



ASTRA

AEROSPACE STANDARD

IMPLEMENTATION GUIDE

Technical Profile Development Guide

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Aviation / Space / Defense / Future systems

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Purpose and application

Turning a retained scope subject into an evaluable application-specific profile, with prospective criteria, representative methods, decisions, continuation and release conditions.

Source requirements and added implementation detail

The controlling ASTRA source is identified above by content fingerprint. Numbered source clauses and annexes retain their own authority. The retained operating material is restructured and expanded with implementation methods, additional profile controls, worked synthetic examples, decision diagrams and record contracts. Added implementation detail is not presented as an earlier institutional approval or as a change to the supplied core standard. Any additional binding criterion requires the applicable technical adoption process.

The displayed publication date identifies the edition; it is not a fabricated authoring, test, approval or operational date. Actual records retain genuine event times and controlled versions. No named outside organisation or standard is incorporated as a normative reference. AF internal instruments and separate legal or contractual duties remain applicable within their actual scope.

Acceptance boundary

A positive grant requires every applicable mandatory condition to PASS, every N/A to have independent justification, every in-scope nonconformity to be verified closed, and competent independent authority. HOLD, unknown state, missing evidence, a favourable average, a signature image or a completed form cannot substitute for those conditions.

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1 Reader, scope and first decisions

For: Technical profile owners, specialists and independent reviewers.

Turning a retained scope subject into an evaluable application-specific profile, with prospective criteria, representative methods, decisions, continuation and release conditions.

Start with the actual requested conclusion and the current adopted profile. Identify which information is source evidence, what is only proposed, who performs the activity and which independent function may decide. A guide explains implementation; it does not add a hidden pass threshold or substitute for the full standard.

2 Implementation sequence

Normative Development, Consultation and Profile Release

Normative development and profile release across F01-F08, including the added technical subjects in core Clauses 32-80. An application-specific value and a programme-wide rule have different approval boundaries.

Build evaluable criteria

For each requirement, specify the object/configuration, actual numerical limit or defined attribute, units, technical basis, method, representative population, uncertainty or rubric, essential failures and responsible decision function. Leave an essential unknown as an open development action, not a phrase such as appropriate aerospace quality.

Freeze the ballot basis

After disposition, identify the final text, eligible voting roll, conflicts and substantive yes/no responses. At least two thirds of eligible members must participate substantively, and at least two thirds of those substantive votes must be affirmative, both rounded upward. Record dissent; material new obligations require appropriate further review.

Maintain a prospective transition

Identify affected publications, holders, configurations, tools and competence. State the actual effective version and any additional assessment required. Preserve historical decision bases. Review suitability at the controlling interval and after significant evidence without using an informal interpretation to bypass the version process.

Common error / hold: Insufficient consultation, invalid ballot, unresolved essential technical dissent, incomplete criteria or absent activation prerequisites results in a recorded development hold; the programme does not advertise a live route.

Scope Definition, Applicability and Evidence Reuse

All case tuples, activity-based applicability, local/remote interfaces and reliance on prior results. This procedure controls the meaning of the claim before planning time or issuing a certificate.

Map retained responsibility

Identify the legal entity, sites, external performers, design/acceptance authority and lifecycle duties. Outsourcing changes the performer but does not necessarily remove the applicant duty. Distinguish headquarters governance from local implementation and direct service performance from coordination.

Examine reused evidence

Verify the original issuer, source, method, configuration, conditions, date and accessible limitations. Identify precisely which characteristics or requirements remain unchanged. Preserve failures and restrictions. A common owner or identical document title does not establish site equivalence.

Carry scope through every record

Check the same tuple in the plan, observations, reports, findings, review, decision, certificate instruction and public record. When the scope changes, preserve the earlier request and assessment history. Do not silently remove a failed activity merely to present the remaining work as an unrestricted success.

Common error / hold: Unclear outcome class, missing configuration, unsupported exclusion or inaccessible essential reused evidence holds the dependent conclusion until an independently reviewable boundary exists.

Assessment Planning, Resources and Site Coverage

Planning by object, sites, methods, shifts, actual performers, conditions and consequence. Organisational AF 9100 time rules are not transplanted into laboratory witnesses or personnel examinations.

Plan local evidence

For initial and renewal operational-capability or CAB work, establish direct evidence at every included delivery location. Shared governance does not establish local capability. Use physical visits where necessary work cannot be established remotely. Apply eligible surveillance sampling only through a justified approved profile.

Calculate real evaluation resources

For non-organisational work, sum justified productive task hours and divide by eight. Count genuinely shared work once. Allocate travel, breaks, reporting, translation delay and independent review/panel work separately. Apply the complete AF 9100 model only for its organisational route and add necessary coverage.

Reconcile actual execution

Record actual participants, productive hours, observations, interruptions and deviations. Add work when essential coverage is missing, or hold/narrow the conclusion through an actual reviewed boundary. Report completed coverage rather than copying the original plan as though every planned action occurred.

Common error / hold: Missing site evidence, unjustified method grouping, unavailable specialist competence, unsafe access or inadequate time requires additional work, a supported restriction or deferral.

Technical Witnessing and Method-Family Coverage

Witnessing of manufacturing, testing, inspection, maintenance, services, education or statement activities within an approved profile and safe access boundary.

Confirm readiness and authority

Verify actual performer, task authorisation, method, article configuration, equipment, software and environmental conditions. Confirm safe access and the responsible stop authority. An assessor observes competence and does not take operational command of hazardous work.

Trace forward to release

Follow the observation into raw data, calculation, report review, technical disposition and actual authorised release. Check whether the conclusion matches the evaluated item and whether recipients received required restrictions. Separate process qualification, product acceptance and provider competence.

Hand over for independent review

Provide an attributable witness record with sources, actual observations, findings and precise conclusion. Identify any supplementary work still required. The witness recommendation is evaluation evidence, not the independent final conformity decision.

Common error / hold: An unobserved essential step, inappropriate method, invalid equipment or unsupported representative grouping requires additional demonstration or an explicitly restricted conclusion.

Measurement Traceability, Uncertainty and Decision Rules

Measurands, references, corrections, uncertainty and decision rules used in every relevant family. Measurement confidence, detection performance and administrative completion percentages are not interchangeable.

Verify the measurement chain

Check instrument suitability, range, resolution, reference basis, calibration result and actual status at the time of use. Review uncertainty and conditions of external calibration, not merely a logo. Document justified alternative reference bases where direct reference traceability is not technically possible.

Approve the decision rule prospectively

Agree uncertainty treatment and false-acceptance/false-rejection considerations before results are evaluated. Apply the full-interval rule when required by Annex G, or obtain the specified independent prospective approval for an alternative. An alternative cannot be selected after seeing a borderline result.

Review and communicate the bounded result

An authorised technical reviewer checks model relevance, arithmetic, actual inputs and the intended claim. Report corrections, uncertainty and coverage where needed, the decision rule, result and limitations. An adverse instrument finding triggers prior-result review and recipient correction, not only recalibration.

Common error / hold: Invalid calibration, an incomplete uncertainty model, an unapproved retrospective rule or an indeterminate essential characteristic blocks acceptance for the dependent claim.

Continuing Validity, Comparisons and Proficiency Activities

Internal checks, independent comparisons, proficiency activity and technically justified alternatives for significant testing, calibration, inspection or statement fields.

Select suitable challenges

Plan reference checks, blind/duplicate work, retained specimens, independent comparisons or proficiency activities suited to the actual decision. Consider material, geometry, range, uncertainty and consequence. Define what a satisfactory outcome means before results are received.

Evaluate results and coverage

Review performance against the pre-established basis and uncertainty. Examine patterns across methods, sites and operators. A satisfactory result for one easy material or range does not automatically cover all technical activity. Maintain a gap map for unchallenged capabilities.

Verify restoration and maintain the plan

Demonstrate corrective effectiveness through relevant repeat or independent evidence before restoring the affected capability. Update the field coverage after scope changes, low activity, new software or relocated equipment. Carry conclusions into surveillance and signatory authorisation.

Common error / hold: Unresolved adverse comparison evidence, an unsuitable assigned value or unchallenged essential field prevents a positive competence conclusion for that scope.

Independent Review and Outcome Decisions

All independent programme outcomes; accreditation panels and other outcome authorities retain their distinct rules. This process cannot supply absent technical evidence by voting.

Freeze an accessible dossier

Record the exact application/profile/configuration, evaluation report, witness coverage, evidence manifest, findings, correction and proposed wording. Version-lock the reviewed package. Essential protected records must be accessible through lawful arrangements; an index without the sources is insufficient.

Apply every positive gate

A grant, renewal or extension requires valid scope, all criteria fulfilled, adequate evidence, all in-scope nonconformities closed, competent independent authority and the required permissions before associated use. Record each gate independently. A favourable average cannot compensate for one failed gate.

Communicate and instruct publication

Notify the applicant of scope, reasons, duties and remedies. Give the registry custodian the authenticated instruction and exact public wording. Update status within two calendar days, with immediate urgent notices. Preserve the reviewed dossier, votes, dissent and subsequent correction history.

Common error / hold: Incomplete dossier, an open in-scope finding, inadequate coverage, unresolved essential uncertainty, conflicted decision role or missing required panel participation blocks a positive result.

Change, Transition, Transfer and Programme Closure

Prospective transition, receiving capability, record and duty transfer, learner/customer protection and preservation of real historical decision bases.

Analyse compatibility and authority

Review the applicable Constitution, common scheme rules, AF 9100 and adopted ASTRA requirements. A changed marketing label cannot amend a higher instrument or confer new powers. Identify separately required technical, institutional, legal and operating approvals.

Verify the receiving capability

On transfer, compare sending/receiving equipment, methods, people, environment, software, data and permissions. Require representative new evidence for material differences. A sent archive, purchased machine or signed commercial handover is not technical receiving acceptance.

Record completion and residual duties

The actual authorised function decides transition, transfer or closure for an exact scope and date. Keep unresolved notifications, warranties, remedies and custody duties assigned. Closing a project or changing an issuer must not erase failure history or imply continuous authority that never existed.

Common error / hold: Unresolved essential compatibility, missing receiving capability, abandoned learner/customer duties or an incomplete evidence transfer prevents a supported closure or new-scope release.

3 Evidence preparation and review

Required identity or field	Content and interpretation
Record ID	Unique persistent identifier; do not reuse a withdrawn or superseded identifier for a different record.
Template / schema version	Identify this form version and any controlled continuation or equivalent record mapping.
Case and evaluated object ID	Connect to the actual application, asset, person, programme, method or statement.
Legal entity and actual performer	Distinguish accountable organisation, issuer, applicant and subcontracted performer.
Family / module and outcome class	Use the retained family/module and correct accreditation, recognition, qualification, certification, verification or validation class.
Scope / technical profile ID and version	Identify the exact version; a title alone is insufficient.
Site / station / delivery mode	Record physical, remote, mobile and partner-delivery boundaries that affect this record.
Configuration / method / statement version	Identify the actual technical baseline and conditions evaluated.
Creation date and time basis	Use the actual creation date; state time zone when a clock or sequence depends on time.
Relevant event / awareness / decision dates	Keep distinct dates separate. Use a linked chronology where more than one event exists.
Accountable author and role	Identify who recorded the information and within which task authority.
Reviewer / approver and authority	Identify the responsible review or approval function; blank does not mean approved.
Evidence references and versions	Link accessible original evidence, including adverse, missing or superseded items.
Record status and purpose	Use the relevant allowed states; evidence status and conformity status are separate.
Access / confidentiality class	Record authorised access; do not put protected operational detail in a public field.
Retention basis / custody / hold	Name the controlling retention rule, custodian and any preservation hold.
Correction / supersession history	Link the original, reason, person, actual date and affected downstream records.

Worked cases and challenge questions

Synthetic case – Normative Development, Consultation and Profile Release

In a synthetic nine-member committee, six substantive votes with four affirmative meet the arithmetic minima. The publication still cannot activate a profile when essential test parameters or independent evaluators are missing.

Review challenge: identify the exact affected object, requirement, missing or adverse evidence, accountable action, independent decision and historical record. A fictional example is not a real applicant or evidence of a completed pilot.

Synthetic case – Assessment Planning, Resources and Site Coverage

A synthetic service case contains 12 hours common review, 12 hours at each of two stations, 8 hours of technical trails and 4 hours of required follow-up: 48 hours, or 6 evaluator-days. Six hours reporting and five hours independent review are additional, not included in the six-day evaluation subtotal.

Review challenge: identify the exact affected object, requirement, missing or adverse evidence, accountable action, independent decision and historical record. A fictional example is not a real applicant or evidence of a completed pilot.

Synthetic case – Measurement Traceability, Uncertainty and Decision Rules

For synthetic inclusive limits 49.970-50.030 mm and $U=0.004$ mm, $y=50.024$ mm supports conformity; $y=50.028$ mm is indeterminate; $y=50.036$ mm supports nonconformity under the full-interval rule. These are teaching values, not product limits.

Review challenge: identify the exact affected object, requirement, missing or adverse evidence, accountable action, independent decision and historical record. A fictional example is not a real applicant or evidence of a completed pilot.

4 Self-check before submission

Can the reviewer identify the exact object, current criteria, actual performer, representative evidence, adverse results, remaining uncertainty and real authority without inferring them from a title? Check local sites and dependent services separately. Keep blanks and unknowns visible and provide controlled continuations for long source material.

Decision and authority boundary

A positive grant, renewal or extension requires valid scope, every applicable criterion fulfilled, sufficient usable evidence, closure of every in-scope nonconformity, current competent independent decision authority and effective required permissions. No score, majority vote, membership status or future corrective promise replaces a missing gate. An operational technical release, a programme outcome and an administrative publication are separate actions.

E1 Explicit acceptance and evidence contract

Apply the following logic to the exact evaluated object and responsible function. A procedural checkpoint, product characteristic, competence decision and public credential are different objects. Their states shall not be collapsed into one score. Source: ASTRA 62.1–62.7 and Annex AL.

State	Sufficient basis	Required next action
PASS	Applicable; current approved predicate met by valid, purpose-specific evidence.	Retain the original evidence and bounded inference. Other mandatory gates still apply.
FAIL	Applicable; valid evidence demonstrates that the approved predicate is not met.	Contain affected use; retain the failure; assess cause, extent and required corrective verification.
HOLD	Applicability, criterion, method, evidence, uncertainty or authority is unresolved.	Resolve the missing basis. Do not manufacture a value, favourable default or product-defect conclusion.
N/A	Activity trigger and retained responsibility are absent; independent exclusion approval exists.	Retain the scope-specific reason and reassess when activity or responsibility changes.
UNSET	Only an uncompleted field in this PDF; not a conformity state.	No conclusion is recorded. Complete review before the field can support a decision.

For a compound source clause, create a child-condition ledger containing every separately testable condition, location, phase and operating mode. A sentence-level checkpoint is a navigation aid, not permission to merge unrelated predicates. Each child receives an ID, responsible owner, criterion, method, source evidence, uncertainty where relevant, current state and independent review. The parent cannot PASS while any mandatory child is FAIL, HOLD or UNSET.

An acceptable measurement interval and an acceptable authority chain are independent prerequisites. Use finite, unit-consistent, unrounded values; negative uncertainty, reversed limits, unknown version or wrong-object evidence produce HOLD. For inclusive [L,H] and accepted interval [a,b], PASS requires $a \geq L$ and $b \leq H$; FAIL requires $b < L$ or $a > H$; otherwise HOLD. Approved one-sided or exclusive boundaries retain their own declared predicate.

Positive-decision conjunction

Every applicable mandatory child is PASS AND each N/A is independently justified AND every in-scope nonconformity is verified closed AND scope, competence, independence and actual authority are valid AND required panel participation and voting rules are satisfied. No average, majority preference or payment supplies missing evidence.

E2 Source-to-implementation crosswalk

The references below use the supplied 248-page FIRST EDITION. Each row retains the original clause identifier and source page. The operating instructions in this document elaborate implementation; they do not replace the full source condition or its applicable annexes. A reference to a whole chapter requires selection of every triggered subclause, not only the examples printed here.

ASTRA ID / page	Source subject	Implementation use
1.1 / 10	Sector and lifecycle coverage	Requirement, objective evidence and local child predicates
1.2 / 10	Eight-family structure	Requirement, objective evidence and local child predicates
1.3 / 10	Object and responsibility tuple	Requirement, objective evidence and local child predicates
1.4 / 10	Group, site and interface limitations	Requirement, objective evidence and local child predicates

ASTRA ID / page	Source subject	Implementation use
1.5 / 11	Activity-based applicability	Requirement, objective evidence and local child predicates
1.6 / 11	Out-of-scope and emerging activities	Requirement, objective evidence and local child predicates
4.1 / 13	Development request and feasibility	Requirement, objective evidence and local child predicates
4.2 / 14	Profile content and acceptance criteria	Requirement, objective evidence and local child predicates
4.3 / 14	Consultation and technical approval	Requirement, objective evidence and local child predicates
4.4 / 14	Pilot evaluation and method challenge	Requirement, objective evidence and local child predicates
4.5 / 14	Activation gate and scope release	Requirement, objective evidence and local child predicates
4.6 / 14	Interpretation and controlled evolution	Requirement, objective evidence and local child predicates
8.2 / 18	Equipment identity and fitness	Requirement, objective evidence and local child predicates
8.3 / 18	Traceability and calibration	Requirement, objective evidence and local child predicates
9.1 / 19	Method selection and contract fit	Requirement, objective evidence and local child predicates
9.2 / 19	Verification and validation	Requirement, objective evidence and local child predicates
9.3 / 20	Sampling and specimen integrity	Requirement, objective evidence and local child predicates
9.4 / 20	Measurement model and uncertainty	Requirement, objective evidence and local child predicates
9.5 / 20	Decision rules and boundary results	Requirement, objective evidence and local child predicates
9.6 / 20	Continuing validity and comparisons	Requirement, objective evidence and local child predicates
9.7 / 20	Technical reporting and amendments	Requirement, objective evidence and local child predicates
11.3 / 22	Existing evidence and reuse	Requirement, objective evidence and local child predicates
12.1 / 23	Planning from scope and consequence	Requirement, objective evidence and local child predicates
12.2 / 23	Sites and stations	Requirement, objective evidence and local child predicates

ASTRA ID / page	Source subject	Implementation use
12.3 / 23	Method-family witnessing	Requirement, objective evidence and local child predicates
12.4 / 24	Time and productive work	Requirement, objective evidence and local child predicates
12.5 / 24	Multifamily coordination	Requirement, objective evidence and local child predicates
12.6 / 24	Plan approval and changes	Requirement, objective evidence and local child predicates
13.3 / 25	Witness control	Requirement, objective evidence and local child predicates
19.3 / 32	Method performance and detection	Requirement, objective evidence and local child predicates
19.10 / 33	Comparisons and validity programme	Requirement, objective evidence and local child predicates
19.12 / 33	Technical witnessing for accreditation	Requirement, objective evidence and local child predicates
25.6 / 43	Proficiency and reference-material activities	Requirement, objective evidence and local child predicates
26.1 / 43	Novelty and bounded deployment	Requirement, objective evidence and local child predicates
26.2 / 43	AI, autonomy and adaptive changes	Requirement, objective evidence and local child predicates
26.3 / 44	Digital twins and simulation	Requirement, objective evidence and local child predicates
26.4 / 44	Remote, space and long-duration operation	Requirement, objective evidence and local child predicates
26.5 / 44	Continuous monitoring and machine-readable status	Requirement, objective evidence and local child predicates
26.6 / 44	Hazardous and controlled activities	Requirement, objective evidence and local child predicates
30.2 / 48	Controlled transition	Requirement, objective evidence and local child predicates
30.4 / 48	Scope withdrawal and learner/customer protection	Requirement, objective evidence and local child predicates
31.3 / 49	Actual adoption record	Requirement, objective evidence and local child predicates
32.1 / 50	Mission definition and accountable boundaries	Requirement, objective evidence and local child predicates
32.2 / 50	Lifecycle assurance plan	Requirement, objective evidence and local child predicates

ASTRA ID / page	Source subject	Implementation use
32.3 / 50	Gates and irreversible commitments	Requirement, objective evidence and local child predicates
32.4 / 50	Integrated assurance case	Requirement, objective evidence and local child predicates
32.5 / 51	Handover and long-life accountability	Requirement, objective evidence and local child predicates
32.6 / 51	Through-life feedback and reassessment	Requirement, objective evidence and local child predicates
33.1 / 51	Requirement quality and allocation	Requirement, objective evidence and local child predicates
33.2 / 51	Multidisciplinary interfaces	Requirement, objective evidence and local child predicates
33.3 / 52	Configuration states and genealogy	Requirement, objective evidence and local child predicates
33.4 / 52	Change impact and independence	Requirement, objective evidence and local child predicates
33.5 / 52	Engineering budgets and margins	Requirement, objective evidence and local child predicates
33.6 / 52	Verification closure and model limitations	Requirement, objective evidence and local child predicates
41.2 / 62	Integrated route and hidden characteristics	Requirement, objective evidence and local child predicates
42.1 / 63	Requirement-led test strategy	Requirement, objective evidence and local child predicates
42.2 / 64	Test tailoring and representativeness	Requirement, objective evidence and local child predicates
42.3 / 64	Combined environments and test sequence	Requirement, objective evidence and local child predicates
42.4 / 64	Data acquisition, uncertainty and protective limits	Requirement, objective evidence and local child predicates
42.5 / 64	Failure, retest and independent judgement	Requirement, objective evidence and local child predicates
42.6 / 64	Laboratories and complete reports	Requirement, objective evidence and local child predicates
56.5 / 81	Export, migration and meaningful recovery	Requirement, objective evidence and local child predicates
59.1 / 83	Need, benefit and foreseeable consequences	Requirement, objective evidence and local child predicates
59.2 / 83	Distinguish research, pilot and operational use	Requirement, objective evidence and local child predicates

