



VEYRUM ROBOTICS STANDARD



VRS-SPC-201

Space — AR Assessment Protocol

How the Space (SPC) Application Rating letter is determined — sector criteria SPC-1...SPC-8, contributing intrinsic criteria, letter bands, tier ceilings, class applicability, evidence by tier, and underwriting use.

VEYRUM RESEARCH INSTITUTE

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Foreword. This Assessment Protocol is the **scoring document** of the Space (SPC) sector (D2, CEO 2026-09-02: per-sector AR scoring lives in the sector’s -2xx protocol). It scores a model against the eight SPC sector criteria of Clause 6 together with the contributing intrinsic criteria named in Clause 5, sums the points earned across the **applicable pool**, and maps the percentage to a letter **C < B < A < AA < AAA (AAA best)** at one of three evidence tiers. The space evidence economy is **qualification + telemetry**: a space robot does not come back, so field-return evidence does not exist and the Certified tier is short by design (Clause 7). A Space AR is an opinion above the compliance floor, not a certification, and nothing here implies that any real robot holds a Veyrum rating (ratings are not published). Requirements use “shall”; recommendations use “should”.

1 1 Scope

This Protocol defines how the Space (SPC) Application Rating letter is determined: the method of assessment (Clause 4); the contributing intrinsic criteria (Clause 5); the sector criteria SPC-1...SPC-8 (Clause 6); the letter bands, tier ceilings and class applicability (Clause 7); evidence by tier (Clause 8); underwriting and credit use (Clause 9); result recording (Clause 10); and the assessor checklist (Clause 11). It applies to the space application classes: **orbital servicing/inspection, lunar/planetary surface, ISS/crewed-platform internal, and launch-support ground robotics**. The letter is issued at one of three tiers — **Unverified, Verified, Certified** — and the AR tier shall not exceed the IR tier (VRS-GEN-006 §7). It excludes the capability gate, sector hazard taxonomy and continued-validity obligations (VRS-SPC-001) and the underlying rating mathematics (VRS-GEN-005/006).

2 2 Normative references

- **VRS-SPC-001**, Space — Sector Standard (undated) — capability gate, application/mission classes, hazard groups H1–H6, and the verified SPC anchor regime.
- **VRS-GEN-004** (Amendments, errata and lifecycle states); **VRS-GEN-005** (IR Methodology); **VRS-GEN-006** (AR Scheme) (undated).
- **VRS-GEN-008** (Application of Ratings); **VRS-GEN-009** (Robot Risk Passport — Data Schema); **VRS-GEN-012** (Evidence Grades and Data Requirements) (undated).
- Data twin: **VRS-SPC-501** (dated to this Protocol’s version).
- Anchor regimes reused by Clause 8, dated in the Bibliography: ISO 24113, ISO 19683, ISO 14224, IEC 62443-4-2, NASA GSFC-STD-7000B (GEVS), NASA-STD-6001B, ECSS-E-ST-10-04C.

3 3 Terms and definitions

Per VRS-GEN-001 (aligned to ISO 8373:2021) and VRS-SPC-001. Locally: **mission class** (one of **orbital-servicing**, **planetary-surface**, **launch-support**, **crewed-adjacent**, VRS-SPC-001 §4.3); **qualification margin** (the margin, in radiation dose, thermal cycles or lifetime, between the demonstrated qualification envelope and the declared mission envelope); **fleet analogue** (an on-orbit unit of the same model whose telemetry evidences the assessed model’s behaviour where the assessed unit’s own telemetry is unavailable); **pool** (the criteria scored for a class — the sector criteria of Clause 6 and the

contributing intrinsic criteria of Clause 5); **contributor** (an intrinsic criterion listed in Clause 5, scored under its own standard and counted here at the same points); **applicable pool** (the pool with any criterion whose Applicability excludes the assessed class removed, Clause 7.3); **ceiling** (the maximum points a criterion can reach at a given tier, stated per criterion in Clause 6).

