

NONE

7.4 Standards withdrawn (Stage 95): 0

NONE

7.5 Standards under Review (Stage 90): 20

ISO 21351:2005	Space systems — Functional and technical specifications	90.20	WG 5
ISO 15864:2004	Space systems — General test methods for space craft, subsystems and units	90.20	WG 2
ISO 15387:2005	Space systems — Single-junction solar cells — Measurements and calibration procedures	90.20	WG 1
ISO 14954:2005	Space systems — Dynamic and static analysis — Exchange of mathematical models	90.20	WG 1
ISO 14711:2003	Space systems — Unmanned mission operations concepts — Guidelines for defining and assessing concept products	90.20	WG 3
ISO 14620-3:2005	Space systems — Safety requirements — Part 3: Flight safety systems	90.20	WG 5
ISO 14303:2002	Space systems — Launch-vehicle-to-spacecraft interfaces	90.20	WG 2
ISO 14302:2002	Space systems — Electromagnetic compatibility requirements	90.20	WG 1
ISO 14222:2013	Space environment (natural and artificial) — Earth upper atmosphere	90.20	WG 4
ISO 26900:2012	Space data and information transfer systems — Orbit data messages	90.60	WG 3
ISO 17401:2004	Space systems — Spacecraft interface requirements document for launch vehicle services	90.60	WG 2
ISO 16698:2013	Space environment (natural and artificial) — Methods for estimation of future geomagnetic activity	90.60	WG 4
ISO 14200:2012	Space environment (natural and artificial) — Guide to process-based implementation of meteoroid and debris environmental models (orbital altitudes below GEO + 2 000 km)	90.60	WG 4
ISO 15390:2004	Space environment (natural and artificial) — Galactic cosmic ray model	90.92	WG 4
ISO 15388:2012	Space systems — Contamination and cleanliness control	90.92	WG 1
ISO 16458:2004	Space systems — Unmanned spacecraft transportation -- General requirements	90.93	WG 3
ISO 16159:2012	Space systems — Launch pad and integration site — Facility, system and equipment failure analysis	90.93	WG 3
ISO 14950:2004	Space systems — Unmanned spacecraft operability	90.93	WG 3
ISO 11227:2012	Space systems — Test procedure to evaluate spacecraft material ejecta upon hypervelocity impact	90.93	WG 7
ISO 10789:2011	Space systems — Programme management — Information and documentation management	90.93	WG 5