ASTRA ID / page	Source subject	Implementation use
59.3 / 84	Emerging domains and evidence gaps	Requirement, objective evidence and local child predicates
59.4 / 84	Safe experimentation and independent challenge	Requirement, objective evidence and local child predicates
59.5 / 84	Learning, consultation and controlled adoption	Requirement, objective evidence and local child predicates
60.1 / 84	Foundation and retained architecture	Requirement, objective evidence and local child predicates
60.2 / 85	Common operating system and competent people	Requirement, objective evidence and local child predicates
60.3 / 85	Family and technical-profile development	Requirement, objective evidence and local child predicates
60.4 / 85	Integrated pilots and local system acceptance	Requirement, objective evidence and local child predicates
60.5 / 85	Controlled launch, surveillance and evolution	Requirement, objective evidence and local child predicates
61.1 / 86	Publication identity	Explicit verification and acceptance predicate
61.2 / 86	Retained text and authored additions	Explicit verification and acceptance predicate
61.3 / 86	Dependent documents and compatibility	Explicit verification and acceptance predicate
61.4 / 86	Actual approval and activation	Explicit verification and acceptance predicate
61.5 / 87	Correction, custody and file integrity	Explicit verification and acceptance predicate
62.1 / 88	Atomic requirement record	Explicit verification and acceptance predicate
62.2 / 88	Mandatory parameter completion	Explicit verification and acceptance predicate
62.3 / 88	Evidence validity before conformity	Explicit verification and acceptance predicate
62.4 / 88	Four requirement states	Explicit verification and acceptance predicate
62.7 / 89	Decision replay and consistency	Explicit verification and acceptance predicate
63.1 / 90	Domain selection without geographic omission	Explicit verification and acceptance predicate
63.3 / 90	Environment, phase and mode matrix	Explicit verification and acceptance predicate
63.5 / 91	Unknown and future environments	Explicit verification and acceptance predicate
63.6 / 91	Interface and lifecycle closure	Explicit verification and acceptance predicate
64.2 / 92	Geometry, reference frames and event time	Explicit verification and acceptance predicate
64.5 / 92	Heritage and similarity	Explicit verification and acceptance predicate
68.7 / 101	Status and long-term custody	Explicit verification and acceptance predicate
74.7 / 113	Disposition and residual responsibility	Explicit verification and acceptance predicate

ASTRA ID / page	Source subject	Implementation use
75.3 / 114	Essential variables and remote monitoring	Explicit verification and acceptance predicate
75.7 / 115	Handover, resource claims and closure	Explicit verification and acceptance predicate
77.2 / 118	Campaign design and article pedigree	Explicit verification and acceptance predicate
77.3 / 118	Measurement and uncertainty readiness	Explicit verification and acceptance predicate
77.5 / 118	Original data and invalid tests	Explicit verification and acceptance predicate
77.6 / 119	Numerical and attribute acceptance	Explicit verification and acceptance predicate
77.7 / 119	Retest and corrective verification	Explicit verification and acceptance predicate
78.7 / 121	Recovery and semantic portability	Explicit verification and acceptance predicate
79.5 / 122	Terminal evidence and responsible transfer	Explicit verification and acceptance predicate
80.1 / 124	One complete application schedule	Explicit verification and acceptance predicate
80.2 / 124	Domain and verification completeness	Explicit verification and acceptance predicate
80.5 / 124	Continuing conformity and change	Explicit verification and acceptance predicate
80.6 / 125	Completion boundary	Explicit verification and acceptance predicate

E3 Detailed operating extensions

AF-AST-PR-002 – Normative Development, Consultation and Profile Release

Implementation basis: 4.1 (p. 13); 4.2 (p. 14); 4.3 (p. 14); 4.4 (p. 14); 4.5 (p. 14); 59.3 (p. 84); 62.1 (p. 88); 62.2 (p. 88); 63.5 (p. 91); 80.1 (p. 124); 80.6 (p. 125)

X02.1 Convert need into a bounded development brief

Record the intended beneficiaries, affected object, existing family/module, mission domains, actual duty and evidence gaps. Distinguish a new method from a new programme family.

Completion / hold: HOLD remains until the activity and retained duties can be stated without an unrestricted sector label.

X02.2 Write testable proposed requirements

Assign stable child IDs to independent conditions, define predicates and populate every triggered technical parameter. Identify unresolved scientific assumptions rather than treating them as values.

Completion / hold: No live profile release while an essential criterion, method, authority or parameter is undefined.

X02.3 Test the proposal before approval

Use normal and adverse technical cases, secure mock records and independent first responses. Record unclear wording, discriminatory behaviour, practical burden and invalid inferences.

Completion / hold: Synthetic workflow success alone does not establish field method capability.

X02.4 Complete genuine consultation and activation

Preserve notice, comment population, original responses, reasoned dispositions, eligible voters and substantive votes. The actual technical and institutional approvals precede scope activation.

Completion / hold: Apply the existing consultation and voting gates and then independently prove operator, people, systems and exact-profile readiness.

Record contract: the actor records the input baseline, actual work, deviations, result and evidence link; the named receiving function acknowledges access and the permitted next action. A returned or incomplete handover retains the original event history. Use the associated FR modules and RG record links; no document or database field confers actual authority.

AF-AST-PR-004 – Scope Definition, Applicability and Evidence Reuse

Implementation basis: 1.3 (p. 10); 1.5 (p. 11); 11.3 (p. 22); 62.1 (p. 88); 62.4 (p. 88); 63.1 (p. 90); 63.3 (p. 90); 63.6 (p. 91); 64.5 (p. 92); 80.1 (p. 124); 80.2 (p. 124)

X04.1 Resolve every applicable domain

Compare the mission concept with AK01-AK32 and the actual activity with F01-F08. Record each phase, mode, duration, interface and retained responsibility.

Completion / hold: Unknown applicability is HOLD; absent equipment or budget never establishes N/A.

X04.2 Establish a defensible similarity argument

Compare object identity, design, sources, environment, software, prior exposure and observability. Assign reused evidence to specific unchanged requirements only.

Completion / hold: Every material difference has accepted new evidence or an explicitly limited conclusion.

X04.3 Maintain separate outcome tuples

A combined case may share provenance and visits but keeps separate methods, criteria, sites, instances, reviewers and independent decisions.

Completion / hold: No shared dossier creates a blanket mission, tenant, supplier or fleet approval.

X04.4 Approve exclusion and re-open triggers

An independent technical reviewer checks the absent trigger and retained duty, names the supported excluded boundary and records conditions that would re-open it.

Completion / hold: Only independently justified exclusions receive N/A; an unexamined consequential interface remains HOLD.

Record contract: the actor records the input baseline, actual work, deviations, result and evidence link; the named receiving function acknowledges access and the permitted next action. A returned or incomplete handover retains the original event history. Use the associated FR modules and RG record links; no document or database field confers actual authority.

AF-AST-PR-009 – Technical Witnessing and Method-Family Coverage

Implementation basis: 12.3 (p. 23); 13.3 (p. 25); 19.12 (p. 33); 41.2 (p. 62); 62.3 (p. 88); 64.5 (p. 92); 75.3 (p. 114); 77.2 (p. 118); 77.3 (p. 118); 77.7 (p. 119)

X09.1 Define the method family technically

Group only common principles, geometry/material ranges, equipment, competence and failure mechanisms. Identify unique or high-consequence boundaries that cannot be inferred.

Completion / hold: No unrelated technique is added because it shares a performer or report template.

X09.2 Observe the complete task

Follow identification, preparation, setup, essential execution, raw data, interpretation, reporting and independent release within safe authorised arrangements.

Completion / hold: A selected favourable demonstration cannot replace missing essential preparation or interpretation evidence.

X09.3 Challenge hidden and remote properties

State what is directly measured, validly inferred or unknown and test relevant difficult boundaries and false-negative mechanisms.

Completion / hold: Process telemetry or nominal equipment output cannot replace an unobservable required product property.

X09.4 Review change and corrective retest

After an interruption, source change or failed witness, preserve originals and define corrective demonstration including the original failed mechanism.

Completion / hold: A fresh favourable run does not validate earlier affected output or automatically extend method scope.

Record contract: the actor records the input baseline, actual work, deviations, result and evidence link; the named receiving function acknowledges access and the permitted next action. A returned or incomplete handover retains the original event history. Use the associated FR modules and RG record links; no document or database field confers actual authority.

AF-AST-PR-010 – Measurement Traceability, Uncertainty and Decision Rules

Implementation basis: 8.2 (p. 18); 8.3 (p. 18); 9.4 (p. 20); 9.5 (p. 20); 62.2 (p. 88); 62.3 (p. 88); 62.4 (p. 88); 62.7 (p. 89); 64.2 (p. 92); 77.3 (p. 118); 77.6 (p. 119)

X10.1 Freeze the quantitative contract

Define the measurand, model, corrected result, units, bounds, inclusivity, actual configuration, uncertainty interpretation and prospective predicate.

Completion / hold: Invalid or missing essential inputs remain HOLD; the assessor does not supply an undocumented limit.

X10.2 Propagate actual uncertainty and dependence

Retain source distributions, sensitivity coefficients, covariance and model discrepancy. Distinguish standard uncertainty, expanded coverage and unbounded knowledge gaps.

Completion / hold: A copied instrument capability or assumed independence cannot replace a use-specific uncertainty budget.

X10.3 Apply state logic without rounding bias

Evaluate the full interval or a prospectively approved alternative with unrounded finite inputs. Preserve PASS, FAIL, HOLD and approved N/A as separate states.

Completion / hold: Boundary overlap remains HOLD; invalid evidence is not converted into a proven product defect.

X10.4 Replay and report independently

Recompute a boundary case with the same frozen inputs, identify any different assumptions and record scope-limited reporting and recipient corrections.

Completion / hold: Unresolved replay disagreement blocks the dependent acceptance even where the nominal arithmetic appears plausible.

Record contract: the actor records the input baseline, actual work, deviations, result and evidence link; the named receiving function acknowledges access and the permitted next action. A returned or incomplete handover retains the original event history. Use the associated FR modules and RG record links; no document or database field confers actual authority.

AF-AST-PR-011 – Continuing Validity, Comparisons and Proficiency Activities

Implementation basis: 9.2 (p. 19); 9.6 (p. 20); 19.3 (p. 32); 19.10 (p. 33); 25.6 (p. 43); 62.3 (p. 88); 64.5 (p. 92); 77.2 (p. 118); 77.5 (p. 118); 77.7 (p. 119)

X11.1 Design a purposeful validity programme

Define the measurand or task, coverage, reference basis, participant independence, frequency rationale and adverse-performance response.

Completion / hold: Participation alone is not satisfactory performance or demonstrated detection capability.

X11.2 Separate assigned-value and participant uncertainty

Review preparation, homogeneity, stability, transport, characterisation and uncertainty before attributing differences to a participant.

Completion / hold: Unstable or non-representative challenge material cannot support an unqualified competence conclusion.

X11.3 Evaluate limited and adverse results

Preserve nonresponses, invalid runs, outliers and unrepresented fields. Where an external exercise is unavailable, document a technically equivalent challenge and limitations.

Completion / hold: A missing comparison is not an automatic pass; accepted alternatives must test the actual claimed ability.

X11.4 Close causes and historical extent

Test occurrence and escape causes, re-execute the original adverse mechanism and review outputs that depended on the deficient method.

Completion / hold: New satisfactory performance restores only a bounded current capability after independent acceptance; old evidence is not rewritten.

Record contract: the actor records the input baseline, actual work, deviations, result and evidence link; the named receiving function acknowledges access and the permitted next action. A returned or incomplete handover retains the original event history. Use the associated FR modules and RG record links; no document or database field confers actual authority.

AF-AST-PR-028 – Change, Transition, Transfer and Programme Closure

Implementation basis: 30.2 (p. 48); 30.4 (p. 48); 31.3 (p. 49); 56.5 (p. 81); 61.3 (p. 86); 62.7 (p. 89); 68.7 (p. 101); 74.7 (p. 113); 75.7 (p. 115); 78.7 (p. 121); 79.5 (p. 122); 80.5 (p. 124)

X28.1 Map the complete change population

Identify affected requirements, profiles, objects, configurations, sites, people, calculations, fields, interfaces and public claims.

Completion / hold: A cosmetic filename or edition-label change cannot hide a changed technical basis.

X28.2 Establish retained and additional evidence

Record what remains valid, what is invalidated, required new demonstration, compatible tools and actual competence. Keep mandatory protective duties active during transition.

Completion / hold: No automatic grandfathering, retrospectively applied requirement or unsupported transfer of scope.

X28.3 Accept custody and local implementation

Reconcile semantic records, permissions, actual receiving capability, remaining learners/customers, open cases, notices and independent decisions.

Completion / hold: Sending an archive or signing a commercial handover does not establish accepted technical custody.

X28.4 Close without abandoning terminal duties

Preserve unknown final states, original status gaps, hazardous inventories, unresolved remedies and actual receiving owners.

Completion / hold: Only demonstrably complete obligations are closed; remaining duties stay assigned after programme or provider cessation.

Record contract: the actor records the input baseline, actual work, deviations, result and evidence link; the named receiving function acknowledges access and the permitted next action. A returned or incomplete handover retains the original event history. Use the associated FR modules and RG record links; no document or database field confers actual authority.

E4 Application-specific parameter completion

These are required information groups from Annex AO, not pre-approved engineering limits. For every triggered group, populate actual values or observable attributes before evaluation, with unit, inclusivity, phase/mode, technical derivation, uncertainty/dependence, method version, owner, independent review, authentic approval and change trigger. An absent trigger requires an approved exclusion; an unsupported or missing essential value is HOLD.

P01 – Mission and scope

Legal owner, performer, family/module, object, domain, configuration, location, duration and modes.

Derivation and evidence: Scope tuple and mission concept; approved applicability matrix.

Completion test: No undefined essential object, duty, phase or exclusion.

P02 – Environment and exposure

Quantity, spatial/temporal boundary, distribution or bound, source/model, uncertainty and coupled effects.

Derivation and evidence: Mission environment baseline and qualified specialist rationale.

Completion test: Selected conditions bound each claimed use; unknown critical mechanisms remain HOLD.

P03 – Requirements and acceptance

Stable ID, owner, characteristic, units, bound inclusivity, predicate, observation and essential-step marker.

Derivation and evidence: Requirement baseline and Annex AL decision rule.

Completion test: Every condition is evaluable before observations are judged.

P04 – Geometry and reference systems

Frame origin/orientation, epoch, time scale, coordinate units, transformation and covariance.

Derivation and evidence: Validated transformation and independent known-answer checks.

Completion test: Correct frame and time are maintained through every interface.

P05 – Materials and process qualification

Material type/condition, geometry, sources, variables, qualified window, machine/tool state and hidden properties.

Derivation and evidence: Actual representative qualification; lot/build genealogy.

Completion test: All influential variables and required product properties are supported.

P06 – Test article and fixtures

Article pedigree, differences from delivered object, mounting, boundary conditions, operating state and exposure history.

Derivation and evidence: Approved representativeness and cumulative-test analysis.

Completion test: No material difference or prior damage invalidates the intended inference.

P07 – Measurement and uncertainty

Measurand, instrument/range, corrections, sensitivity, covariance, coverage, time/space sampling and calibration.

Derivation and evidence: Complete measurement model; valid raw data.

Completion test: Uncertainty and detection capability are fit for the approved decision rule.

P08 – Structure, life and mechanisms

Loads, allowables, factors, life, geometry, material state, mechanisms, detectability and approved reserve.

Derivation and evidence: Qualified structural/life model and representative evidence.

Completion test: Each prospectively defined margin and essential mechanism predicate passes.

P10 – Thermal and environmental control

Node/location, mode, temperatures/gradients, heat inputs, sink/view factors, properties, uncertainty and transient cases.

Derivation and evidence: Correlated thermal model and applicable environment tests.

Completion test: All required hot, cold and transition conditions meet approved limits.

P11 – Communication and timing

Distance, frequency/wavelength, gain/loss, noise, rate, margin, latency, event time, age, clock error and outage.

Derivation and evidence: Validated end-to-end budget and adverse service tests.

Completion test: Required quality, delay and integrity conditions all pass.

P13 – Contamination and samples

Relevant substances/particles, pathway, limit, method/detection, custody, cleanliness, containment and receiving.

Derivation and evidence: Mission-specific technical/protection basis.

Completion test: Required integrity and scientific cleanliness are demonstrated for the actual sample/use.

P14 — Software, AI and models

Purpose/domain, source/build/weights/data, dependencies, target, errors, uncertainty, prohibited behaviour and change limits.

Derivation and evidence: Independent verification and model/use validation.

Completion test: Essential scenarios and target conditions pass; experimental outputs remain separate.

P15 — Security and command authority

Identities, roles, privileges, keys/trust, target, validity window, command sequence, integrity and interruption response.

Derivation and evidence: Written test authorisation and deployed workflow validation.

Completion test: No prohibited authority or unverified command state is accepted.

P16 — Reliability and availability

Population, exposure, failure definition, observation, dependencies, confidence model, downtime and maintenance exclusions.

Derivation and evidence: Prospective statistical design plus engineering mechanism evidence.

Completion test: The actual demonstrated bound meets the approved claim; zero failures is not zero risk.

P17 — Logistics and environmental claims

Identity, amount, units, condition, losses, allocation, lifecycle boundary, factor provenance and exclusive attributes.

Derivation and evidence: Reconciled custody/quantity records and separate suitability/statement evaluation.

Completion test: Quantity and claim integrity pass independently of technical eligibility.

P18 — Decision, continuity and terminal duties

Closed findings, reviewer competence, independence, authority, status clocks, final-state criteria, custody and open obligations.

Derivation and evidence: Authenticated decisions and verified terminal/transfer evidence.

Completion test: Every mandatory gate is complete; incomplete or unknown terminal state remains explicit.

E5 All-space applicability and bounded responsibility

The following Annex AK tags are selected because the document can support these responsibilities. Applicability is decided for the actual case. Tags do not expand a family, create an operating permission or place a whole mission inside a supplier's limited scope. Resolve domain, phase, mode, environment and retained duty before accepting a claim.

Domain / source page	Coverage	Required boundary
AK01 / 187 Terrestrial engineering and supply	Design offices, manufacturing, material sources, procurement and integration.	Every delivered characteristic and essential supplier interface is traceable to accepted evidence.
AK02 / 187 Test facilities and technical providers	Environmental, structural, materials, calibration and inspection services, including mobile and remote work.	Actual method competence and valid result evidence are separately demonstrated.
AK03 / 187 Launch sites and spaceports	Site infrastructure, handling, ground services, emergency interfaces and actual permissions.	No site outcome is used as vehicle, launch or mission permission.

Domain / source page	Coverage	Required boundary
AK04 / 187 Launch and deployment interfaces	Vehicle/payload integration, handling, ascent environment, separation and commissioning.	Every required integration and protective condition is met before the actual commitment.
AK05 / 188 Reusable launch and return articles	Cumulative exposure, refurbishment, thermal protection, hidden damage and life decisions.	Reuse is based on actual history and accepted condition, never a reset life.
AK06 / 188 Low Earth orbit systems	Satellites, stations and services in the declared near-Earth operating environment.	Environment-specific qualification and end-of-life capability support the bounded mission.
AK07 / 188 Medium, geosynchronous and high Earth orbits	Navigation, communication, relay and other specified orbit-dependent services.	No lower-orbit or nominal-link evidence automatically covers a different environment.
AK08 / 188 Highly elliptical and transfer regions	Missions crossing materially different exposure, geometry and communication regimes.	Every phase and transition has a supported envelope and verification path.
AK09 / 189 Cislunar and libration-region systems	Lunar vicinity, relays, gateways, transportation interfaces and regional services.	The exact operating domain and service dependencies are technically complete.
AK10 / 189 Constellations and formation services	Distributed functions, inter-satellite links, fleet management and shared ground support.	Distributed performance and independent redundancy assumptions are validated.
AK11 / 189 Orbital traffic and tracking support	Tracking, conjunction information, data services and inter-operator coordination.	A metric is accepted only for its validated data/model scope; missing data are not zero risk.
AK12 / 189 Cooperative docking and servicing	Authorised inspection, connection, transfer, repair and service interventions.	All essential interface and completion states are independently supported.
AK13 / 190 On-orbit assembly and manufacture	Assembly, additive or other production, finishing and output verification in space.	Process execution is not substituted for evidence of required output properties.
AK14 / 190 Stations and inhabited orbital platforms	Habitation, payload integration, visiting vehicles, occupants and support.	Integrated human protection and resources are accepted independently of mission success.
AK15 / 190 Extravehicular and isolated crew work	Individual equipment, user/task, environment, support and rescue dependencies.	Essential individual and integrated protective tasks pass without averaging.
AK16 / 190 Lunar surface systems	Landers, rovers, infrastructure, observation and processing on the Moon.	Destination-specific evidence bounds the actual region, phase and operating mode.
AK17 / 191 Planetary landers and surface vehicles	Surface exploration, scientific instruments, mobility and handling.	Terrestrial analogy is justified; unknown critical surface conditions remain restricted.
AK18 / 191 Atmospheric and buoyant exploration	Planetary atmospheric vehicles, balloons, aircraft and relevant instruments.	All relevant environment-specific structural and functional predicates pass.
AK19 / 191 Small-body and comet operations	Observation, cooperative contact, sampling and resource demonstrations.	Uncertain body/interaction properties are not treated as established terrestrial conditions.
AK20 / 191 Subsurface and ocean-world exploration	Subsurface, liquid, ice and extreme-pressure exploration systems and their interfaces.	Specialist boundary and contamination evidence precedes dependent use.
AK21 / 192 Interplanetary cruise and deep-space missions	Spacecraft, relays, science operations and long-delay mission support.	Human and autonomous actions are feasible within actual timing and resource limits.