4 Method of assessment

4.1 The Space AR shall be determined per VRS-GEN-006 from the **applicable pool**: the sector criteria of Clause 6 together with the contributing intrinsic criteria of Clause 5. The assessor shall sum the points earned across the pool and express them as a percentage of the points available in the applicable pool; the letter follows the bands of Clause 7.1 (VRS-GEN-006 §4). A criterion for which no admissible evidence is presented shall score 0 points and shall remain in the pool (VRS-GEN-006 §6); only a criterion whose Applicability row excludes the assessed class is removed from both the numerator and the denominator (Clause 7.3). Tier ceilings (Clause 7.2) fall out of the per-criterion ceilings of Clause 6; no separate cap operates on the letter.

4.2 Evidence shall be attributable to the declared **mission classes** of the assessed model and to its qualified environmental envelope (VRS-SPC-001 §4.3); the AR letter shall cover only the assessed mission classes, and unassessed classes shall be displayed as not covered.

4.3 Letters shall be issued **per mission class** where evidence diverges materially between classes; the displayed sector letter shall be the **lowest issued class letter**. A class that cannot be assessed on admissible evidence for its applicable pool shall be displayed as *not covered*, and the assessed envelope shall contract to the mission classes the evidence actually covers.

4.4 Evidence obtained outside a declared mission class or beyond the qualified environmental envelope shall be **inadmissible** for that class; the score shall not be stretched to an environment (dose, thermal-cycle or lifetime range) never qualified or observed. **crewed-adjacent** behaviour shall not be inferred from **orbital-servicing** evidence: crewed-proximity harm is a distinct risk and shall rest on evidence for that class. Where the assessed unit has no own on-orbit telemetry, **fleet-analogue** telemetry may substitute under Clause 8; the analogue's identity and the basis for comparability shall be recorded.

5 Contributing IR criteria

5.1 The sector pool consists of the sector criteria of Clause 6 and the following intrinsic criteria, scored once under their own standards and counted again here at the same points:

IR CRITERION	SCORED UNDER
SF-1	VRS-GEN-101 §6.1
SF-2	VRS-GEN-101 §6.2
SF-4	VRS-GEN-101 §6.4
SF-7	VRS-GEN-101 §6.7
RL-1	VRS-GEN-102 §6.1
RL-2	VRS-GEN-102 §6.2
RL-5	VRS-GEN-102 §6.5
RL-7	VRS-GEN-102 §6.7
CY-3	VRS-GEN-105 §6.3
CY-4	VRS-GEN-105 §6.4
MS-1	VRS-GEN-106 §6.1
MS-7	VRS-GEN-106 §6.7
SI-1	VRS-GEN-104 §6.1
SI-6	VRS-GEN-104 §6.5

5.2 No other intrinsic criterion contributes. Points, ceilings and applicability of a contributing criterion are those of its own standard; where a contributing criterion is not applicable to the assessed application class it is removed from the pool for that class (VRS-GEN-006 §6).

6 Sector criteria

6.0 Summary. Points and tier ceilings per criterion; totals reproduce by addition.

§	CRITERION	POINTS	UNVERIFIED CEILING	VERIFIED CEILING	CERTIFIED CEILING
6.1	SPC-1 Qualification campaign fit (ECSS / NASA-STD)	0–18	14	15	18
6.2	SPC-2 Debris-mitigation and proximity-operation safety	0–14	9	12	14
6.3	SPC-3 Crewed-adjacency safety (materials, offgassing, sharp edges, energy)	0–12	8	10	12
6.4	SPC-4 Command-link loss and autonomous-behaviour bounds	0–14	9	11	14
6.5	SPC-5 Radiation and thermal-cycle margins	0–14	9	12	14
6.6	SPC-6 Single-point failure and redundancy analysis	0–12	8	10	12
6.7	SPC-7 Programme support and ground-twin sustainment	0–8	7	7	8
6.8	SPC-8 Mission anomaly record	0–8	6	8	8
Total		100	70	85	100

6.1 6.1 SPC-1 Qualification campaign fit (ECSS / NASA-STD) (0–18)

ROW	
What is measured	Environmental verification campaign (thermal-vacuum, vibration, radiation) with published summaries and independent review.
Ladder	18 = independent review + full campaign · 15 = pack-evidenced (documents), not demonstrated · 14 = campaign documented + launch-provider acceptance public · 9 = partial · 4 = declared · 0 = not established
Unverified — evidence & ceiling	Launch-provider acceptance; published papers. Ceiling 14.
Verified — evidence & ceiling	Campaign reports + reviews. Ceiling 15.
Certified — evidence & ceiling	— (documentary). Ceiling 18.
Company-wide fallback	n/a
Evidence bar	Mission environment declared.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

6.2 SPC-2 Debris-mitigation and proximity-operation safety (0–14)

ROW	
What is measured	ISO 24113 compliance; collision-avoidance and abort logic for proximity operations.
Ladder	14 = independently reviewed + abort logic demonstrated on ground twin · 12 = pack-evidenced (documents), not demonstrated · 10 = documented + reviewed · 9 = publicly evidenced only (no pack, no demonstration) · 6 = documented · 0 = not established
Unverified — evidence & ceiling	Published mitigation plans; regulator filings. Ceiling 9.
Verified — evidence & ceiling	Plans + reviews + analysis. Ceiling 12.
Certified — evidence & ceiling	Ground-twin abort logic demonstration. Ceiling 14.
Company-wide fallback	n/a
Evidence bar	Mission profile declared.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

6.3 SPC-3 Crewed-adjacency safety (materials, offgassing, sharp edges, energy) (0–12)

ROW	
What is measured	Safety-review acceptance for crewed platforms; materials/offgassing data.
Ladder	12 = acceptance public + witnessed inspection on ground twin · 10 = acceptance public · 8 = publicly evidenced only (no pack, no demonstration) · 6 = documented · 0 = not established. · 0. Crewed-adjacent classes only.
Unverified — evidence & ceiling	Public safety-review acceptance. Ceiling 8.
Verified — evidence & ceiling	Safety-review package. Ceiling 10.
Certified — evidence & ceiling	Ground-twin inspection. Ceiling 12.
Company-wide fallback	n/a
Evidence bar	Applies to crewed-adjacent classes.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

6.4 SPC-4 Command-link loss and autonomous-behaviour bounds (0–14)

ROW	
What is measured	Behaviour under link loss with light-delay; autonomy divergence detection and safe modes.
Ladder	14 = demonstrated on ground twin/simulator · 11 = pack-evidenced (documents), not demonstrated · 10 = validated + documented in detail · 9 = publicly evidenced only (no pack, no demonstration) · 6 = documented · 0 = not established
Unverified — evidence & ceiling	Published architecture. Ceiling 9.
Verified — evidence & ceiling	Validation evidence. Ceiling 11.
Certified — evidence & ceiling	Ground-twin/simulator demonstration of link-loss and safe modes. Ceiling 14.
Company-wide fallback	n/a
Evidence bar	Autonomy architecture declared.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

6.5 6.5 SPC-5 Radiation and thermal-cycle margins (0–14)

ROW	
What is measured	Dose budget vs mission; thermal-cycle fatigue margins; SEE mitigation.
Ladder	14 = test data + margins published + independent review · 12 = pack-evidenced (documents), not demonstrated · 10 = test data · 9 = publicly evidenced only (no pack, no demonstration) · 6 = margins declared · 0 = not established
Unverified — evidence & ceiling	Published papers; datasheet. Ceiling 9.
Verified — evidence & ceiling	Test reports. Ceiling 12.
Certified — evidence & ceiling	— (documentary). Ceiling 14.
Company-wide fallback	n/a
Evidence bar	Mission dose/thermal profile declared.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

6.6 SPC-6 Single-point failure and redundancy analysis (0–12)

ROW	
What is measured	FMEA/FTA with redundancy for mission-critical functions.
Ladder	12 = independently reviewed · 10 = pack-evidenced (documents), not demonstrated · 9 = FMEA/FTA provided · 8 = publicly evidenced only (no pack, no demonstration) · 5 = summarised · 0 = not established
Unverified — evidence & ceiling	Published summaries. Ceiling 8.
Verified — evidence & ceiling	FMEA/FTA. Ceiling 10.
Certified — evidence & ceiling	Ground-twin failover demonstration where feasible. Ceiling 12.
Company-wide fallback	n/a
Evidence bar	None.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

6.7 6.7 SPC-7 Programme support and ground-twin sustainment (0–8)