Domain / source page	Coverage	Required boundary
AK22 / 192 Solar and heliophysics missions	Solar observations and missions with relevant thermal, plasma and radiation extremes.	Protection and data-quality evidence cover the actual mission envelope, not a screening equation alone.
AK23 / 192 Outer-system and distant observatories	Low-flux, long-life, long-delay science and infrastructure applications.	Required lifetime and survival margins are met with credible continuity and data integrity.
AK24 / 192 Interstellar precursor and future distant systems	Bounded research and demonstrable capabilities for very long-range or novel concepts.	Research promise is not an operational grant; unsupported capability stays in development.
AK25 / 193 Human exploration and surface habitats	Crew transport interfaces, habitation, exploration support and emergency protection.	Every essential human protection and feasibility predicate is supported by specialists.
AK26 / 193 Planetary protection and sample return	Forward/backward contamination, scientific cleanliness, samples and receiving chain.	No dependent commitment precedes complete protection and receiving evidence.
AK27 / 193 Resource utilisation and remote processing	Resource characterisation, processing, quality, storage, use and residues.	Resource yield, product eligibility and permission remain distinct.
AK28 / 193 Space logistics and distributed supply	Warehousing, transfer, spares, custody, condition, receiving and service continuity.	Only physically or otherwise validly confirmed accepted usable inventory supports mission budgets.
AK29 / 194 Specialised energy infrastructure	Generation, storage, conversion, remote delivery and controlled high-hazard power interfaces.	Performance never substitutes for safety, source authority or terminal accountability.
AK30 / 194 Ground, communication and navigation services	Mission control, RF/optical links, timing, data processing, relays and PNT support.	Availability, correctness, authority and completion are separately demonstrated.
AK31 / 194 Digital and autonomous space systems	Software, programmable hardware, AI, models, twins and defensive security.	All essential behaviours and prohibited transitions are verified for the actual deployment.
AK32 / 194 Retirement and long-term stewardship	Disposal, passivation governance, loss-of-contact states, records and residual obligations.	Final-state claims are truthful and every unresolved duty has an accepted owner.

E6 Workflow and evidence relationships

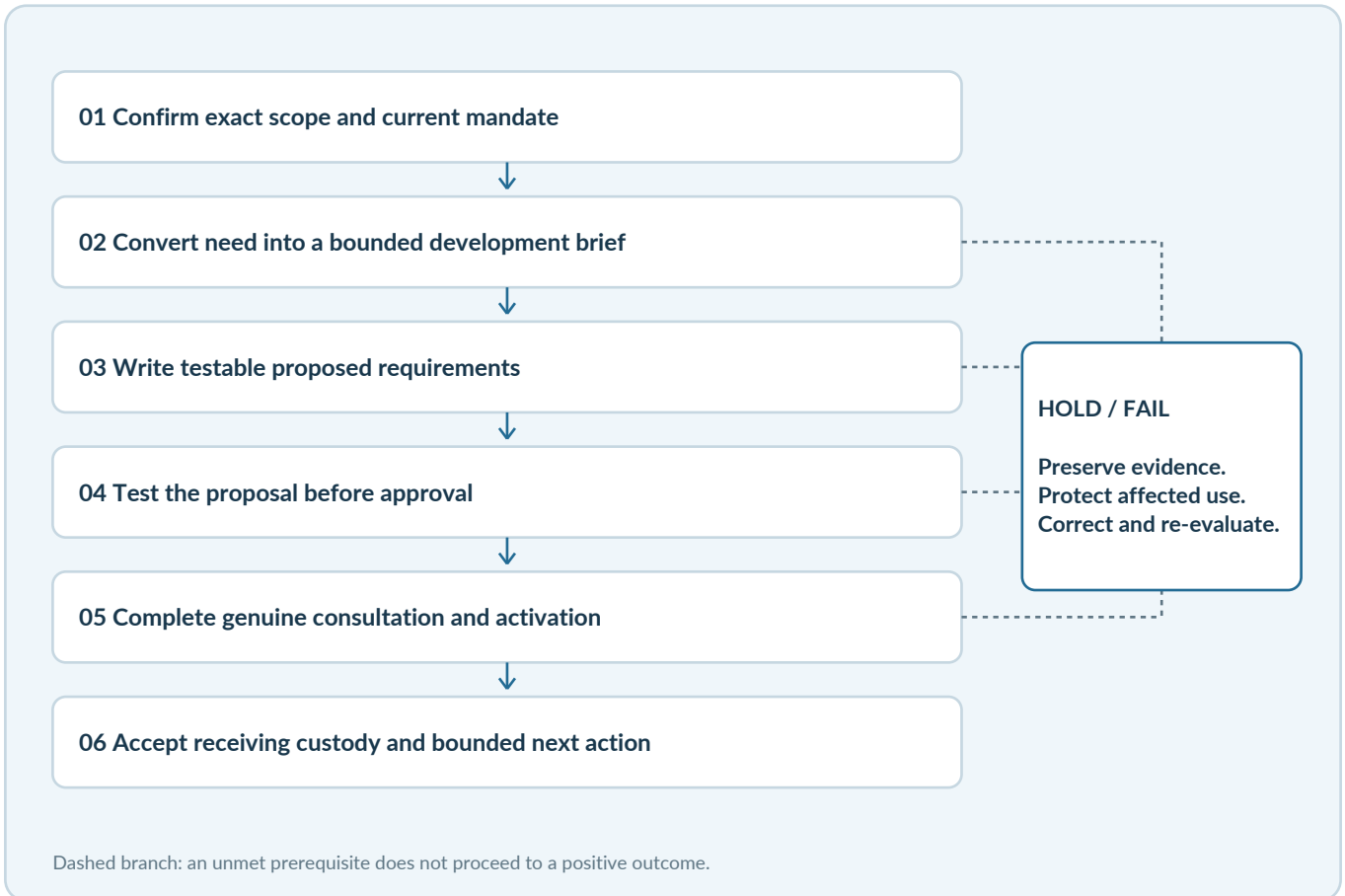
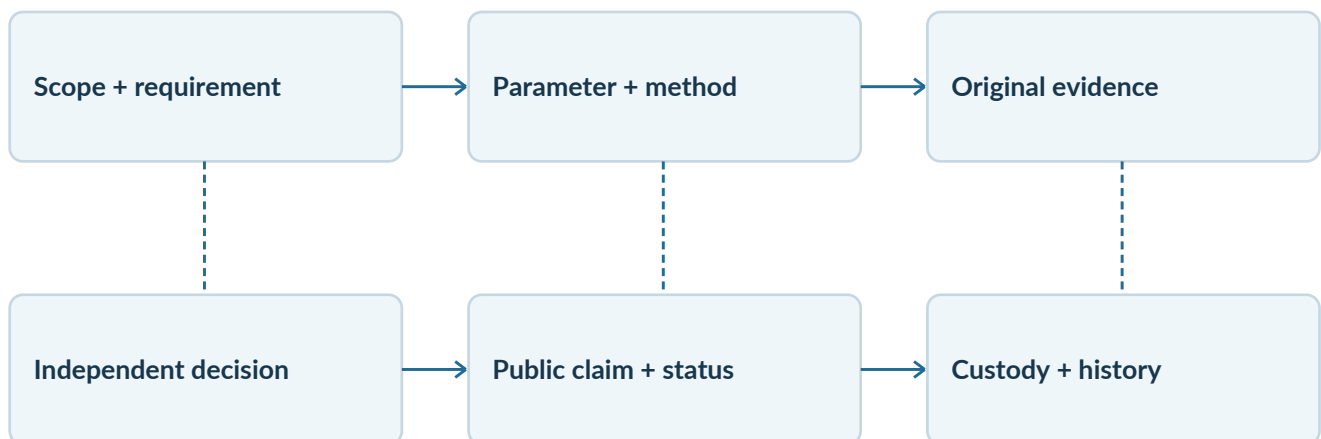


Figure — Implementation sequence for AF-AST-PR-002. Explanatory diagram; the source prerequisites and actual authority remain controlling.



Each relationship carries object identity, controlled version, actual event time and purpose-specific validity.

Figure — Scope-to-custody evidence relationships. A relationship is validated for its decision purpose, not merely because two identifiers exist.

E7 Calculations, assumptions and synthetic charts

The worked calculations below reproduce the supplied standard's Annex AM examples. Charted extensions are newly computed synthetic illustrations of those equations, not measured mission performance or new universal limits. A result is usable only when the actual inputs, model, units, uncertainty and approved application predicate are valid. A successful arithmetic check is not field validation.

AM.Q01 Measurement uncertainty and covariance

Source: ASTRA Annex AM, Q01, page 200. All numerical inputs in this example are synthetic.

$$u_c^2 = \sum (c_i^2 u_i^2) + 2\sum (i < j) (c_i c_j \text{cov}_{ij})$$

$$U = k u_c$$

Variables and units

u_i is a standard uncertainty; c_i is a sensitivity coefficient; cov_{ij} is covariance; k is the justified coverage factor. Variance terms carry squared output units.

Example inputs

Synthetic direct sum: $c_1=c_2=1$; $u_1=0.003$ mm; $u_2=0.004$ mm. First assume independence, then correlation $\rho=0.5$. Illustrative $k=2$.

Calculation and checks

1. Independent variance = $0.003^2 + 0.004^2 = 0.000025$ mm².
2. $u_c = 0.005$ mm; $U = 0.010$ mm for the stated k .
3. Correlated covariance = $0.5 \times 0.003 \times 0.004 = 0.000006$ mm².
4. Correlated variance = $0.000025 + 2 \times 0.000006 = 0.000037$ mm².
5. Correlated $u_c = 0.0060827625303$ mm; $U = 0.0121655250606$ mm.

Decision interpretation: The correlated model produces a larger uncertainty. No PASS/FAIL follows until an approved specification and decision rule are applied.

Validity limits: The linear propagation model requires a valid measurement function and adequate approximation. $k=2$ is not a universal guarantee of 95% coverage. Known bias requires correction or explicitly justified treatment; uncertainty does not conceal missing requirements.

ASTRA connections: 9.4–9.5; Annex G; 62; 77

Standard and expanded uncertainty

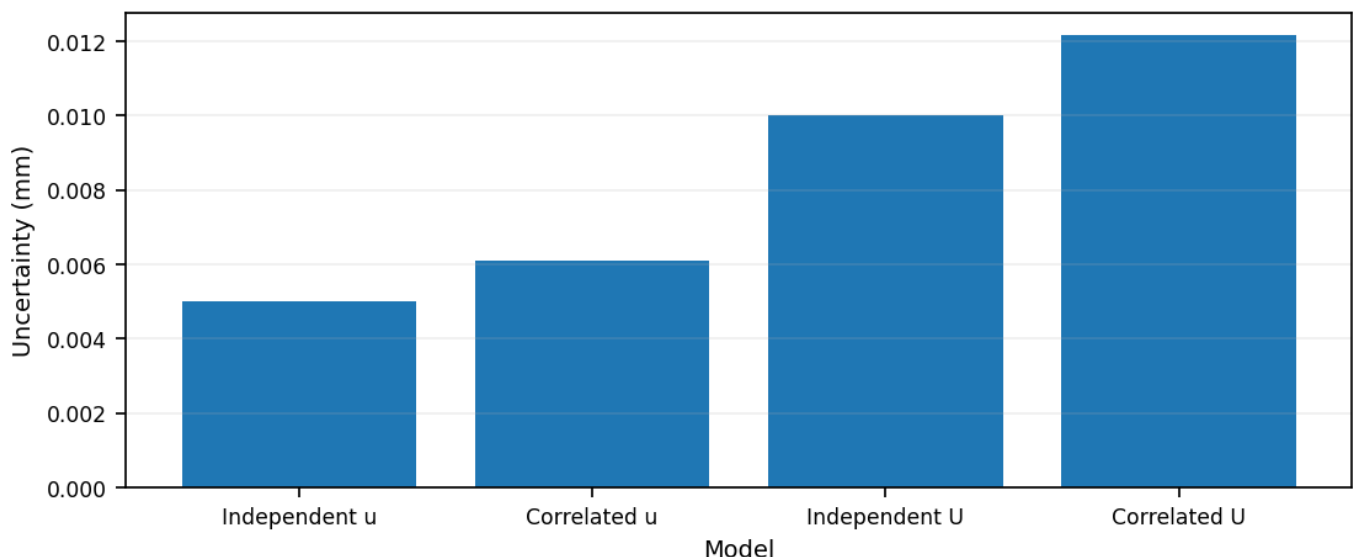


Figure Q01 — Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q02 Inclusive limits and four distinct measurement outcomes

Source: ASTRA Annex AM, Q02, page 201. All numerical inputs in this example are synthetic.

PASS: $y - U \geq L$ AND $y + U \leq H$

FAIL: $y + U < L$ OR $y - U > H$

Otherwise: HOLD; invalid evidence also results in HOLD

Variables and units

L and H are inclusive specification limits; y is a corrected result; U is a non-negative expanded uncertainty with stated coverage.

Example inputs

Synthetic specification [49.970, 50.030] mm; U=0.004 mm. Results y=50.024, 50.028, 50.036 and 50.026 mm.

Calculation and checks

1. $50.024 \pm 0.004 \rightarrow [50.020, 50.028]$ mm: PASS.
2. $50.028 \pm 0.004 \rightarrow [50.024, 50.032]$ mm: HOLD, interval overlaps the upper limit.
3. $50.036 \pm 0.004 \rightarrow [50.032, 50.040]$ mm: FAIL, interval entirely above the limit.
4. $50.026 \pm 0.004 \rightarrow [50.022, 50.030]$ mm: PASS; equality is inside the inclusive upper bound.

Decision interpretation: Neither the overlapping interval nor an invalid run is rounded into acceptance. N/A is an applicability decision, not a measurement outcome.

Validity limits: Use actual endpoints for asymmetric intervals. For an upper-only limit, PASS requires the upper endpoint at or below the limit and FAIL the lower endpoint above it. A coverage interval is not automatically a probability that this particular item conforms.

ASTRA connections: Annex G; 62.3–62.5; 77.6

Inclusive full-interval decisions

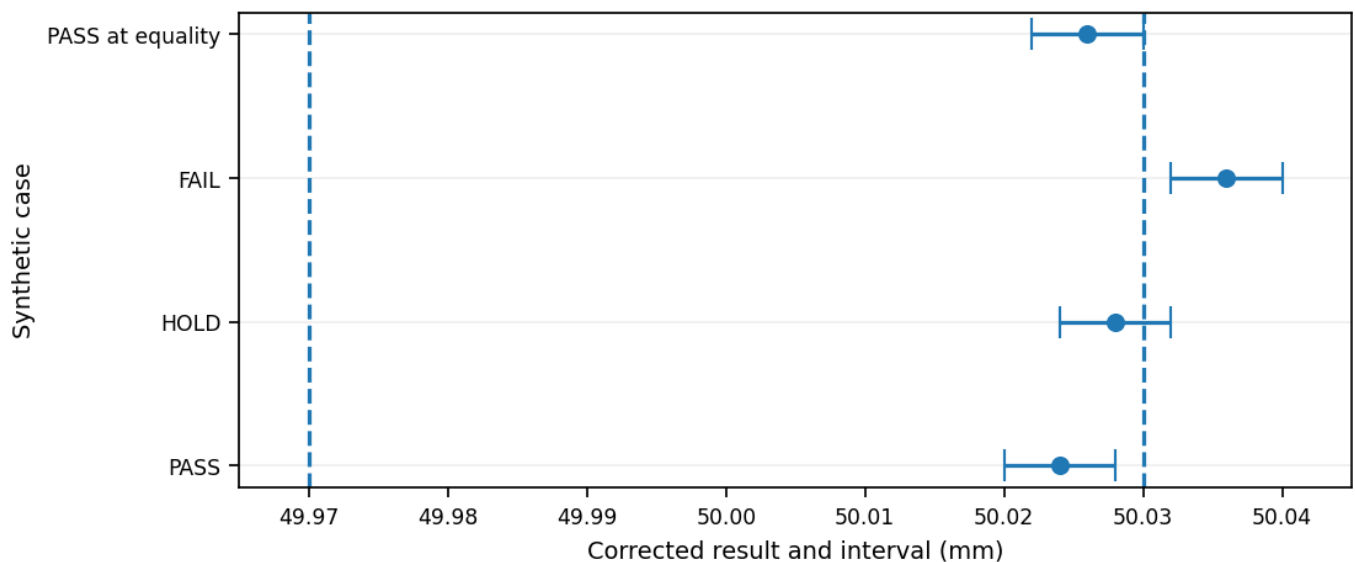


Figure Q02 — Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q03 Positive-decision conjunction and essential failure

Source: ASTRA Annex AM, Q03, page 202. All numerical inputs in this example are synthetic.

$G = S \wedge P \wedge E \wedge F \wedge C \wedge I \wedge A$

Requirement completion = completed applicable rows / all applicable rows

Variables and units

S=valid scope; P=all predicates passed; E=adequate valid evidence; F=all in-scope findings closed; C=competence; I=independence; A=actual authority.

Example inputs

A synthetic file has 200 applicable rows; 190 are complete. One remaining row concerns an essential protective control. Six other gate groups are true.

Calculation and checks

1. Completion = $190/200 = 0.95 = 95\%$.
2. The unverified essential row makes P false and E false for the requested conclusion.
3. $G = \text{true false false} \dots = \text{false}$.

Decision interpretation: No positive grant. The completion percentage is a planning measure only. A conditional development permission is a separate bounded action, not a conformity certificate.

Validity limits: No averaging, vote or commercial action can change a false mandatory gate. N/A requires independent approval of the absent trigger; it is not a way to remove unfinished work.

ASTRA connections: 15.2; Annex G.1; 62.5; 80

Completion is not the grant decision

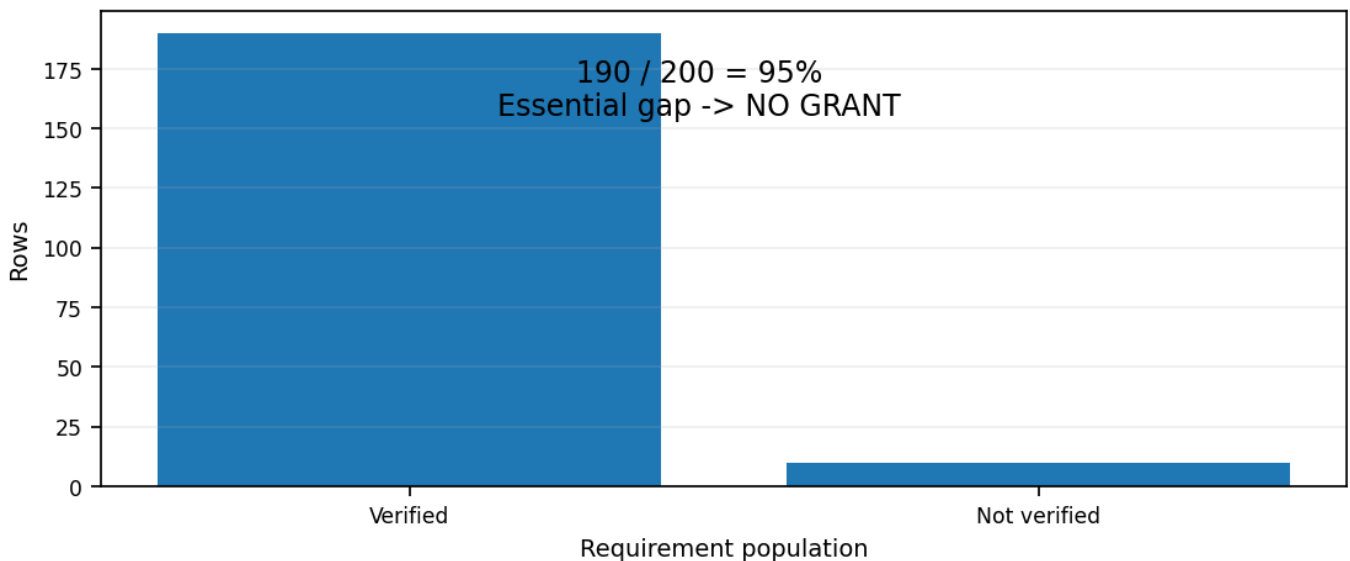


Figure Q03 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q04 Committee arithmetic and accreditation panels

Source: ASTRA Annex AM, Q04, page 203. All numerical inputs in this example are synthetic.