ROW	
What is measured	Multi-year ops support commitments, spares for ground twins, software maintenance horizon.
Ladder	8 = commitments + record · 7 = evidenced by documents alone (public or pack), not demonstrated · 6 = commitments public · 3 = described · 0 = not established
Unverified — evidence & ceiling	Public commitments. Ceiling 7.
Verified — evidence & ceiling	Commitments + record. Ceiling 7.
Certified — evidence & ceiling	From Verified evidence. Ceiling 8.
Company-wide fallback	Company-wide → 6
Evidence bar	None.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

6.8 6.8 SPC-8 Mission anomaly record (0–8)

ROW	
What is measured	Anomalies/losses over prior missions.
Ladder	8 = none (model) · 6 = null-result rung · 5 = remediated · 0 = not established
Unverified — evidence & ceiling	Public mission reports. Ceiling 6.
Verified — evidence & ceiling	Anomaly register. Ceiling 8.
Certified — evidence & ceiling	From Verified evidence. Ceiling 8.
Company-wide fallback	Company-wide → 6
Evidence bar	None.
Applicability	orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes.

7 7 Letter bands, tier ceilings and class applicability

7.1 Bands (VRS-GEN-006 §4). AAA ≥ 90 % · AA ≥ 75 % · A ≥ 60 % · B ≥ 45 % · C below 45 % of the applicable pool.

7.2 Pool ceilings. Sector criteria alone: Unverified 70/100 (70 %) · Verified 85/100 (85 %) · Certified 100. With the contributing criteria of Clause 5 the pool ceilings are as recorded in VRS-SPC-501; in both forms the best attainable letter is A at Unverified, AA at Verified and AAA at Certified (VRS-GEN-006 §8).

7.3 Application classes. orbital servicing/inspection · lunar/planetary surface · ISS/crewed-platform internal · launch-support ground robotics. SPC-3 applies to crewed-adjacent classes... A criterion whose Applicability row excludes the assessed class is removed from both the numerator and the denominator; the letter is issued per class and the displayed letter is the lowest (Clause 4).

7.4 No modifiers, caps or gates operate on the letter other than the ceilings of Clause 6 and the tier rule of VRS-GEN-006 §7.

7.5 Where the former modifiers now live. The four modifiers of the earlier draft are re-expressed as criteria and the tier rule so a reader of the earlier text finds each: the qualification-campaign requirement (former §7.1) is the §6.1 SPC-1 ladder — an unestablished campaign earns 0 points and is not a gate; the crewed-adjacency materials requirement (former §7.2) is §6.3 SPC-3, earning 0 when absent for a crewed-adjacent class; the margin-exceedance limit (former §7.3) is the §6.5 SPC-5 ladder. Former §7.4

(margin-approach scrutiny) is a continued-validity **review state under VRS-GEN-004**: the rating changes *state*, never a lower letter, and this state shall not by itself reduce an issued letter.

7.6 Certified tier. Because no space robot returns, several criteria (SPC-1, SPC-5, SPC-7, SPC-8) reach their Certified ceiling from documentary or Verified evidence rather than a distinct on-orbit demonstration; the Certified set is short by design.

8 Evidence by tier

8.1 Each criterion of Clause 6 states, in its Unverified / Verified / Certified rows, the evidence that supports it at each tier and the ceiling that evidence reaches. The tiers are **Unverified, Verified, Certified** (VRS-GEN-006 §7); the tier a class reaches is the tier its evidence supports and shall not exceed the IR tier.

8.2 Each criterion shall be supportable by an artefact the manufacturer already produces for space conformity, so adoption is a mapping, not new testing:

CRITERION	REUSED EVIDENCE ARTEFACT (DATED AT POINT OF USE)
SPC-1	GEVS (NASA GSFC-STD-7000B, 2021) or ISO 19683:2017 qualification report with margins of record; on-orbit telemetry; anomaly/mission-outcome reports
SPC-2	ISO 24113:2023 debris-mitigation and end-of-life passivation plan; conjunction-assessment/proximity-operation logs
SPC-3	NASA-STD-6001B (2011, w/Change 2 2016) materials test report; crewed-platform interface safety data package
SPC-4	IEC 62443-4-2:2019 evaluation of the command/update plane (FR1–FR7); command-link loss-of-signal telemetry; software bill of materials and update-governance record
SPC-5	Qualification-campaign records against ECSS-E-ST-10-04C Rev.1 environment definition; radiation and thermal-cycle test reports; declared-versus-qualified margin table (dose, thermal cycles, lifetime)
SPC-6	FMEA/FTA with redundancy analysis for mission-critical functions
SPC-7	Programme sustainment plan; end-of-support declaration (horizon in months); ISO 14224:2016-coded ground-twin maintenance records
SPC-8	Mission-outcome and anomaly reports; anomaly register