Substantive participation minimum = $\text{ceil}(2N/3)$

Affirmative minimum = $\text{ceil}(2V/3)$

Variables and units

N is the eligible committee population; V is the number of substantive yes/no votes. These equations concern the technical committee, not an applicant panel.

Example inputs

Synthetic committee: N=9, V=6, yes=4, no=2. Separate accreditation panel: three eligible members, two affirmative and one adverse.

Calculation and checks

1. Participation: $\text{ceil}(2 \times 9 / 3) = 6$; actual V=6 meets it.
2. Affirmative: $\text{ceil}(2 \times 6 / 3) = 4$; actual yes=4 meets it.
3. Accreditation panel: all three must participate; at least two support and all technical gates must pass.
4. Two participating panel members voting yes do not form a valid three-person panel.

Decision interpretation: The committee arithmetic passes for the stated case. The separate panel can decide positively only if technical gates and eligibility are all established.

Validity limits: Abstentions are not substantive committee yes/no votes. Rounding is upward. A mathematical majority never resolves missing technical evidence or an ineligible member.

ASTRA connections: 3.4; 4.3; 15.3; Annex B

Committee participation threshold

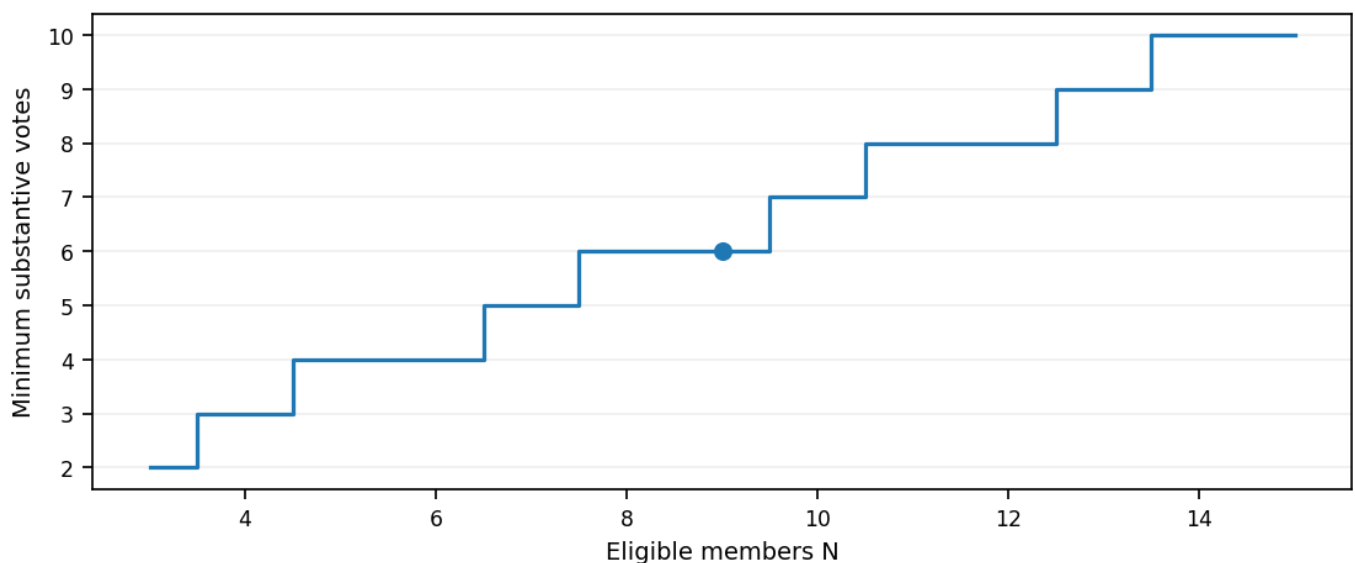


Figure Q04 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q05 Productive evaluation time without double counting

Source: ASTRA Annex AM, Q05, page 204. All numerical inputs in this example are synthetic.

$$T_{\text{eval}} = \sum h_i / 8 \text{ evaluator-days}$$

Total resource = evaluation + separate reporting/review/travel resources

Variables and units

h_i are distinct productive technical person-hours. Shared tasks are counted once unless distinct real work is documented.

Example inputs

Synthetic tasks: 12, 12, 12, 8 and 4 productive hours. Report 6 h; independent review 5 h; panel 3 person-hours.

Calculation and checks

1. Evaluation hours = $12+12+12+8+4 = 48$ h.
2. $T_{eval} = 48/8 = 6$ evaluator-days.
3. Separate report/review/panel time = $6+5+3 = 14$ person-hours.
4. Total stated technical resources = 62 person-hours before travel and other separately justified work.

Decision interpretation: Six evaluator-days describes only this synthetic activity breakdown. It is not a universal minimum or quotation.

Validity limits: Do not count a trainee as an independent productive assessor or two passive observers as two completed tasks. Calendar duration, person-hours and evaluator-days are distinct.

ASTRA connections: 12.4; Annex F.1; 58.2

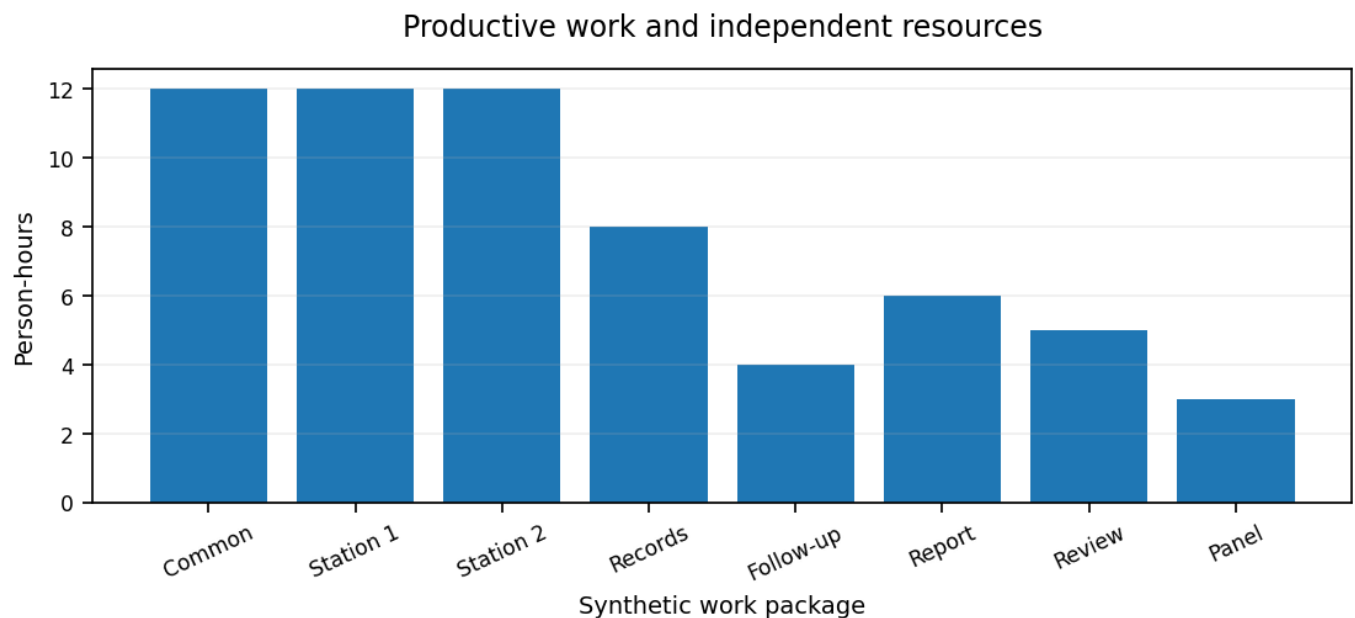


Figure Q05 — Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q06 Random detection sample size

Source: ASTRA Annex AM, Q06, page 205. All numerical inputs in this example are synthetic.

$$P(\text{at least one detection}) = 1 - (1-p)^n$$

$$n_{min} = \text{ceil}[\ln(1-C)/\ln(1-p)]$$

Variables and units

p is a fixed issue probability per independent representative observation; C is the selected target detection probability; n is a positive integer.

Example inputs

Synthetic $p=0.10$ and $C=0.95$.

Calculation and checks

1. $\ln(0.05)/\ln(0.90) = 28.433158\dots$; round upward to $n=29$.
2. $P(\text{detection at } n=29) = 1 - 0.9^{29} = 0.9528987130$.
3. At $n=28$, $P = 0.9476652367$, below the specified target.

Decision interpretation: 29 is the minimum integer sample for the stated independent model; the demonstration does not certify 95% conformity.

Validity limits: This calculation is invalid for unexamined dependence, changing p , biased selection or a judgemental sample represented as random. Detection is also conditional on an effective observation method.

ASTRA connections: 9.3; Annex F.5; 55.3

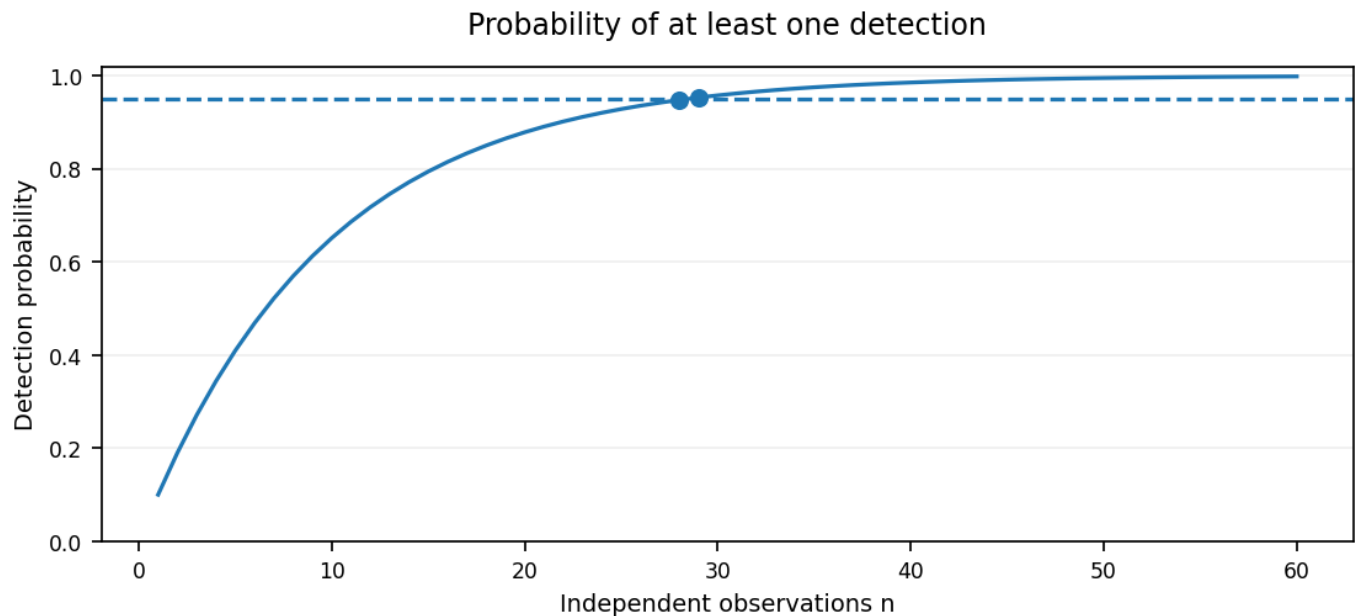


Figure Q06 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q07 Zero observed failures and an exact binomial bound

Source: ASTRA Annex AM, Q07, page 206. All numerical inputs in this example are synthetic.

```
p_upper = 1 - α^(1/n)
n_min = ceil[ln(α)/ln(1 - p_target)]
```

Variables and units

α =1-confidence; n is a prospectively fixed number of independent comparable binary trials; all n trials have zero observed failures.

Example inputs

Synthetic one-sided confidence 95%, so $\alpha=0.05$. Examine $n=30$ and a target upper failure probability of 0.01.

Calculation and checks

1. For $n=30$: $p_{\text{upper}} = 1 - 0.05^{(1/30)} = 0.095033853 = 9.5033853\%$.
2. For $p_{\text{target}}=0.01$: $\text{ceil}[\ln(0.05)/\ln(0.99)] = 299$.
3. For $n=299$: $p_{\text{upper}} \approx 0.0099691468$, below 1%.

Decision interpretation: Thirty successful trials do not demonstrate a failure probability below 1%. Under the specified model, 299 all-success trials are needed for that particular bound.

Validity limits: A statistical upper confidence bound is not proof of zero risk or total system safety. Nonrepresentative trials, changing configuration, adaptive stopping or unmodelled common causes invalidate this simple inference.

ASTRA connections: 55.1–55.3; 62; 77

Zero failures: one-sided 95% binomial bound

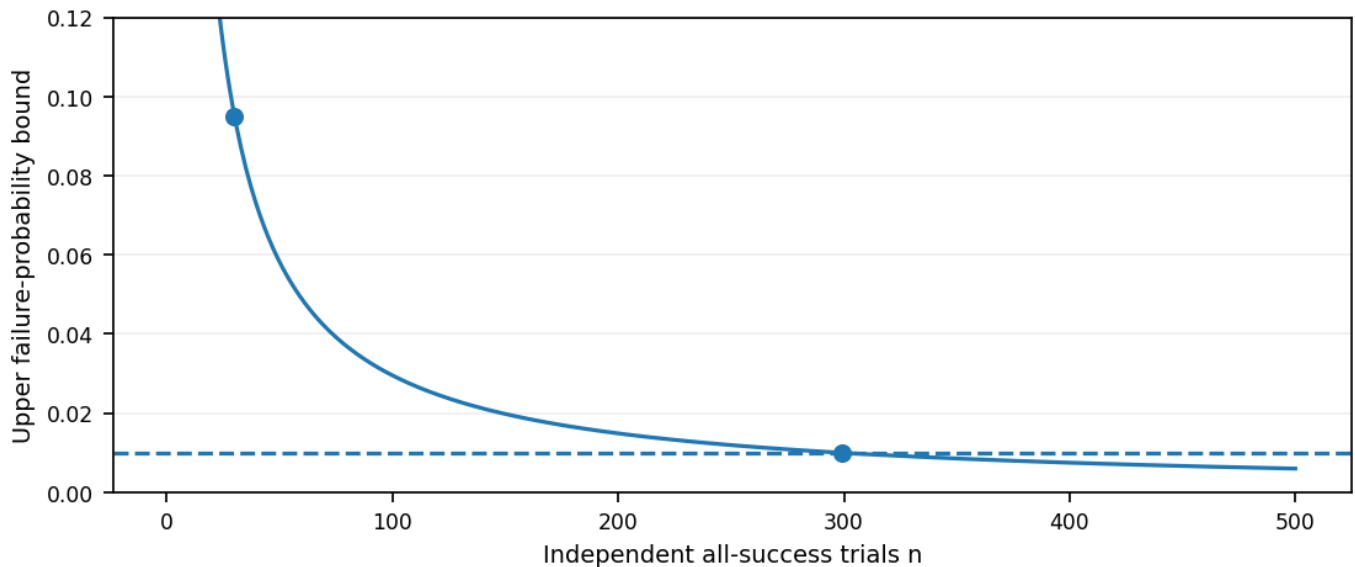


Figure Q07 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q08 No failures during exposure: exponential bound

Source: ASTRA Annex AM, Q08, page 207. All numerical inputs in this example are synthetic.

$$\lambda_{\text{upper}} = -\ln(\alpha)/T$$

$$\text{MTBF}_{\text{lower}} = T/[-\ln(\alpha)]$$

Variables and units

T is total comparable exposure time under a justified constant-rate model; $\alpha=1$ -confidence; no failures occur. λ has reciprocal-time units.

Example inputs

Synthetic T=800 operating hours; one-sided confidence=95%, $\alpha=0.05$.

Calculation and checks

1. $-\ln(0.05) = 2.9957322736$.
2. $\lambda_{\text{upper}} = 2.9957322736/800 = 0.003744665342 \text{ h}^{-1}$.
3. $\text{MTBF}_{\text{lower}} = 800/2.9957322736 = 267.0465606 \text{ h}$.

Decision interpretation: The observed zero-failure record supports only the stated model-based lower bound, not infinite mean life.

Validity limits: Ageing, wear-out, maintenance quality, heterogeneity and common causes may violate the constant-rate assumption. MTBF is not a guaranteed individual life and does not extend a mandatory life limit.

ASTRA connections: 55; 79

Zero failures: constant-rate model bound

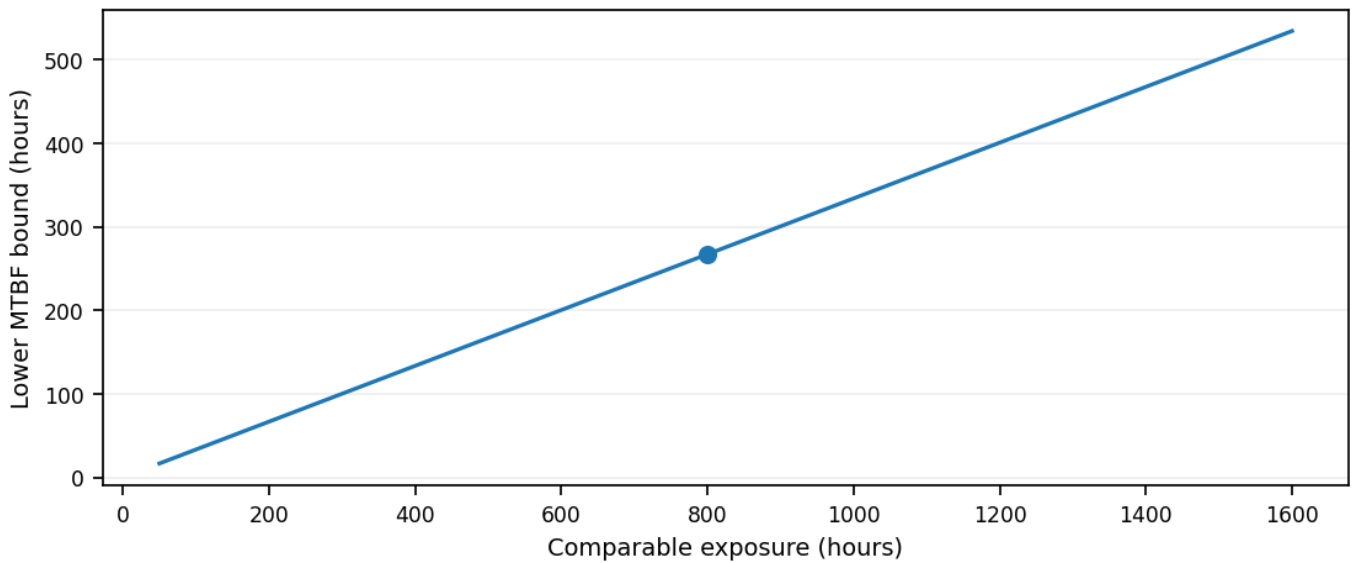


Figure Q08 — Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q09 Availability is not output correctness

Source: ASTRA Annex AM, Q09, page 208. All numerical inputs in this example are synthetic.

$$A_{\text{observed}} = T_{\text{available}} / T_{\text{window}}$$

$$\text{Correct-service fraction} = T_{\text{available_and_correct}} / T_{\text{window}}$$

Variables and units

All categories shall use the same declared window and explicit downtime and integrity definitions. Missing time is separately recorded.

Example inputs

Synthetic window=1,000 h; available=960 h; unavailable=40 h. Of the available time, 20 h produced unacceptable information.

Calculation and checks

1. Availability = $960 / 1,000 = 96\%$.
2. Available-and-correct time = $960 - 20 = 940$ h.
3. Correct-service fraction = $940 / 1,000 = 94\%$.

Decision interpretation: The 96% availability value does not prove correctness during every available hour. The two measures support different requirements.

Validity limits: The service boundary, outages, correctness test, unknown intervals and planned exclusions must be established in advance. A high uptime percentage cannot close an integrity failure.

ASTRA connections: 51.4; 55.1; 66.7; 78.7

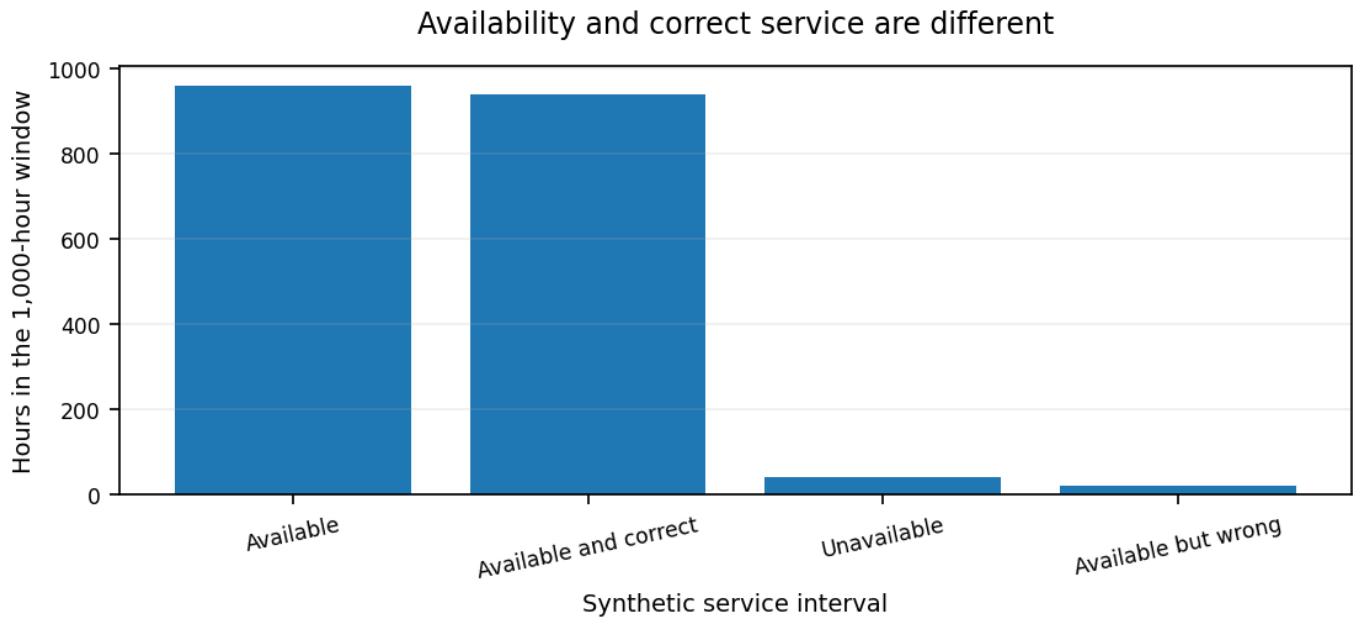


Figure Q09 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q16 Outage data storage with overhead

Source: ASTRA Annex AM, Q16, page 215. All numerical inputs in this example are synthetic.

$$B_{\text{required}} = R_{\text{data}} \times t_{\text{outage}} \times f_{\text{overhead}}$$

$$1 \text{ byte} = 8 \text{ bits}$$

Variables and units

Use a defined payload rate and explicit overhead, reserves and decimal/binary storage conventions. Avoid mixing Mbit/s and MB/s.

Example inputs

Synthetic 2.0×10^6 bit/s, 6 h outage, overhead factor=1.25; usable storage= 64×10^9 bit.

Calculation and checks

1. Outage duration= $6 \times 3,600 = 21,600$ s.
2. Required capacity= $2.0 \times 10^6 \times 21,600 \times 1.25 = 54 \times 10^9$ bit.
3. In decimal bytes this is 6.75×10^9 bytes = 6.75 GB.
4. Headroom= 10×10^9 bit; headroom/required=18.5185185%.

Decision interpretation: The example quantity fits in the stated usable capacity. Data priority, integrity and required extra reserve still need their own criteria.

Validity limits: Do not credit unvalidated compression, unavailable storage blocks or capacity already allocated elsewhere. Tests must include overflow, power interruption, duplicate delivery and recovery.

ASTRA connections: 66.3; 67.4; 78.7

Outage storage including the stated overhead

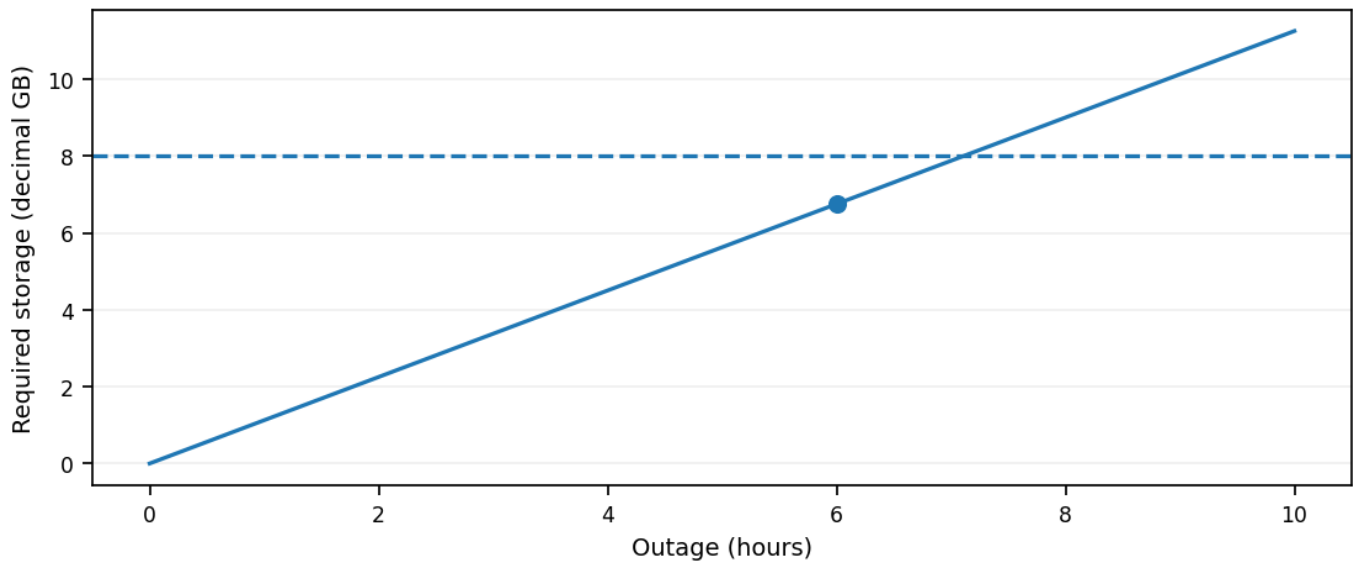


Figure Q16 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q17 Clock uncertainty and maximum data age

Source: ASTRA Annex AM, Q17, page 216. All numerical inputs in this example are synthetic.

$u_t = \sqrt{u_{\text{event}}^2 + u_{\text{sync}}^2}$ for justified independence

$U_t = k u_t$

Upper age endpoint = age_estimate + U_t

Variables and units

Time components refer to the same event and time basis. Correlation and systematic conversion errors require appropriate treatment.

Example inputs

Synthetic standard components 3 ms and 4 ms; illustrative $k=2$; maximum inclusive permitted data age=100 ms.

Calculation and checks

- $u_t = \sqrt{3^2 + 4^2} = 5$ ms; $U_t = 10$ ms.
- At age estimate 95 ms, interval=[85,105] ms: HOLD under the full-interval rule.
- At age estimate 80 ms, interval=[70,90] ms: PASS for this age criterion.

Decision interpretation: A recently received packet can still contain stale event data. The 95 ms estimate is not rounded down into acceptance.

Validity limits: This calculation does not account automatically for unrecorded queueing, an incorrect epoch or an unknown time scale. Such validity defects cause HOLD before the age predicate is evaluated.

ASTRA connections: 66.4; Annex G; 77.6

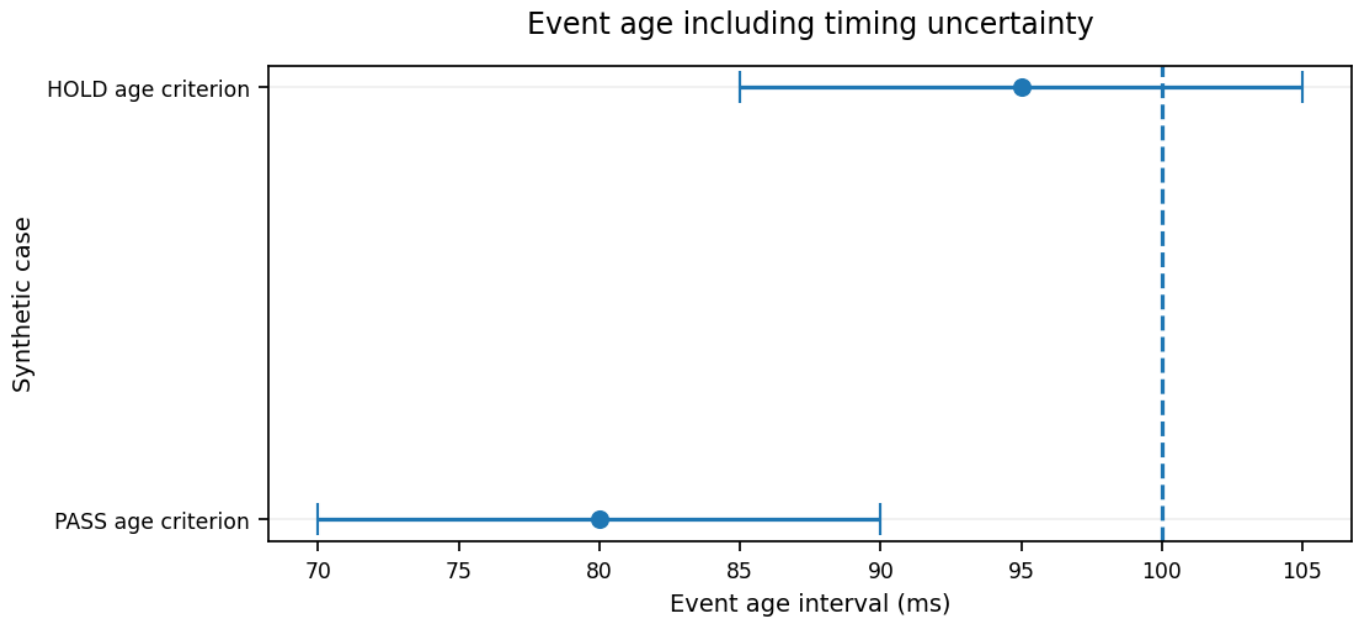


Figure Q17 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q18 Structural margin with explicitly assigned factors

Source: ASTRA Annex AM, Q18, page 217. All numerical inputs in this example are synthetic.

$$MS = \text{allowable_lower_bound} / (\text{factor} \times \text{demand_upper_bound}) - 1$$

Variables and units

Use compatible force, stress or other characteristic units and a consistent definition of applied factors. The chosen lower and upper bounds must not double-count uncertainty.

Example inputs

Synthetic allowable lower bound=150 kN; demand upper bound=100 kN; approved example factor=1.25; required example margin=0.10.

Calculation and checks

- Factored demand=1.25×100=125 kN.
- MS=150/125-1=0.20.
- The result 0.20 is at least the example required 0.10.

Decision interpretation: The stated scalar margin passes its example predicate. Every other required load case and mechanism remains separately evaluated.

Validity limits: No factor or margin here is a universal structural design rule. Buckling, joints, thermal loads, dynamics, damage, fatigue and model validity may require distinct analysis and evidence.

ASTRA connections: 33.5; 65.1; 77

Scalar structural margin: approved factors still required

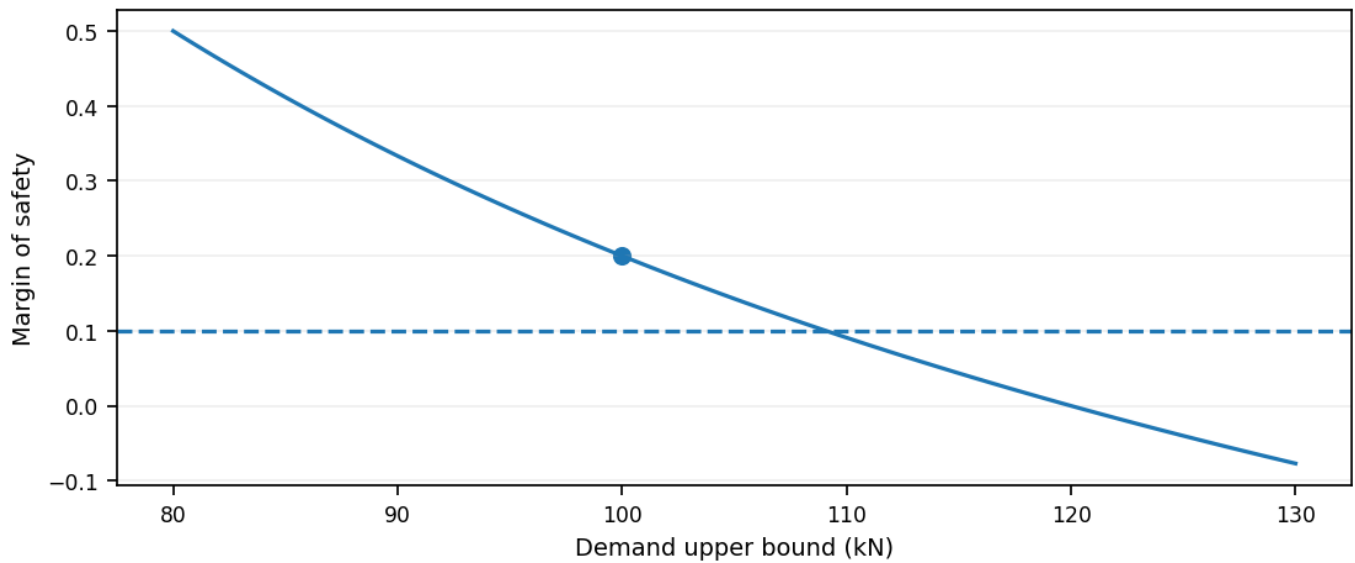


Figure Q18 — Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q19 Vibration spectral integration and units

Source: ASTRA Annex AM, Q19, page 218. All numerical inputs in this example are synthetic.

$$a_{\text{rms}}^2 = \int S_a(f) df$$

$$a_{\text{rms}} = \sqrt{a_{\text{rms}}^2}$$

Variables and units

S_a is acceleration power spectral density. With g^2/Hz and Hz , the integrated variance is g^2 . The specified conventional acceleration conversion is 9.80665 m/s^2 per g .

Example inputs

Synthetic flat PSD= $0.04 \text{ g}^2/\text{Hz}$ from 20 to 120 Hz; no content outside that illustrative band.

Calculation and checks

1. Bandwidth= $120-20=100 \text{ Hz}$.
2. Variance= $0.04 \times 100 = 4 \text{ g}^2$.
3. RMS= $\sqrt{4} = 2 \text{ g} = 19.6133 \text{ m/s}^2$.

Decision interpretation: The integration is correct for the stated flat spectrum. It does not define a test severity or establish qualification.

Validity limits: Real piecewise spectra, control methods, fixture dynamics, cross-axis behaviour, time duration and response limits require an approved profile. Do not integrate a logarithmic amplitude representation as though it were a linear PSD.

ASTRA connections: 42; Annex T; 77

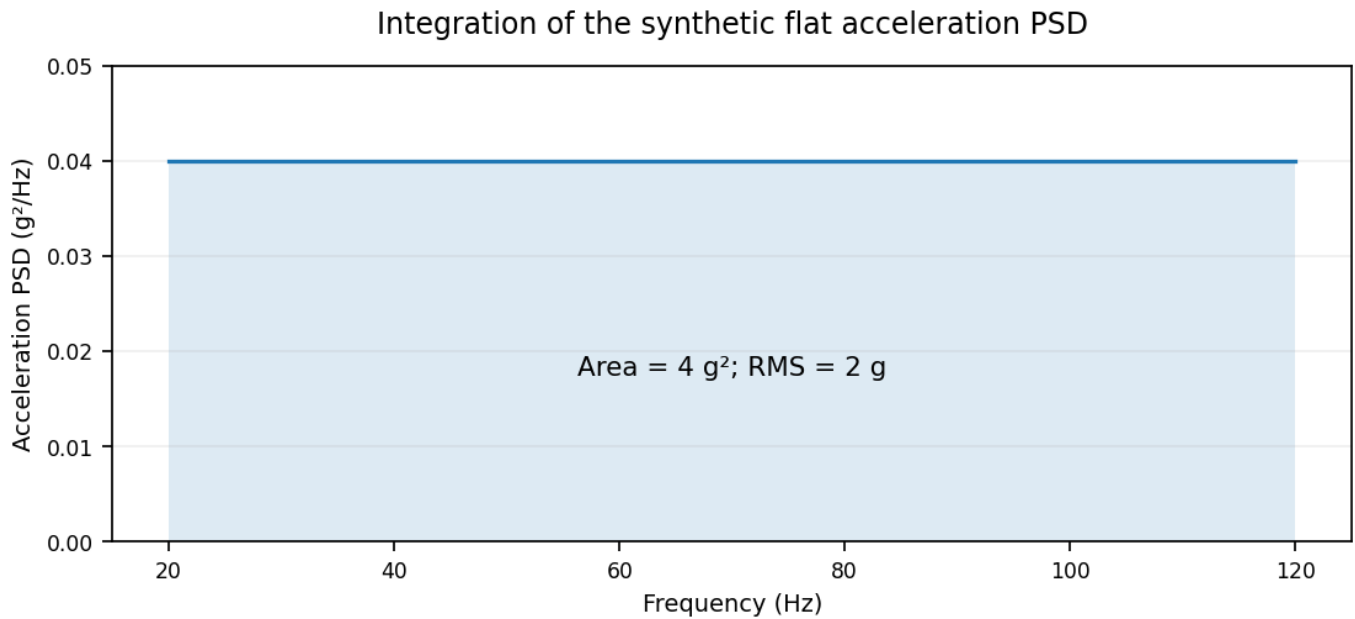


Figure Q19 – Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

AM.Q23 Material genealogy, yield and retained work

Source: ASTRA Annex AM, Q23, page 222. All numerical inputs in this example are synthetic.

Input = good + reject + tests + losses + work_in_progress

First-pass yield = accepted_first_pass_output/input

Variables and units

All quantities shall use a consistent lot and period. Recovered material remains linked to its origin and is not counted twice as new production.

Example inputs

Synthetic input=500 units; good first-pass=410; reject=30; destructive tests=10; process losses=20; work in progress=30.

Calculation and checks

1. Reconciliation=410+30+10+20+30=500 units.
2. First-pass yield=410/500=82%.
3. If 20 rejected units are later recovered, the recovery does not increase original input or first-pass output.

Decision interpretation: The quantity balance closes. Technical identity, condition and acceptance evidence still determine whether the 410 outputs are eligible.

Validity limits: A closed balance does not prove authenticity, completeness or material quality. Mixing quantities with different units or unverified scrap/recovery transfers invalidates the reconciliation.

ASTRA connections: 18.4; 48.4; Annex AC; 75.4

Original input reconciliation

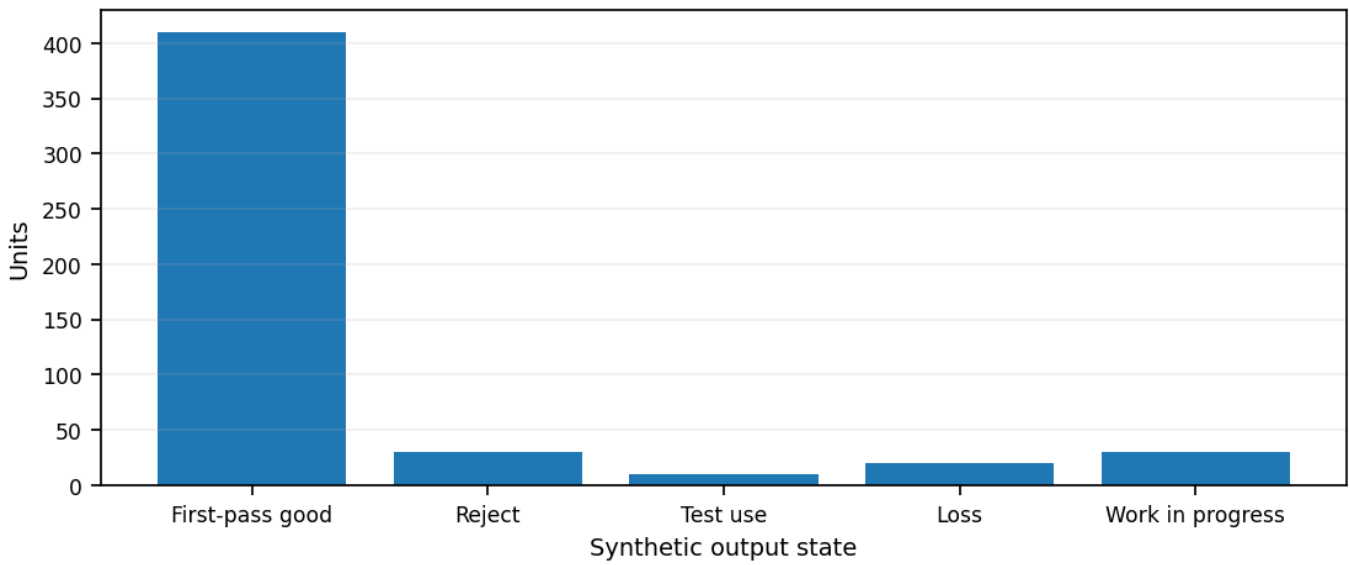


Figure Q23 — Synthetic visualisation. The axes and stated scenario define the quantity; no graph is an accreditation score, approved operating envelope or evidence of a real mission.

Local replay record: retain the actual input manifest, source versions, calculation version, unit checks, independent recomputation, expected/observed boundary results, limitations and decision authority. Do not overwrite the teaching inputs as though they were operational data.