Where a manufacturer already holds these artefacts for ISO, IEC, ECSS or NASA-program conformity, the assessor shall accept them by mapping and shall require no SPC-specific re-testing.

8.3 Each admitted artefact shall be graded per VRS-GEN-012 §4 by independence and rigour; grades are labels on the evidence, not multipliers on the points. Manufacturer self-declarations — declared

margins, end-of-support date, autonomy claims — shall reach no higher tier than the independent verification that corroborates them.

8.4 Where the assessed unit has no own on-orbit telemetry, fleet-analogue telemetry may substitute for one criterion's evidence; the analogue's identity and the basis for comparability shall be recorded, and evidence outside the declared class or beyond the qualified envelope remains inadmissible (Clause 4.4).

9 Underwriting and credit use

9.1 The letter is an opinion above the compliance floor, not a certification, and shall not be published or imply that any real robot holds a Veyrum rating (VRS-GEN-008). **A rating is an opinion on the robot, not on the lawfulness of any deployment.**

9.2 The per-class letters and the recorded qualification envelope are the underwriting hooks: the letter informs rate relativity and the covered mission classes inform coverage scope, so that operation outside the qualified envelope is an exclusion or a condition rather than an implied covered risk. Debris generation (SPC-2) and command/update-plane compromise (SPC-4) are **correlated/catastrophe** signals that do not diversify across a fleet; the assessor shall surface the orbital regime(s) and the state of the command/update-plane evaluation separately so an underwriter can set a per-fleet or per-regime accumulation limit rather than pricing each unit independently (VRS-SPC-001 §8.4).

9.3 For credit, remaining qualification margin (SPC-5) and programme sustainment (SPC-7) shall be readable from the recorded per-criterion points to inform LTV, residual curves and end-of-support assumptions; because no on-orbit repair is possible, residual value depends on remaining margin (radiation dose, thermal cycles, lifetime) and on the manufacturer's sustainment horizon in months, which shall be recorded as separate fields and not netted against one another (VRS-SPC-001 §8.5).

10 Result recording

The rating record shall carry, per VRS-GEN-009: the displayed sector letter and the per-class letters with the qualification envelope each was issued at; the **tier** and the **edition**; the **per-criterion points earned** and the **not-applicable (N/A) set**; the **contributing criteria** of Clause 5 used and their source standards; this Protocol's version and the **VRS-SPC-501 twin version**; the qualification programme of record (GEVS / ISO 19683 / ECSS / SMC tailoring) and margins of record; the recorded radiation dose, thermal cycles and lifetime margins per class; the orbital-regime and command/update-plane attributes for the SPC-2 / SPC-4 correlated drivers (VRS-SPC-001 §8.4); and the continued-validity obligations (VRS-SPC-001). Recording flows to the Passport per VRS-GEN-009; no personal information shall be stored (VRS-GEN-012 §5.2).

11 Assessor checklist

An assessor with this Protocol and the evidence shall reach the same result by executing the following steps in order; no step admits an unrecorded judgement call, and any deviation shall be recorded with its basis:

1. Confirm the capability gate and record the declared application/mission classes with the qualified environmental envelope (VRS-SPC-001 §4).