E8 Adverse cases and independent replay

Challenge	Expected handling	Evidence retained
PR-002: Convert need into a bounded development brief — required basis missing	HOLD remains until the activity and retained duties can be stated without an unrestricted sector label.	Original input, unresolved value, affected requirement and scope; named action owner.
PR-002: Complete genuine consultation and activation — handover or review incomplete	Apply the existing consultation and voting gates and then independently prove operator, people, systems and exact-profile readiness.	Expected and observed state; independent replay; correction/retest; receiving acknowledgement.
PR-004: Resolve every applicable domain — required basis missing	Unknown applicability is HOLD; absent equipment or budget never establishes N/A.	Original input, unresolved value, affected requirement and scope; named action owner.
PR-004: Approve exclusion and re-open triggers — handover or review incomplete	Only independently justified exclusions receive N/A; an unexamined consequential interface remains HOLD.	Expected and observed state; independent replay; correction/retest; receiving acknowledgement.
PR-009: Define the method family technically — required basis missing	No unrelated technique is added because it shares a performer or report template.	Original input, unresolved value, affected requirement and scope; named action owner.
PR-009: Review change and corrective retest — handover or review incomplete	A fresh favourable run does not validate earlier affected output or automatically extend method scope.	Expected and observed state; independent replay; correction/retest; receiving acknowledgement.
PR-010: Freeze the quantitative contract — required basis missing	Invalid or missing essential inputs remain HOLD; the assessor does not supply an undocumented limit.	Original input, unresolved value, affected requirement and scope; named action owner.
PR-010: Replay and report independently — handover or review incomplete	Unresolved replay disagreement blocks the dependent acceptance even where the nominal arithmetic appears plausible.	Expected and observed state; independent replay; correction/retest; receiving acknowledgement.
PR-011: Design a purposeful validity programme — required basis missing	Participation alone is not satisfactory performance or demonstrated detection capability.	Original input, unresolved value, affected requirement and scope; named action owner.
PR-011: Close causes and historical extent — handover or review incomplete	New satisfactory performance restores only a bounded current capability after independent acceptance; old evidence is not rewritten.	Expected and observed state; independent replay; correction/retest; receiving acknowledgement.
PR-028: Map the complete change population — required basis missing	A cosmetic filename or edition-label change cannot hide a changed technical basis.	Original input, unresolved value, affected requirement and scope; named action owner.

Challenge	Expected handling	Evidence retained
PR-028: Close without abandoning terminal duties — handover or review incomplete	Only demonstrably complete obligations are closed; remaining duties stay assigned after programme or provider cessation.	Expected and observed state; independent replay; correction/retest; receiving acknowledgement.

Before local reliance, also select every relevant AP01–AP48 challenge in the core. Keep fictional tests isolated from live credentials, commands and recipients. For each test define the requirement, precondition, expected response, execution steps, actual observations, evidence, defect consequence, correction, retest and acceptance. This publication supplies test designs and examples, not completed local validation records.

Appendix A – Controlling source requirements

The following text is reproduced from the supplied ASTRA FIRST EDITION. The clause identifier and page refer to that 248-page source. These excerpts and their evidence fields must be read with all triggered normative annexes. Newly authored implementation steps elsewhere in this document do not amend the core standard.

1.1 – Sector and lifecycle coverage

Source: AF-AST-STD-001, page 10.

The programme may cover civil and military aviation; space systems and operations; land, maritime, air, space and associated defense industry; heavy and advanced industry; and vehicles, equipment and services used for defense, aerospace support or space exploration. It encompasses research, design, manufacture, integration, test, supply, operation, maintenance, modification and retirement where a released profile exists. The sector description is a development remit, not an assertion that AF or any assessor possesses every listed capability. Sensitive and hazardous work shall be limited to authorised specialists and lawful evidence arrangements.

Required evidence: Sector and lifecycle scope; released-profile check; authorised access arrangements.

1.2 – Eight-family structure

Source: AF-AST-STD-001, page 10.

The eight families are F01 Management Systems Assurance; F02 Critical Processes and Products; F03 Testing and Inspection; F04 Education Programmes; F05 Airports and Aerodromes; F06 Aircraft Maintenance and Technical Services; F07 Ground Operations and Aviation Support Services; and F08 Carbon, Environment and Climate Assurance. Annex A defines their boundaries and links. Family labels organise scope selection and do not establish certificate types. Individual methods, disciplines, aircraft types, service stations or environmental modules shall not be counted as additional programme families.

Required evidence: Family catalogue; deduplication record; outcome class for each application.

1.3 – Object and responsibility tuple

Source: AF-AST-STD-001, page 10.

Each application shall identify the responsible legal entity, actual performer, object type, family and module, sites and remote functions, configuration or programme version, lifecycle role, applicable period, criticality, profile and exclusions. Products, services, processes, people, supplier scopes, educational programmes, assessment providers and environmental statements are separate objects. A combined dossier may share evidence but shall provide a separate conclusion and status history for each claimed object. Where a duty is outsourced, the record shall identify both the performer and the organisation retaining accountability.

Required evidence: Complete scope tuple; separate requested outcomes; actual-performer map.

1.4 – Group, site and interface limitations

Source: AF-AST-STD-001, page 10.

Group governance evidence may be reused after its relevance and local implementation are demonstrated. It shall not grant unexamined competence to every subsidiary, airport, station, faculty, workshop or laboratory. Scope schedules shall distinguish a headquarters function from operational delivery. An airport outcome does not include independent tenants by default; an MRO outcome does not include its training centre or all internal test methods automatically. Shared premises, a common owner or one purchasing contract shall not erase those boundaries.

Required evidence: Entity/site hierarchy; interface agreements; scope-specific coverage and decisions.

1.5 – Activity-based applicability

Source: AF-AST-STD-001, page 11.

The applicant shall make a reasoned applicability decision for every common and family requirement. Non-applicability requires the actual activity and retained responsibility to be absent, without undermining a claimed outcome. Small size, another certificate, customer nomination or outsourcing alone does not justify exclusion. A provider that changes from distribution to repair, or from laboratory testing to product certification, shall reassess its scope before making the broader claim. Technical reviewers shall approve material exclusions and record the supporting evidence.

Required evidence: Approved applicability matrix; technical rationale; review triggers and version history.

1.6 – Out-of-scope and emerging activities

Source: AF-AST-STD-001, page 11.

Heliports, vertiports, spaceports, specialist air-navigation activities, novel fuels, human spaceflight and restricted defense applications require dedicated criteria and verified technical coverage before activation. Their inclusion in the portfolio does not permit operation under a conventional airport or generic service profile. A request outside the released catalogue may enter a development or expression-of-interest register, not an implied live accreditation route. Airline flight operations remain outside F07 unless a separate profile and lawful delivery arrangement are expressly released.

Required evidence: Development request; scope exclusion; dedicated supplement and release decision.

4.1 – Development request and feasibility

Source: AF-AST-STD-001, page 13.

A new profile shall start from a defined sector need, intended beneficiaries, output type, failure consequences and available evidence. The technical owner shall assess whether a new profile is necessary or an existing one can cover the activity without scope distortion. The development record shall consider feasibility, access, resources, conflicts, proportionate burden and the capability required of evaluators. A catalogue entry or market demand alone is not approval of a method or authority to solicit formal applications.

Required evidence: Development brief; duplicate-scope review; feasibility and resource decision.

4.2 – Profile content and acceptance criteria

Source: AF-AST-STD-001, page 14.

Every released profile shall contain the fields in Annex C: exact scope, prerequisites, measurable or defined attribute criteria, methods, sampling, uncertainty, essential controls, competence, sites, witnessing, decision rules, duration, surveillance, records and permissible claims. Criterion limits shall be derived from the actual technical and obligation basis. They shall be fixed before results are evaluated. There shall be no universal tolerance, environmental test load, staff ratio, curriculum credit total or carbon threshold invented to cover unrelated applications.

Required evidence: Complete approved profile; criterion-to-method map; acceptance rationale.

4.3 – Consultation and technical approval

Source: AF-AST-STD-001, page 14.

Substantive requirements shall receive at least 60 calendar days of public consultation before final technical approval through the applicable AF process. Material comments and dissent shall receive recorded dispositions. Final normative committee approval requires substantive yes-or-no participation by at least two thirds of eligible voting members and affirmative votes from at least two thirds of those substantive votes, rounded upward. Material new requirements introduced after consultation shall undergo further review or consultation proportionate to their effect. Actual records shall be retained; preparation does not retrospectively establish consultation.

Required evidence: Notice; comments and dispositions; eligible roll; substantive vote and approval records.

4.4 – Pilot evaluation and method challenge

Source: AF-AST-STD-001, page 14.

Before release, the operator shall exercise representative normal and adverse cases, including an undefined scope, inaccessible evidence, a failed critical requirement, a conflict, a rejected result, a status change, an appeal and a recovery failure. Technical pilots shall examine criterion clarity, discrimination, burden, evaluator agreement and evidence sufficiency. Participants shall be told the restricted pilot purpose. Synthetic cases shall be labelled. A pilot participation letter shall not be a live accreditation, certification or recognition result.

Required evidence: Pilot plan; authentic or clearly synthetic cases; findings; verified correction and limitations.

4.5 – Activation gate and scope release

Source: AF-AST-STD-001, page 14.

A scope becomes available only after the independent technical readiness check and authorised institutional activation described in Annex P. Confirm lawful operator identity, complete profile, competent teams and decision authority,

executed terms, working evidence and registry systems, remedies, resources and continuity. Release shall identify exact available scopes and unavailable supplements. A partially ready portfolio may open only the independently complete profiles; unrelated incomplete development projects need not block that release. No profile shall borrow an unverified capability from a future programme.

Required evidence: Scope-release checklist; readiness evidence; authorised effective date; published boundaries.

4.6 – Interpretation and controlled evolution

Source: AF-AST-STD-001, page 14.

A controlled interpretation may explain an existing condition but shall not change a threshold, expand a claim, waive competence or convert missing evidence into a pass. Such changes require formal normative version and prospectively defined transition. Review active rules at least every three years and sooner after serious incidents, method failures or material technological change. Retain earlier criteria and decisions. An urgent factual safety communication may protect users but shall not be disguised as an unconsulted new accreditation requirement.

Required evidence: Interpretation register; change classification; transition assessment; version archive.

8.2 – Equipment identity and fitness

Source: AF-AST-STD-001, page 18.

Equipment, software-controlled instruments, fixtures, tools and reference artefacts shall be uniquely identified and suitable for the required range, resolution, accuracy, uncertainty and duty. Verify acceptance before first use, after repair or configuration change, and when validity is questioned. Records shall include version, location, maintenance, checks, restrictions and status. Calendar calibration alone shall not establish fitness for every method or specimen. Out-of-service equipment shall be prevented from supporting an authorised result.

Required evidence: Equipment register; acceptance and checks; method suitability; restricted-use controls.

8.3 – Traceability and calibration

Source: AF-AST-STD-001, page 18.

Measurement results shall have a technically appropriate documented connection to accepted reference quantities or justified reference bases, with uncertainty contributions and competent calibration evidence. Verify the actual service range and result, not only the provider's logo. Where direct reference traceability is not technically possible, document the alternative reference, method validation and limitations. Do not claim metrological traceability from an unverified manufacturer declaration or a broken chain of comparisons.

Required evidence: Calibration chain; certificates/results; uncertainty contributions; justified alternative basis.

9.1 – Method selection and contract fit

Source: AF-AST-STD-001, page 19.

Before work, select a method suitable for the actual object, property, range, operating conditions and intended decision. Resolve contradictory or obsolete customer instructions and disclose methods outside demonstrated capability. The method shall define preparation, setup, execution, data treatment, acceptance and limitations sufficiently for competent reproducibility. A familiar method name shall not establish fitness for a new material, geometry, low-level concentration, digital system or service context.

Required evidence: Reviewed method request; authorised procedure; scope/range suitability; resolved ambiguities.

9.2 – Verification and validation

Source: AF-AST-STD-001, page 19.

Verify established methods in the actual implementation. Validate new, non-standard or materially modified methods for the intended use, addressing relevant bias, precision, selectivity, sensitivity, range, robustness and uncertainty. Establish acceptance criteria before validation data are assessed. Retain failed trials and restrictions. Method transfer between sites, instruments, software or personnel requires evidence that material performance remains valid; a shared procedure number does not demonstrate successful transfer.

Required evidence: Validation/verification plan; raw results; acceptance analysis; transfer and limitation records.

9.3 – Sampling and specimen integrity

Source: AF-AST-STD-001, page 20.

When sampling is within scope, establish the population, selection method, sample size, locations, conditions, randomisation where relevant, transport and preparation. Address sampling contributions to uncertainty and limitations of inference. A result from a client-selected item shall identify that boundary. Sample identity and chain of custody shall survive splitting, pooling, consumption and subcontracting. Reject or condition work on unsuitable specimens before interpreting the result as representative.

Required evidence: Sampling plan; population and selection; custody; deviations and restricted inference.

9.4 – Measurement model and uncertainty

Source: AF-AST-STD-001, page 20.

Evaluate uncertainty appropriate to the reported result and decision. Identify measurand, significant corrections, input distributions, sensitivity coefficients, dependence, sample preparation and environmental effects. The calculation shall distinguish standard and expanded uncertainty, coverage factor, units and coverage interpretation. Known material bias shall be corrected or explicitly handled through an approved model, not hidden in a convenient uncertainty allowance. A result shall not inherit an uncertainty copied from an unrelated calibration capability.

Required evidence: Uncertainty budget; corrections; covariance; units; coverage and applicability justification.

9.5 – Decision rules and boundary results

Source: AF-AST-STD-001, page 20.

Agree the decision rule before evaluation and record its treatment of false acceptance, false rejection, uncertainty and criticality. Annex G sets the full-interval rule and alternative-rule controls. Conformity demonstrated, nonconformity demonstrated and indeterminate are separate outcomes under that rule. Indeterminate work remains held from acceptance pending valid disposition. Repeating observations until one passes, rounding a borderline value into compliance or changing the specification after seeing the result is not a valid resolution.

Required evidence: Pre-agreed rule; unrounded inputs; outcome; hold and authorised disposition.

9.6 – Continuing validity and comparisons

Source: AF-AST-STD-001, page 20.

Maintain a planned programme of internal controls and independent or interlaboratory comparison appropriate to each significant technical field. Participation alone is not satisfactory performance. Investigate adverse results, assign causes and assess prior reports. Where a suitable comparison is unavailable or impracticable, approve a technically justified alternative with evidence of challenge and limitations; lack of participation opportunity shall not be described as external proof of competence. Review coverage as methods and volumes change.

Required evidence: Validity-monitoring plan; comparison results; justified alternatives; adverse-result actions.

9.7 – Technical reporting and amendments

Source: AF-AST-STD-001, page 20.

Reports shall identify issuer, client, actual item, scope, method/version, conditions, dates, results, units, uncertainty where needed, deviations, decision rule, conclusion, limitations and authorised signatory. Identify subcontracted results and opinions separately. A report shall not imply that untested characteristics or future production were examined. Amendments shall preserve the original, state the reason and affected conclusion, and reach recipients who relied on an incorrect result.

Required evidence: Attributable report; raw-data linkage; subcontracted-result identity; amendment and recipient log.

11.3 – Existing evidence and reuse

Source: AF-AST-STD-001, page 22.

Review prior reports, approvals and certificates for authenticity, issuer competence, actual method, site, period, conditions and configuration. Identify precisely which requirement and decision use they support and what remains to be evaluated. Include adverse results and restrictions. Another outcome shall not be declared equivalent solely from a similar title or scope label. Evidence reuse may reduce repeated document requests but cannot remove necessary local

implementation, witnessing or independent decision.

Required evidence: Reuse matrix; authenticity/scope checks; residual gaps; controlled access to original evidence.

12.1 – Planning from scope and consequence

Source: AF-AST-STD-001, page 23.

The plan shall begin with the requested object and requirement set, not a fixed commercial duration. Identify legal entities, technical methods, actual performers, sites, shifts, programme delivery modes, configurations, prior findings, changes and critical interfaces. Select representative routine and adverse work and assign specialists for every material domain. Define what evidence can support each conclusion and where sampling cannot establish the full claim.

Required evidence: Approved scope-led plan; coverage matrix; technical assignments; sample rationale.

12.2 – Sites and stations

Source: AF-AST-STD-001, page 23.

For initial and renewal operational-capability or CAB scopes, establish direct evidence at every included operating site, station or delivery location. Common governance evidence can be shared but local capability shall be demonstrated. Use physical visits where necessary work cannot be validly observed remotely. Surveillance sampling of genuinely homogeneous low-consequence activities requires an approved profile, justified eligibility, rotation and expansion triggers; no generic headquarters sample grants all stations. AF 9100 organisational cases retain the specific site rules of that standard.

Required evidence: Site-by-activity coverage; remote/on-site rationale; rotation and ineligible-site controls.

12.3 – Method-family witnessing

Source: AF-AST-STD-001, page 23.

Group methods only when common principles, equipment, competence, ranges and failure mechanisms justify representativeness. Witness each distinct method or capability family, including material extremes and high-consequence tasks. A single demonstration shall not cover unrelated techniques merely because one employee performs them. Include the whole relevant task from preparation and identity through data interpretation and reporting. Map any unobserved part to valid supplementary evidence or exclude it from the granted scope.

Required evidence: Witnessing plan; family grouping rationale; observed limits; supplementary evidence.

12.4 – Time and productive work

Source: AF-AST-STD-001, page 24.

Use an activity-based work breakdown for non-organisational assessments, with necessary preparation, observation, data review, sites, shifts and rework. One evaluator-day is eight productive evaluation hours. Travel, breaks, sales, report preparation, translation delay and independent review/decision are separate resources. Do not count a trainee as a fully productive assessor or double-count two observers performing the same task without distinct technical work. AF 9100 organisational time remains governed by its Annex AC. Annex F provides a planning method and examples, not universal technical durations.

Required evidence: Task/time matrix; separate resources; actual productive time; approved additions.

12.5 – Multifamily coordination

Source: AF-AST-STD-001, page 24.

Coordinate visits and common evidence requests when the same applicant uses several families. Preserve each profile, specialist, finding impact, review and outcome. Record which shared control was evaluated, for what scope and by whom. Calculate any efficiency from demonstrably shared work rather than an arbitrary bundled discount on necessary technical observation. A finding in a common control shall trigger review of every dependent outcome, with restrictions limited only where unaffected scope is independently established.

Required evidence: Integrated schedule; shared-work allocation; separate conclusions; cross-scope finding impact.

12.6 – Plan approval and changes

Source: AF-AST-STD-001, page 24.

The lead and competent technical reviewer shall accept the plan before execution. Inform the applicant of scope, access, timing, witnesses and safety arrangements without allowing selective favourable evidence. Changes during work shall retain the original plan, reason, impact and approved replacement. Where capability, access or time is inadequate, add work, restrict the request or defer the conclusion. A report shall disclose actual coverage rather than reproduce the planned coverage as though it occurred.

Required evidence: Plan approval; applicant notice; deviations; completed-versus-planned coverage.

13.3 – Witness control

Source: AF-AST-STD-001, page 25.

Record the actual task, date, site, equipment, software, personnel, conditions, method version and acceptance basis. Observe essential steps directly where required and prevent coached performance from being misrepresented as routine independent work. Controlled simulation is acceptable only where the profile justifies its fidelity and restrictions. Live work shall not be made unsafe to create a demonstration. A missing essential observation requires supplementary evidence, reassessment or restricted scope, not a presumed pass.

Required evidence: Witness log; essential steps; simulation validity; unobserved-step disposition.

19.3 – Method performance and detection

Source: AF-AST-STD-001, page 32.

Demonstrate method suitability for relevant defect mechanisms or measurands, specimen preparation, surfaces, geometry, matrix effects, interference, access and environmental conditions. For qualitative inspection, evaluate false-positive and false-negative behaviour where material. Detection capability shall be tied to technique, task, equipment and person. A successful reference check on an easy artefact shall not prove the ability to detect every relevant defect in an installed structure.

Required evidence: Method validation; challenge specimens; detection limitations; authorised interpretation.

19.10 – Comparisons and validity programme

Source: AF-AST-STD-001, page 33.

For each significant technical field, define risk-based reference checks, blind or duplicate work, comparison participation and other validity controls. Before granting a new scope, examine available satisfactory comparison evidence or an independently accepted alternative that directly challenges the claimed ability. No arbitrary score shall compensate for unresolved poor performance. Record investigation, affected historical work and successful corrective verification. Programme enrolment alone shall not be counted as a satisfactory result.

Required evidence: Validity coverage map; comparison/alternative results; investigations; restored capability.

19.12 – Technical witnessing for accreditation

Source: AF-AST-STD-001, page 33.

The accrediting team shall witness representative activities for every distinct method family or inspection capability and examine a complete application-to-report trail. Include adverse work, authorised sign-off, uncertainty, outsourced results and subsequent controls. Similar-method grouping requires a written technical rationale. An organisational audit with no relevant technical observation is not a completed laboratory or inspection competence evaluation. The final scope shall match the actual demonstrated capability, locations and limitations.

Required evidence: Witness coverage; complete case trail; independent scope review; accreditation decision.

25.6 – Proficiency and reference-material activities

Source: AF-AST-STD-001, page 43.

A body organising proficiency exercises or producing reference material requires a separately released technical profile. That profile shall cover competence, planning, assigned values or property characterisation, homogeneity/stability, uncertainty, participant/sample confidentiality, statistical methods, reporting and validity. These functions shall not be inferred from ordinary laboratory accreditation. Until the specialised profile and witnesses are complete, the catalogue shall show the requested activity as development, not granted scope.

Required evidence: Dedicated profile; characterisation/statistical basis; valid specialised witnessing; bounded status.

26.1 – Novelty and bounded deployment

Source: AF-AST-STD-001, page 43.

A materially novel activity shall have a defined use, technical owner, foreseeable failure mechanisms, evidence gaps and safe development boundary. Approval shall distinguish research demonstration, restricted pilot and operational capability. Additional evidence, independent challenge and monitoring shall address weak operating history. A promising technology readiness label does not authorise normal production or a broader accreditation claim. Missing critical performance shall remain an explicit gate rather than a future deliverable assumed complete.

Required evidence: Novelty dossier; restrictions; independent review; demonstrated release conditions.

26.2 – AI, autonomy and adaptive changes

Source: AF-AST-STD-001, page 43.

For an AI-enabled process or service, define intended domain, human authority, data lineage, evaluation sets, failure metrics, uncertainty, exclusions and fallback. Evaluate relevant difficult and rare cases separately rather than hiding them in aggregate accuracy. Changes to weights, preprocessing, sensors, thresholds or deployment conditions shall trigger impact review. Adaptation outside the approved envelope requires renewed assurance before a changed claim is used.

Required evidence: Model/data cards; scenario evidence; enforced limits; controlled change and fallback.

26.3 – Digital twins and simulation

Source: AF-AST-STD-001, page 44.

A model used as decision evidence shall identify the physical or operational target, version, validation domain, inputs, calibration, uncertainty and limitations. Demonstrate fidelity for the specific conclusion and sensitivity to relevant assumptions. A visual match or correct calculation does not establish physical validity. Maintain the relationship between actual and model configuration after change. Simulation may supplement evidence but shall not remove required physical or practical observation without a technically approved basis.

Required evidence: Model-credibility dossier; validation/sensitivity; configuration linkage; approved use boundary.

26.4 – Remote, space and long-duration operation

Source: AF-AST-STD-001, page 44.

For inaccessible, in-space or delayed-communication work, establish evidence acquisition, identity, configuration, time basis, telemetry validity, data loss, permitted remote actions and safe fallback. Explain what is directly observed, inferred or unknown. Independent review shall use appropriately authorised experts and retained records. No space suitability or completed end-of-life action shall be claimed from an unverified signal or terrestrial analogy alone. Mission-specific technical profiles remain prerequisites.

Required evidence: Remote assurance plan; telemetry provenance; inference limits; mission profile and decisions.

26.5 – Continuous monitoring and machine-readable status

Source: AF-AST-STD-001, page 44.

Continuous data may support surveillance only when the measured parameters, failure coverage, integrity, drift, missing-data response and responsible review are validated. Live dashboards do not automatically renew credentials or prove every requirement continuously. Machine-readable status shall match the authorised human decision, exact scope and history. A credential remains subject to expiry, changes, field evidence and remedies. Automated alerts may trigger protective review, not secretly issue new authority.

Required evidence: Monitoring validation; alert/action trail; authenticated status; human review and expiry controls.

26.6 – Hazardous and controlled activities

Source: AF-AST-STD-001, page 44.

Defense, energetic, radiation, hazardous testing and sensitive infrastructure activities shall use authorised personnel and lawful specialist procedures. This programme establishes accountability, competence, evidence, segregation and review requirements only; it provides no weapon construction, targeting, offensive cyber, hazardous-source handling or operational attack instructions. Confidentiality shall protect legitimate information while allowing sufficient independent review. If required access or safety capability is absent, the activity stays outside the live scope.

Required evidence: Permissions; specialist competence; safe evidence access; explicit exclusions and holds.

30.2 – Controlled transition

Source: AF-AST-STD-001, page 48.

For a new profile or substantive version, identify affected holders, evidence gaps, changed methods, competence, system updates, communications and effectivity. Set a technically justified transition that does not waive immediate safety duties. Preserve the basis of previous decisions and state when additional assessment is needed. Neither indefinite grandfathering nor automatic retrospective invalidation is presumed. A future requirement is not applied as though it had governed an earlier decision.

Required evidence: Transition plan; holder impact; competence/tool updates; actual effective versions.

30.4 – Scope withdrawal and learner/customer protection

Source: AF-AST-STD-001, page 48.

Before closing a profile or provider operation, identify active holders, open cases, pending appeals, unresolved findings, learners, records, status, contracts and financial duties. Notify affected parties and arrange lawful transfer or teach-out as relevant. A closure shall not erase adverse evidence or imply continued authority. Preserve access to historical decisions and correction channels. If urgent cessation is required, prioritise protection and accurate communication while completing residual obligations.

Required evidence: Closure plan; affected-party notices; transfer/teach-out; retained records and remedies.

31.3 – Actual adoption record

Source: AF-AST-STD-001, page 49.

Record the authenticated legal operator, technical approval, consultation completion, competent institutional adoption, signatories, effective date, applicable instruments and any necessary compatibility amendments. Keep edition date distinct from legal or operational effectivity. Uncompleted approval fields shall not be filled with assumed names or dates. Programme-wide adoption alone shall not activate every listed technical scope; each profile requires the independent readiness and scope decision in Annex P.

Required evidence: Authentic adoption; completed compatibility conditions; individual scope activation.

32.1 – Mission definition and accountable boundaries

Source: AF-AST-STD-001, page 50.

The responsible organisation shall establish an approved mission or service concept describing intended beneficiaries, objectives, success conditions, operating environments, duration, interfaces and constraints. The concept shall distinguish mission success from protection of people, essential infrastructure and the environment when success is no longer achievable. Normal, degraded, emergency, maintenance and retirement conditions shall be considered. Every assumption supplied by another organisation shall have an owner and a means of verification. Commercial ambition or a planned demonstration shall not be recorded as an established operational capability.

Required evidence: Mission concept; responsibility boundary; scenario set; success and protective-state criteria; external-assumption register.

32.2 – Lifecycle assurance plan

Source: AF-AST-STD-001, page 50.

The assurance plan shall connect requirements, design, procurement, manufacturing, integration, verification, acceptance, operation, support and retirement. It shall identify activities that require independent challenge, critical characteristics, technical specialists, resources, records and decision authorities. The organisation shall update the plan when mission duration, operating conditions, suppliers or architecture change. Planning shall include failures during development and operation, not only the nominal delivery sequence. A supplier's assurance plan may provide inputs, but the integrator shall retain responsibility for the completeness of the integrated assurance argument.

Required evidence: Lifecycle assurance plan; interface allocation; critical-characteristic register; review and update history.

32.3 – Gates and irreversible commitments

Source: AF-AST-STD-001, page 50.

Each lifecycle gate shall have defined entry conditions, required technical evidence, unresolved-issue rules, independent review and an accountable exit decision. A gate may authorise limited further development without authorising production, operational deployment or an ASTRA outcome. Conditions shall identify permitted work, prohibited commitments, an owner and closure evidence. Before an irreversible action, the responsible authority shall explicitly review remaining uncertainty and recovery limitations. A schedule milestone, procurement expenditure or successful presentation shall not substitute for a technical gate decision.

Required evidence: Gate criteria; configuration-specific review dossier; decision and conditions; verified closure before dependent action.

32.4 – Integrated assurance case

Source: AF-AST-STD-001, page 50.

The organisation shall maintain an argument linking each material safety, performance and mission claim to requirements, assumptions, configuration, evidence and limitations. The case shall expose adverse evidence, competing explanations, common dependencies and unresolved uncertainty. It shall distinguish analysis, simulation, observed demonstration and service experience. Independent review shall challenge whether the evidence supports the actual claim rather than merely whether documents exist. An accepted component or qualified supplier shall not establish the acceptability of every integrated configuration or operational scenario.

Required evidence: Claim-evidence map; assumption and uncertainty records; counter-evidence; independent challenge; bounded conclusions.

32.5 – Handover and long-life accountability

Source: AF-AST-STD-001, page 51.

Handover shall reconcile the as-built or as-delivered configuration, accepted changes, operating instructions, competent personnel, support arrangements, restrictions and unresolved duties. The receiving organisation shall confirm usable access to the information necessary for its role. Long-life programmes shall address loss of suppliers, tools, software services and original expertise. Record transfer shall preserve meaning and history; it shall not be presented as transfer of regulatory privileges or an expanded conformity scope. Responsibilities for later defects and corrections shall remain identifiable after commercial completion.

Required evidence: Handover manifest; receiving acceptance; support and knowledge-preservation plan; continuing-duty allocation.

32.6 – Through-life feedback and reassessment

Source: AF-AST-STD-001, page 51.

The organisation shall connect incidents, maintenance findings, production changes, field data and user feedback to the original requirements and assurance case. Material new evidence shall trigger review of affected configurations and earlier conclusions. The review shall distinguish a changed operating context from an error in the original evidence. Restrictions, corrective actions and recipient communications shall be proportionate to the supported extent. An operational history without a reported failure shall not close a hazard that the monitoring system was unable to detect.

Required evidence: Feedback-to-configuration trace; affected-population review; updated case; corrective and communication records.

33.1 – Requirement quality and allocation

Source: AF-AST-STD-001, page 51.

Requirements shall be identifiable, verifiable, internally consistent and assigned to an accountable implementation and acceptance function. The organisation shall record the technical basis, intended use, units, tolerances where relevant, environment and consequence of failure. Derived requirements shall retain their relationship to parent needs and constraints. Ambiguous terms such as future-ready or aerospace-grade shall be translated into evaluable conditions before they are used for acceptance. Requirements that are not yet technically defined shall remain open and shall prevent the dependent positive conclusion.

Required evidence: Requirement baseline; allocation and rationale; verification method; unresolved-definition register.

33.2 – Multidisciplinary interfaces

Source: AF-AST-STD-001, page 51.

Interface definitions shall address relevant mechanical, structural, electrical, thermal, fluid, data, timing, human and organisational characteristics. They shall identify the provider and receiver, valid configurations, ownership, assumptions,

error handling and change-notification duties. Integration reviews shall examine incompatible assumptions between individually acceptable subsystems. Units, coordinate frames, reference times and version conventions shall be explicit. Interface acceptance shall include abnormal inputs and loss of a supporting service where material to the intended use.

Required evidence: Interface-control baseline; owner acknowledgements; compatibility review; integrated verification and anomalies.

33.3 – Configuration states and genealogy

Source: AF-AST-STD-001, page 52.

The configuration system shall distinguish intended, designed, built, tested, delivered, installed and currently operated states. Each technical result shall identify the state actually evaluated, including relevant software, parameters, materials and modifications. Serial, batch, assembly and parent-child relationships shall survive splitting, replacement and repair. Configuration identity shall not be inferred from a commercial product name alone. Where a legacy baseline is incomplete, the organisation shall establish the uncertainty and necessary verification before extending the assurance claim.

Required evidence: Configuration register; as-built and as-operated records; genealogy; test-to-configuration links; legacy gap review.

33.4 – Change impact and independence

Source: AF-AST-STD-001, page 52.

A proposed change shall identify affected requirements, interfaces, hazards, qualification evidence, manufacturing controls, maintenance data, training and public claims. The review shall state which prior evidence remains valid and why, what becomes invalid and what new demonstration is required. The design or technical authority shall approve the technical disposition, while the independent conformity function separately determines any effect on ASTRA status. A document version, new software version or relocated process shall not automatically inherit its predecessor's evidence.

Required evidence: Before-and-after baseline; impact map; retained-evidence argument; new tests; separate technical and status decisions.

33.5 – Engineering budgets and margins

Source: AF-AST-STD-001, page 52.

Relevant mass, power, energy, thermal, structural, timing, memory, communication and consumable budgets shall have a baseline, owner, allocation, uncertainty treatment and review trigger. Margin definitions shall be consistent across subsystem and system levels so that the same reserve is not counted more than once. Cumulative changes and degraded conditions shall be reviewed. A positive arithmetic balance shall not establish physical adequacy where the underlying model, environmental assumption or failure scenario is unsupported.

Required evidence: Budget register; allocation and margin definitions; uncertainty; cumulative-change review; approved technical basis.

33.6 – Verification closure and model limitations

Source: AF-AST-STD-001, page 52.

The verification matrix shall link each requirement to an approved method, representative configuration, evidence and acceptance decision. Unverified interfaces and waived observations shall remain visible. A model shall be credible for the particular decision and conditions in which it is used; a visual match or successful numerical execution is insufficient. Extrapolation beyond validated conditions requires explicit justification and independent review. Verification closure shall not be declared by counting completed tests when a required function or failure condition remains unexamined.

Required evidence: Verification matrix; coverage and configuration review; model limitations; requirement-specific closure.

41.2 – Integrated route and hidden characteristics

Source: AF-AST-STD-001, page 62.

The production route shall identify every process stage, branch, handover and external performer that can affect a required characteristic. Essential variables shall include relevant preparation and downstream treatment, not only the main machine cycle. Qualification shall cover representative materials, geometry, equipment, software, personnel and environmental conditions. Final inspection shall not be assumed capable of detecting all latent process defects. The route shall preserve failed runs, rework and technical restrictions through product acceptance.

Required evidence: Route and dependency map; qualification matrix; essential variables; hidden-property rationale; original run history.

42.1 – Requirement-led test strategy

Source: AF-AST-STD-001, page 63.

The organisation shall select inspection, analysis, demonstration or testing according to the requirement and intended decision. The plan shall identify the actual article, configuration, environment, acceptance criterion, method, instrumentation, uncertainty, competent personnel and protective arrangements. Qualification, production acceptance, workmanship screening and research shall be distinguished. A catalogue of tests shall not be treated as a complete verification programme until every applicable requirement and material interface has an adequate method and evidence path.

Required evidence: Requirement-to-method matrix; test purpose; article/configuration identity; approved criteria and safety review.

42.2 – Test tailoring and representativeness

Source: AF-AST-STD-001, page 64.

Test conditions shall be derived from the actual technical and obligation basis. The organisation shall explain specimen geometry, material condition, mounting, fixtures, boundary conditions, input locations, operating modes and differences from the deployed article. Similarity arguments shall identify relevant differences and failure mechanisms. Tailoring, reduced exposure or substitution of analysis shall have prospective technical approval. No universal vibration level, temperature, radiation dose, acoustic spectrum or electromagnetic severity is imposed by this standard.

Required evidence: Tailoring rationale; environment definition; specimen and fixture review; approved deviations and retained limitations.

42.3 – Combined environments and test sequence

Source: AF-AST-STD-001, page 64.

The verification strategy shall evaluate whether environmental stresses interact and whether the order of exposure affects the conclusion. Cumulative damage, preconditioning, repairs, software changes and prior unsuccessful tests shall remain part of the article history. The organisation shall distinguish necessary qualification margin from unrepresentative over-test. Where separate tests cannot demonstrate a coupled effect, an additional integrated method or justified analysis shall be established. A passed individual test shall not automatically bound every combination of operating conditions.

Required evidence: Sequence and interaction analysis; article exposure history; cumulative-effect review; additional integrated evidence.

42.4 – Data acquisition, uncertainty and protective limits

Source: AF-AST-STD-001, page 64.

Instrumentation and software shall be suitable for the required range, bandwidth, accuracy, synchronisation and uncertainty. The organisation shall retain original data, transformations, calibration and configuration evidence. Technical acceptance and safety-stop criteria shall be specified separately. An interruption, missing channel or unexpected protective action shall be recorded and assessed before restart. Restoring the test setup shall not establish that the article remains representative or that the interrupted evidence supports the intended conclusion.

Required evidence: Measurement-chain dossier; raw data; uncertainty and timing; stop/restart records; article-validity review.

42.5 – Failure, retest and independent judgement

Source: AF-AST-STD-001, page 64.

Failed, invalid and indeterminate results shall remain identifiable with their original conditions. A retest shall follow an approved technical rationale and account for selection effects, changed articles, repairs and repeat exposure. The organisation shall not test repeatedly until a favourable result appears or revise acceptance criteria after seeing the data. The independent reviewer shall examine coverage, adverse evidence and limitations. Any product concession shall remain separate from a conformity claim that requires the original criterion to be fulfilled.

Required evidence: Failure and validity classification; retest rationale; original/revised configuration; independent acceptance or hold.

42.6 – Laboratories and complete reports

Source: AF-AST-STD-001, page 64.

Testing shall use demonstrated method-specific competence, suitable facilities, traceability and continuing-validity controls. Reports shall identify actual performer, article, method/version, conditions, deviations, results, uncertainty where relevant, decision rule and supported conclusion. Subcontracted data and opinions shall be distinguishable. A

laboratory competence outcome does not approve every tested product, and an article qualification does not accredit the laboratory. The final report shall expose untested characteristics and restrictions on inference to a broader family.

Required evidence: Laboratory scope and validity; complete test report; subcontractor identity; independent review and limited inference.

56.5 – Export, migration and meaningful recovery

Source: AF-AST-STD-001, page 81.

Transfer shall preserve readable evidence, identities, versions, field semantics, units, time zones, approvals, relationships and current and historical status. Reconciliation shall examine meaning as well as counts; equal file totals may conceal substitutions or missing links. Recovery shall distinguish availability from integrity and reconcile events after the selected recovery point. A sent archive is not accepted custody. The receiving function shall demonstrate usable access and acknowledge continuing duties before dependent cutover.

Required evidence: Export manifest; semantic reconciliation; preserved source; recovery integrity; receiving acceptance and custody.

59.1 – Need, benefit and foreseeable consequences

Source: AF-AST-STD-001, page 83.

A development proposal shall state the problem, intended beneficiaries, expected benefit, foreseeable harm, affected people, technical owner and evidence gaps. It shall identify the existing family and object route or justify a separately governed architectural change. The review shall consider technical feasibility, safety, privacy, misuse, access and resources. A projected market or ambitious technology label shall not establish that the proposed method can produce a valid independent conclusion.

Required evidence: Development brief; family/object mapping; benefit and harm review; feasibility and evidence-gap assessment.

59.2 – Distinguish research, pilot and operational use

Source: AF-AST-STD-001, page 83.

Readiness descriptions shall identify what has actually been demonstrated, under which conditions and with what limitations. Research success, laboratory demonstration, restricted pilot, qualified process and operational service shall remain distinct states. Each transition shall have an evidence and authority gate. A prototype may proceed within a safe approved development boundary without a conformity claim. Operational deployment shall not be justified solely by completion of a research milestone.

Required evidence: Demonstration-state register; actual observations; transition criteria; bounded pilot and release decisions.

59.3 – Emerging domains and evidence gaps

Source: AF-AST-STD-001, page 84.

Candidate topics may include new propulsion and energy architectures, advanced materials, adaptive manufacturing, autonomous services, distributed space systems, remote habitation and evolving digital trust mechanisms. These are development directions, not forecasts of maturity or promised programme releases. The technical owner shall determine their specific hazards, dependencies, measurement needs, assessor competence and acceptance criteria. No universal test recipe or claim of future readiness shall replace a completed technical profile.

Required evidence: Topic-specific profile development; hazard and evidence analysis; competence feasibility; prospective acceptance basis.

59.4 – Safe experimentation and independent challenge

Source: AF-AST-STD-001, page 84.

Experimental work shall have authorised boundaries, competent specialists, protections, monitoring and stop conditions suitable for its consequence. The organisation shall state which actions are reversible and which create irreversible commitments. Independent challenge shall examine weak operating history, unobserved failure mechanisms and optimistic assumptions. Synthetic or simulated results shall be identified. A restricted experiment shall not silently expand into normal production or passenger, crew or public exposure without the relevant evidence and permissions.

Required evidence: Experiment authorisation; safety and observation plan; independent review; exact limitations and stop decisions.

59.5 – Learning, consultation and controlled adoption

Source: AF-AST-STD-001, page 84.

Pilot results shall be assessed for criterion clarity, technical discrimination, burden, repeatability of judgement and adverse outcomes. Material new requirements shall follow the consultation and approval process in Clause 4.3. Adoption shall state which profiles, people, tools and holders are affected and preserve previous decision bases. Horizon scanning shall inform a maintained development portfolio, but shall not be used to impose unconsulted requirements or advertise unavailable accreditation routes.

Required evidence: Pilot findings; reasoned versions ; consultation and ballot records; transition plan; truthful availability catalogue.

60.1 – Foundation and retained architecture

Source: AF-AST-STD-001, page 84.

Implementation shall begin with the actual scheme owner, legal operator, responsibilities, permissible outcome names and controlled requirements. Preserve F01–F08 and the original code-to-subject relationships. The 68 retained technical development subjects and the 108-title base documentation architecture are organising inventories, not measures of competence or proof of activation. A separate programme family shall not be created merely because a technical topic needs more detailed guidance or a dedicated local profile.

Required evidence: Authority and compatibility review; retained architecture; controlled source inventory; development versus activation status.

60.2 – Common operating system and competent people

Source: AF-AST-STD-001, page 85.

Establish the common processes for application, scope, impartiality, resources, evidence, findings, decisions, remedies, records and continuity. Assign real accountable owners and evaluate people for their actual roles. The foundational assessor, profile, registry, operator-review, consistency, surveillance and publication workpacks may support implementation without replacing the core requirements. A prepared form or completed training session shall not establish that the corresponding operational process has been implemented and independently verified.