2. Determine the applicable pool per class: remove any criterion whose Applicability excludes the class (SPC-3 for non-crewed-adjacent classes) from both numerator and denominator (Clause 7.3).
3. Score **SPC-1** – qualification campaign fit – on its ladder (§6.1); an unestablished campaign scores 0 and is not a gate.
4. Score **SPC-2** – debris-mitigation and proximity-operation safety (§6.2).
5. Score **SPC-3** – crewed-adjacency safety – for crewed-adjacent classes only (§6.3).
6. Score **SPC-4** – command-link loss and autonomous-behaviour bounds (§6.4).
7. Score **SPC-5** – radiation and thermal-cycle margins (§6.5).
8. Score **SPC-6** – single-point failure and redundancy analysis (§6.6).
9. Score **SPC-7** – programme support and ground-twin sustainment (§6.7).
10. Score **SPC-8** – mission anomaly record (§6.8).
11. Add the contributing intrinsic criteria of Clause 5 at their own points; discard evidence inadmissible under Clause 4.4 / 8.4 (**crewed-adjacent** never on **orbital-servicing** evidence; nothing beyond the qualified envelope).
12. For each scored criterion take the points of the tier its evidence supports (Clause 6); the pool tier shall not exceed the IR tier (Clause 8.1).
13. Sum the points earned, divide by the applicable pool, and map the percentage to a letter per Clause 7.1.
14. Issue the letter per class, set the displayed sector letter to the lowest issued class letter (Clause 4.3), and record the result per Clause 10.

12 Annex A (informative) — Worked example

FICTIONAL EXAMPLE — not a real product; illustrates mechanics only.

A fictional free-flying orbital-servicing manipulator, model code **SPC-EX-01**, is assessed at the **Verified** tier for the **orbital-servicing** class (this class is not crewed-adjacent). The manufacturer holds a GEVS qualification report (NASA GSFC-STD-7000B, 2021) with margins of record, an ISO 24113:2023 debris-mitigation and passivation plan reviewed independently, validated link-loss and safe-mode documentation, radiation and thermal-cycle test reports, an FMEA/FTA, multi-year sustainment commitments with a maintenance record, and an anomaly register from prior missions.

Applicability. The class is not crewed-adjacent, so **SPC-3 is not applicable** and is removed from both numerator and denominator (Clause 7.3). The applicable sector pool is therefore **88 points** (100 – 12).

Points earned at the Verified tier (each within its Verified ceiling):

CRITERION	RUNG REACHED	POINTS	VERIFIED CEILING
SPC-1	pack-evidenced (documents)	15	15
SPC-2	documented + reviewed	10	12
SPC-4	validated + documented in detail	10	11
SPC-5	test data	10	12
SPC-6	FMEA/FTA provided	9	10
SPC-7	commitments + record	7	7
SPC-8	anomaly register	8	8
Total		69	85 (pool 100)

Arithmetic. Score = $69 / 88 = 78.4\%$ → band **AA** ($\geq 75\%$, Clause 7.1). The contributing criteria of Clause 5 are scored once under their own standards and added to both sides of this ratio identically; they are omitted here for brevity. Since only **orbital-servicing** is assessed, the displayed sector letter equals the class letter (Clause 4.3): **Space AR: AA (VRS 2026) – Verified.**

Refusal variant. Had no environmental-verification campaign been evidenced, SPC-1 would score 0 and remain in the denominator (it is not a gate); had the class been **crewed-adjacent** with no NASA-STD-6001B materials evidence, SPC-3 would score 0 for that class; and a class that cannot be assessed on admissible evidence for its applicable pool is displayed *not covered* rather than issued a letter. Numbers illustrate mechanics only.

13 Bibliography

The full SPC anchor regime is verified in VRS-SPC-001; the following are the specific anchors this Protocol's evidence lanes (Clause 8) reuse, dated at point of use and re-verified 2026-09-15:

- ISO 8373:2021 – Robotics – Vocabulary (iso.org/standard/75539.html) – robot-term basis.
- ISO 24113:2023 – Space systems – Space debris mitigation requirements (3rd ed.) (iso.org/standard/83494.html) – SPC-2 debris/collision lane.
- ISO 19683:2017 – Space systems – Design qualification and acceptance tests of small spacecraft and units (iso.org/standard/66008.html) – SPC-1/SPC-5 qualification-campaign lane. (A 2026 edition, ISO 19683:2026, is now published; SPC-001 currently anchors the 2017 edition – see Open questions.)
- ISO 16290:2013 – Space systems – Definition of the Technology Readiness Levels (TRLs) (iso.org/standard/56064.html) – qualification-maturity basis.
- ISO 14224:2016 – Collection and exchange of reliability and maintenance data (iso.org/standard/64076.html) – SPC-7 ground-twin reliability/maintenance lane.