Required evidence: Working process owners; competent role assignments; authentic operating trails; validated records and controls.

60.3 – Family and technical-profile development

Source: AF-AST-STD-001, page 85.

Develop each family route against its exact objects, sites, methods, levels and service conditions. F03 provider competence, F04 education, F05–F07 operations, F08 statements and F01/F02 system/process work may progress in parallel when dependencies are met. The application schedule shall complete measurable or defined attribute criteria, methods, uncertainty, witnesses, independence, duration and permissible claims. Missing essential parameters keep the particular profile in development without preventing unrelated complete profiles from progressing.

Required evidence: Completed Annex C payload; family-specific criteria; application schedule; technical and independent completeness review.

60.4 – Integrated pilots and local system acceptance

Source: AF-AST-STD-001, page 85.

Before live scope release, perform representative technical and workflow pilots and verify correction of blocking findings. Test actual source access, assessment coverage, adverse results, conflicts, independent decisions, public claims and recovery. Local system validation shall test the actual deployment, not only a reference workbook. Synthetic cases support logic checks but shall not be represented as genuine applicants or field validation. Readiness conclusions shall state precisely which capabilities have been demonstrated.

Required evidence: Pilot plans and executed evidence; findings/retests; local validation; bounded readiness report.

60.5 – Controlled launch, surveillance and evolution

Source: AF-AST-STD-001, page 85.

Launch shall identify exact active profiles, authorised operators, competent resources, terms, public claims and operational effectivity. Scope availability shall follow real release decisions. Continuing review shall monitor technical validity, independence, changes, outcomes, access and resources rather than certificate volume alone. The programme shall maintain usable historical records, controlled version and responsible closure. A later expansion shall preserve earlier code meanings and undergo its own compatibility, technical and activation review.

Required evidence: Actual activation; public availability; surveillance and independent review; version /transition and closure records.

61.1 – Publication identity

Source: AF-AST-STD-001, page 86.

The display title shall be ASTRA with AEROSPACE STANDARD directly beneath it. The standard identifier shall remain AF ASTRA-100:2026 and the document code AF-AST-STD-001. The displayed edition shall be FIRST EDITION and the displayed publication date 30 September 2026. These labels shall not be substituted for an actual technical approval, contract effectivity, operational permission or conformity-decision date.

Verification: Compare cover, identity page, headers, metadata and controlled publication record.

Acceptance / hold rule: Identity fields agree. A publication date alone provides no evidence of adoption or operational authority.

61.2 – Retained text and authored additions

Source: AF-AST-STD-001, page 86.

Clauses 0–60 and Annexes A–AH retain the source architecture, subject identifiers and operational controls, subject to the editorial identity changes stated in Annex AI. This clause, Clauses 62–80 and Annexes AK–AR develop explicit all-space coverage, decision logic, calculations and evidence controls. They shall not be represented as records of completed field evaluation or as proof that the complete consolidated text existed on the displayed edition date.

Verification: Review the internal authorship boundary in Annex AJ and the actual approval dossier.

Acceptance / hold rule: Source-derived requirements and newly authored material are distinguishable; no invented approval, validation or prior effectivity is asserted.

61.3 – Dependent documents and compatibility

Source: AF-AST-STD-001, page 86.

The responsible custodian shall identify every affected profile, manual, procedure, checklist, form and register before use of this text. Existing 108-title architecture and F01–F08 codes shall remain stable. Newly added requirements shall be mapped to the actual dependent documents; a previous checklist shall not be assumed to cover them. Actual constitutional and legal obligations remain separately applicable.

Verification: Reconcile the dependency register against selected requirements and operating versions.

Acceptance / hold rule: Every required operating document is available, consistent and authorised for the intended use. Unresolved conflicts place dependent use on HOLD.

61.4 – Actual approval and activation

Source: AF-AST-STD-001, page 86.

The adoption dossier shall retain the proposed text, consultation, comment dispositions, valid technical decision, institutional authority, operator identity and exact scope activation. Real signatories and event timestamps shall be recorded when the events occur. A blank, generated or copied signature shall not be used as an approval. Technical and institutional release shall remain separate from the acceptance of a particular applicant.

Verification: Trace the authorisation chain and independently verify each necessary approval.

Acceptance / hold rule: All triggered gates in Clause 4 and Annex P are satisfied before live scope use; otherwise the affected scope remains unavailable.

61.5 – Correction, custody and file integrity

Source: AF-AST-STD-001, page 87.

The custodian shall retain controlled source versions, change reasons, affected requirements and distribution records even though no numbered change label appears on the publication. Corrections shall not erase historical decisions. The issued PDF shall have complete content, readable figures, working navigation and an identifiable master. Removal of publication labels shall not remove record timestamps, method versions or technical configuration controls.

Verification: Reconcile the final file with its manifest and inspect content, navigation and correction records.

Acceptance / hold rule: No missing section, contradictory edition field or unreadable essential figure; the original evidence and actual history remain retrievable.

62.1 – Atomic requirement record

Source: AF-AST-STD-001, page 88.

Each assessed requirement shall have a stable identifier, one accountable owner, an applicability trigger, defined object and configuration, required behaviour or characteristic, observable conditions, verification method and acceptance predicate. Compound statements shall be separated into individually testable rows without deleting any condition. Terms such as adequate, suitable, promptly or representative shall be resolved through the explicit records in this clause before they support an acceptance decision.

Verification: Inspect each requirement row and its linked method, boundary and predicate.

Acceptance / hold rule: Every applicable row is evaluable without inventing an object, limit, observation or decision role. Unresolved essential terms result in HOLD.

62.2 – Mandatory parameter completion

Source: AF-AST-STD-001, page 88.

An application-dependent value shall be entered in a controlled parameter schedule before the relevant test or evaluation. Each entry shall state symbol, meaning, unit, inclusive or exclusive bounds, uncertainty treatment, operating modes, technical derivation, source evidence, approver and change trigger. A declared value is not adequate merely because the applicant selected it. The independent reviewer shall challenge whether it bounds the claimed environment and consequence.

Verification: Recalculate derivations and check mission, interface and obligation coverage.

Acceptance / hold rule: The complete parameter set is approved prospectively. A blank, TBD, unsupported factor or undefined threshold blocks the dependent release.

62.3 – Evidence validity before conformity

Source: AF-AST-STD-001, page 88.

The evaluator shall first determine whether evidence belongs to the correct object, configuration, period, method and authorised performer and whether it is usable for the intended inference. Only valid relevant evidence shall enter a conformity predicate. Rejected, corrupted, missing, unobservable or wrong-version evidence shall remain identified. Evidence may be valid and show failure; an invalid test is not a valid pass or a valid proof of product failure.

Verification: Check provenance, configuration, method capability, original data and uncertainty separately from result classification.

Acceptance / hold rule: Validity is established before PASS or FAIL is assigned; otherwise use HOLD with an explicit invalidity or evidence-gap reason.

62.4 – Four requirement states

Source: AF-AST-STD-001, page 88.

A requirement state shall be PASS, FAIL, HOLD or N/A. PASS means the approved predicate is satisfied by valid evidence. FAIL means valid evidence demonstrates that the predicate is not satisfied. HOLD means applicability, method, evidence, uncertainty or authority is not sufficiently resolved. N/A means the trigger and retained responsibility are absent and independent approval of that exclusion is recorded. Missing equipment, budget, access or time shall not justify N/A.

Verification: Execute the truth table in Annex AL using actual scope and evidence.

Acceptance / hold rule: Exactly one current state is assigned with reason and traceable evidence. All earlier states are retained.

62.7 – Decision replay and consistency

Source: AF-AST-STD-001, page 89.

A decision shall be reproducible from the same frozen requirements, parameter values, original evidence, calculation version, uncertainty model and role assignments. Two competent reviewers reaching different results shall identify the differing input, predicate, assumption or expertise before closure. Interpretation records may clarify a term but shall not change limits after results are known. Equation inputs shall retain unrounded values.

Verification: Independently replay a selected boundary case and reconcile every difference.

Acceptance / hold rule: The replay produces the same supported state, or the case remains HOLD pending a controlled technical resolution.

63.1 – Domain selection without geographic omission

Source: AF-AST-STD-001, page 90.

The mission owner shall assess every domain in Annex AK and record applicable, not applicable or not yet determined. The scope shall include terrestrial preparation, launch and recovery interfaces as well as the in-space activity. Earth orbit, cislunar and libration-region operations, solar and planetary missions, small bodies, ocean-world exploration and interstellar precursor concepts shall not be excluded solely because they differ from conventional satellite operations.

Verification: Compare the mission concept and responsibility map with all Annex AK domain rows.

Acceptance / hold rule: Every domain has a reasoned disposition. Any unassessed domain that can affect a required outcome remains HOLD.

63.3 – Environment, phase and mode matrix

Source: AF-AST-STD-001, page 90.

For each applicable domain, define mission phase, operating mode, intended duration, exposure, interfaces, repairability, accessible evidence and credible degraded states. Include dormant storage, transport, separation, commissioning, routine service, communication outage, servicing, retirement and loss-of-mission conditions when relevant. A qualification for one phase shall not automatically cover another phase with different loads, resources or observability.

Verification: Review the complete phase-by-mode matrix and its verification links.

Acceptance / hold rule: Every safety-, mission- or claim-relevant cell has accepted evidence or an explicit restriction; no essential unexamined cell is passed by analogy.

63.5 – Unknown and future environments

Source: AF-AST-STD-001, page 91.

For a novel environment or technology, the technical owner shall document known conditions, uncertain mechanisms, missing measurements, model limitations and the evidence needed to resolve them. Restricted research may continue only inside its approved protective boundary. An operational or conformity claim shall not be issued until the essential criteria and evidence are complete. Existing equations shall not be extrapolated beyond their validity without a tested justification.

Verification: Examine novelty analysis, experiment authority and unresolved-condition register.

Acceptance / hold rule: Unknown essential behaviour is not recorded as safe or conforming. Development status and permitted work are explicit.

63.6 – Interface and lifecycle closure

Source: AF-AST-STD-001, page 91.

The scope shall include relevant upstream and downstream duties, including supplied design data, ground services, communications, receiving facilities, environmental custody and long-term records. Transfers shall identify the sender, receiver, evidence and acceptance. A contractor delivering one subsystem shall not be made responsible for unrelated mission duties, but an integrator shall not exclude duties it retains because they are performed by others.

Verification: Trace each interface to an accountable performer and retained owner.

Acceptance / hold rule: No essential responsibility, evidence handover or terminal obligation is orphaned.

64.2 – Geometry, reference frames and event time

Source: AF-AST-STD-001, page 92.

Trajectory- and geometry-dependent information shall identify frame origin, orientation, epoch, time scale, units, state covariance and transformation version. An exchanged position or orientation shall not be accepted without enough metadata to transform it consistently. Surface-relative, body-fixed, inertial and local engineering coordinates shall remain distinct. Event time, receipt time and ground processing time shall not be merged.

Verification: Recompute selected transformations and challenge wrong-frame and stale-epoch inputs.

Acceptance / hold rule: Transformations meet the approved error and time bounds; incompatible or ambiguous metadata produces HOLD.

64.5 – Heritage and similarity

Source: AF-AST-STD-001, page 92.

A heritage argument shall compare actual design, materials, manufacturing source, mission exposure, software, interfaces and life history. Identify unchanged evidence, invalidated evidence and new demonstration. Successful service of a related design shall be accepted only for characteristics and mechanisms it actually supports. Lack of a recorded failure shall not prove performance of an unmonitored critical characteristic.

Verification: Review a difference matrix and trace each retained conclusion to applicable original evidence.

Acceptance / hold rule: Every material difference has a technical disposition and sufficient evidence before the new claim is accepted.

68.7 – Status and long-term custody

Source: AF-AST-STD-001, page 101.

Closure shall record whether an asset is operating, restricted, dormant, disposed, lost or unknown using verified evidence and defined meanings. Loss of communication shall not be labelled successful disposal. Assign remaining notices, monitoring and records to an actual custodian. A closed commercial contract does not close an unresolved technical or environmental obligation.

Verification: Trace final-state evidence and accepted transfer of residual duties.

Acceptance / hold rule: Terminal claims match observed or explicitly bounded inferred states, and every continuing duty has a receiving owner.

74.7 – Disposition and residual responsibility

Source: AF-AST-STD-001, page 113.

Final disposition shall identify sample, container, residue, facility, record and long-term custody obligations. Transfer shall include receiving acceptance and usable evidence. Mission completion shall not terminate a continuing protection or scientific-record duty. The custodian shall preserve genuine access conditions and correction channels after organisational closure.

Verification: Trace final-state evidence and accepted residual duties.

Acceptance / hold rule: No required custody or protection obligation is abandoned and no unverified disposal is claimed complete.

75.3 – Essential variables and remote monitoring

Source: AF-AST-STD-001, page 114.

The qualified envelope shall identify influential variables, combinations, tolerances, monitoring performance and reaction rules. Retain actual variable histories, interruptions and sensor gaps by output identity. Remote telemetry shall support acceptance only for properties and mechanisms demonstrated to be observable or validly inferred. A successful process command does not prove the intended material transformation occurred.

Verification: Review representative qualification, sensor/model validation and raw production history.

Acceptance / hold rule: All required variables and output characteristics are supported; an unobservable essential property requires additional evidence or a restricted outcome.

75.7 – Handover, resource claims and closure

Source: AF-AST-STD-001, page 115.

The final claim shall state actual production, quality, quantity, conditions, uncertainty, exclusions and accepted receiving responsibility. Demonstration of a resource process creates no ownership, extraction right or operating permission. Waste, residues, hazardous inventories and long-term custody shall have accepted disposition.

Verification: Reconcile reported outputs, accepted products, rights/permissions and final-state evidence.

Acceptance / hold rule: The claim is bounded to measured and accepted achievement; undeveloped scale-up and unknown disposition remain separate.

77.2 – Campaign design and article pedigree

Source: AF-AST-STD-001, page 118.

Define qualification articles, flight or service articles, specimens, representative differences, prior exposure, fixtures, operating modes and cumulative test sequence. Identify which conclusions may be transferred between articles and why. Failed tests, repairs and substitutions shall remain in the same historical chain.

Verification: Review specimen-to-product and test-to-configuration equivalence records.

Acceptance / hold rule: All material differences and accumulated effects are evaluated before evidence reuse; unrepresentative essential evidence is not accepted.

77.3 – Measurement and uncertainty readiness

Source: AF-AST-STD-001, page 118.

Before execution, verify instrument identity, calibration, range, bandwidth, synchronisation, environment, software, raw-data retention and uncertainty suitability. Sensor placement and spatial coverage shall represent the characteristic being accepted. Protect the article and personnel through separately specified stop conditions.

Verification: Inspect the full measurement chain and execute relevant readiness checks.

Acceptance / hold rule: All required channels are valid for the intended inference; a missing, saturated or misconfigured critical channel prevents that acceptance.

77.5 – Original data and invalid tests

Source: AF-AST-STD-001, page 118.

Retain actual setup, input and response histories, environmental conditions, interruptions, alarms, raw files, corrections, uncertainty and validity classification. An invalid run shall state what evidence remains usable and which requirement is not demonstrated. A repaired or changed article shall not silently replace the originally failed configuration.

Verification: Reconstruct a selected run from raw data and contemporaneous records.

Acceptance / hold rule: The run is independently interpretable and no failed, invalid or missing evidence is concealed.

77.6 – Numerical and attribute acceptance

Source: AF-AST-STD-001, page 119.

Quantitative decisions shall use the prospectively selected predicate and uncertainty rule. Attribute decisions shall name observable states and essential steps rather than unstructured judgement. Equality at an inclusive limit is handled as specified; empty acceptance regions, invalid units and non-finite values produce HOLD. Rounding shall not change an outcome.

Verification: Replay boundary, negative and missing-input cases using Annex AL and Annex AM.

Acceptance / hold rule: The correct state follows deterministically from valid unrounded inputs and the approved predicate.

77.7 – Retest and corrective verification

Source: AF-AST-STD-001, page 119.

Retest shall follow an approved rationale, defined scope and representative configuration. It shall preserve the original failure and address causal, exposure and selection effects. Repeated trials until a pass occurs are not an acceptance strategy. Corrective verification shall include the original failure mode and relevant regression, not merely a new favourable measurement.

Verification: Review the retest authorisation, all attempts and failure-to-correction trace.

Acceptance / hold rule: The original deficiency and affected requirements are demonstrably resolved; otherwise the claim remains failed or held.

78.7 – Recovery and semantic portability

Source: AF-AST-STD-001, page 121.

Export and recovery shall preserve identities, scope, configuration, evidence states, decisions, history, units, time basis, permissions and relationships. Equal file counts do not establish equal meaning. Reconcile events after the recovery point and obtain receiving acceptance before cutover. Service availability and evidence-integrity acceptance are separate.

Verification: Execute missing-link, wrong-version, interrupted-write, expired-authority and restore tests.

Acceptance / hold rule: All essential records and relationships are usable and correct; unresolved evidence loss keeps dependent decisions on HOLD.

79.5 – Terminal evidence and responsible transfer

Source: AF-AST-STD-001, page 122.

Terminal-state claims shall specify the exact intended condition, permitted inference, observation method, resources and residual duties. Transfer shall preserve custody and receiving acceptance of records, hazardous inventory, notices, monitoring and unresolved remedies. A file sent or contract ended is not accepted closure.

Verification: Reconcile final-state evidence, inventory and recipient acknowledgement.

Acceptance / hold rule: Every required terminal criterion is demonstrated or openly limited, and every remaining duty has an actual receiving owner.

80.1 – One complete application schedule

Source: AF-AST-STD-001, page 124.

The schedule shall join the object tuple, F01–F08 selection, Annex AK domains, phase/mode matrix, required methods, parameter records, competence, evidence, independent decisions and continuing controls. All triggers in Annex AO shall be resolved. Shared records may be reused after relevance review, but shall not merge distinct objects, outcome classes or actual authority.

Verification: Reconcile the full schedule with Clauses 1, 4, 62 and 63 and Annex C.

Acceptance / hold rule: No essential scope, parameter, responsibility or evidence field remains undefined before a positive decision.

80.2 – Domain and verification completeness

Source: AF-AST-STD-001, page 124.

Map every applicable domain and requirement to valid verification and to an accountable conclusion. Treat domain counts, test counts and completed checklist percentages as planning measures only. Annex T is not exhaustive of all future methods; a newly discovered material mechanism shall create a controlled additional requirement and evidence task before the affected claim proceeds.

Verification: Perform forward and reverse traceability and inspect omitted-domain reasons.

Acceptance / hold rule: Every applicable condition passes or has a justified approved N/A; no HOLD or FAIL is hidden by a coverage percentage.

80.5 – Continuing conformity and change

Source: AF-AST-STD-001, page 124.

Maintain surveillance, technical validity, people, resources, configuration, monitoring and actual state history under the controlling clocks. Mission, environment, population or technology changes shall trigger impact review before expanded reliance. Restoration shall preserve expiry unless a full renewal has occurred and shall not validate the suspended interval.

Verification: Audit actual completion, change and status records rather than scheduled dates alone.

Acceptance / hold rule: The current claim remains fully supported; overdue or invalidated conditions trigger the applicable restriction, suspension or withdrawal.

80.6 – Completion boundary

Source: AF-AST-STD-001, page 125.

The final document is a requirement and evidence framework. Each actual mission and technical profile shall complete its numerical limits, specialist procedures, permissions and validation. Newly authored provisions shall follow the real adoption process before binding live use. No statement in this publication guarantees that every undiscovered physical phenomenon or future technology has already been validated.

Verification: Review the final release dossier and the truthful distinction between prepared text and real implementation.

Acceptance / hold rule: Only the exact demonstrated and authorised scope is released; incomplete domains remain available for controlled development, not presumed conformity.

Appendix B — Local adoption, validation and receiving acceptance

Gate	Required evidence	Outcome when incomplete
Authority and identity	Actual operator, scoped mandate, permissible result class, named owner, independent decision and remedy functions.	No live scope release.
Requirement population	All applicable clauses and annexes mapped to child conditions, with reasons and independent approval for exclusions.	HOLD the affected conclusion.
Parameters and methods	Prospective values/attributes; technical basis; valid methods; representativeness; calibration, uncertainty and approved predicates.	No dependent acceptance.
People and evidence	Current demonstrated competence; conflict clearance; original usable source evidence; actual configuration and event times.	Reassign or obtain sufficient evidence.
Local tools and tests	Actual deployment tested with positive, boundary, missing, invalid and prohibited inputs; original failed cases retested.	No consequential reliance on unaccepted tools.
Independent closure	Every mandatory requirement PASS, approved N/A, all in-scope nonconformities verified closed, panel rules where required.	No grant, renewal or extension.
Claims and continuity	Decision-linked scope/status; source history; genuine custody, receiving access, retention, urgent notices and terminal duties.	Restrict publication or transfer until resolved.

Record authentic approval and activation in AF-AST-FR-001 and AF-AST-SC-004 or an equivalent controlled record. The edition label is not an effective date for a particular case. Preserve historical decisions under their actual controlling basis; a newer document does not retroactively create missing competence or evidence. Source: Clauses 4, 31, 61, 62 and 80; Annexes P and AR.

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