- IEC 62443-4-2:2019 (ed. 1.0; COR1:2022) — Technical security requirements for IACS components (FR1–FR7) (webstore.iec.ch/en/publication/34421) — SPC-4 command/update-plane cyber lane.
- NASA GSFC-STD-7000B (2021-04-28) — General Environmental Verification Standard (GEVS) (standards.nasa.gov/standard/GSFC/GSFC-STD-7000) — SPC-1/SPC-5 environmental-verification program.
- NASA-STD-6001B (2011-08-26, w/Change 2 2016-04-21) — Flammability, offgassing, and compatibility (standards.nasa.gov/standard/NASA/NASA-STD-6001) — SPC-3 crewed-adjacency materials lane.
- ECSS-E-ST-10-04C Rev.1 (2020-06-15) — Space engineering — Space environment (ecss.nl) — SPC-5 radiation/thermal/lifetime environment definition.
- VRS-SPC-501 — machine-readable data twin of this Protocol (Clause 5/6/7 values).

14 Change history

DATE	VERSION	STATUS	CHANGE	AUTHORITY
2026-09-16	1.0.0	Draft	VRS 2026 rewrite: criterion tables, tier ceilings, retired forms removed; see GEN-005 §6. Replaced the renormalised weighted-mean method with a point-sum over the applicable pool (§4); replaced weights/loss-driver table with the named IR contributor list (§5); replaced grade bands with sector criteria SPC-1...SPC-8 in the eight-row layout (§6); replaced modifier caps with percentage bands, pool tier ceilings and a class-applicability table, and re-anchored the four former modifiers to criteria/GEN-004 review state (§7.5); recast §8 as evidence-by-tier (exposure denominators deleted); recast underwriting/credit use and result recording (§9/§10); regenerated the assessor checklist (§11) and worked example at the Verified tier (Annex A). Retired all confidence/provisional/renormalisation/weighted-mean/cold-start/GEN-201 wording. No criterion, ceiling or band value changed by hand; VRS-SPC-501 regenerated by the dispatcher. Net ≈3,260→≈3,150 words; shall 59→~40.	Curator REWRITE; instructions v1 §5.3 Batch C
2026-09-15	0.2.0	Draft	DEEPEN: brought to publishable depth against the depth-audit brief (bib, words, shall, refusal, example, anchors, units), on the VRS-IND-201 v0.2.0 exemplar. Added assessment method with per-mission-class letters and renormalisation (§4), loss-driver mapping (§5.2), provisional-flag rule (§6), full modifier set incl. crewed-adjacency materials gate and margin-exceedance B-cap (§7), exposure denominators + evidence-lane conformity-artefact reuse + admissibility/grading gates (§8), underwriting/credit use (§9, GEN-008/009), passport recording (§10), assessor checklist (§11), worked example producing per-class letters (Annex A), Bibliography with dated anchors re-verified 2026-09-15. No criterion, weight, band or sufficiency-constant value changed; VRS-SPC-501 twin remains 1:1 (no regeneration). Net +≈2,740 words (520→3,261); shall 1→59. No requirements deleted.	Curator Run #192; charter DEEPEN
2026-09-13	0.1.0ε1	Draft	COHERENCE: retired 4 bare CALIBRATION-PENDING markers (Foreword, §5 and §6 headers, §8 evidence sufficiency) → VRS-GEN-202 stage labels, matching the clean sibling AR protocols and the twin VRS-SPC-501 (Run #71); corrected the stale Foreword “data	Curator Run #95; charter COHERENCE

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			twin planned as VRS-SPC-501” → the twin now exists. Editorial only – no criterion, weight, band, or constant changed.	
2026-09-05	0.1.0	Draft	Initial draft – qualification+telemetry evidence economy; C3 drop-out for non-crewed envelopes	CEO goal 2026-09-05

About Veyrum Research Institute

Veyrum Research Institute is the research arm of Veyrum – the independent intelligence and trust layer for the robotics industry (research, ratings and registry, advisory, data, and specialist insurance & finance introductions).

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