



AF 9100:2026

Aerospace Quality Management System

WORK INSTRUCTION

Prospective Technical-Parameter Completion

AF-WI-9100-002

FIRST EDITION

30 September 2026 | English master text

Publication identity and application

Control	Publication value
Title	Prospective Technical-Parameter Completion
Document code	AF-WI-9100-002
Edition / language	FIRST EDITION / English master text
Companion edition identity	30 September 2026
Controlling source	AF 9100:2026 — FIRST EDITION — 29 September 2026
Responsible owner function	Local implementation owner
Primary source anchors	2.2, AA.2, M, AD.1
Delivery status	Prepared implementation companion. Actual approval, adoption, effectivity and operational decisions are recorded separately.

Use and document-control boundary

This companion implements the supplied AF 9100 requirement basis without changing the original standard. Its process allocation, examples, checklists and record design are authored implementation material. Actual mission or product limits, specialist procedures, permissions and genuine observations must be completed before consequential use. Applicable source minima and independent decision conditions cannot be reduced by this companion.

The printed edition date identifies the companion series; it is not evidence that later preparation, review or operational decisions occurred on that date. New support codes in this set are proposed allocations for controlled registration. Established AF-IG-9100-001, AF-FAQ-9100-001 and AF-TR-9100-001 identities are retained; earlier files, the corporate master list and ASTRA codes are not overwritten.

Equivalent combined or digital records are permitted when all required fields, relationships, authority and history remain intact. A completed PDF field or typed name is not evidence of an authenticated approval. Blank records in this delivery contain no invented applicant, signature, event or result.

Contents and reading route

Publication identity and application	2
Contents and reading route	3
1 Purpose and controlled work	4
2 Detailed work sequence	4
3 Safe adverse-case execution matrix	5
4 Actual execution and verification record	6
Appendix A — Controlling source and evidence	7
Source tables — complete field and decision payloads	9

Select actual scope → complete application criteria → use the applicable procedure and technical book → capture authentic evidence → evaluate every applicable condition → obtain the required independent decision. Document availability does not establish implementation or conformity.

1 Purpose and controlled work

Use this instruction within the adopted local process and exact source scope. It supports reproducible execution but does not replace the complete applicable AF requirements or actual technical authorization.

2 Detailed work sequence

1. Identify the object and phase

Record route, configuration, actual environment, site, duty, phase, mode and assessed period.

2. Derive the real value

Use the actual technical and obligation basis, sensitivity, required reserve and supporting evidence; a convenient applicant-selected number is not sufficient.

3. Define variables and boundaries

Name symbols, units, inclusive/exclusive limits, reference frame, time scale and scenario conditions.

4. Define the method and uncertainty

Set measurements, sampling, model domain, corrections, covariance, coverage and the prospective acceptance rule.

5. Obtain competent approval

Record independent challenge where required and freeze the complete schedule before evaluating results. Do not invent missing signatures or dates.

6. Maintain difference control

When conditions change, assess affected historical evidence, revised qualification and actual effectivity before broader reliance.

3 Safe adverse-case execution matrix

Challenge	Required behavior
Missing essential criterion	HOLD; complete the prospective technical basis.
Wrong object or loaded configuration	HOLD; reconcile identity and relevant verification.
Invalid measurement or negative uncertainty	HOLD; reject invalid input and review affected conclusions.
Interval overlaps the limit under DR-A	HOLD; neither demonstrated conformity nor proven physical defect.
Valid essential failure with high total score	FAIL / no dependent positive release.
Open minor at new attestation	No grant, renewal or extension until verified closure.
Evaluator approves own third-party case	Block assignment; require competent independent decision.
Expired person authority at event time	Block dependent reliance; later renewal does not repair the past.
Unavailable source labeled N/A	Reject exclusion; restore the not-demonstrated state.
A test record is published as live	Stop publication and isolate the test system.
Missing evidence link after recovery	Hold assured use until semantic integrity is established.
Same file count, wrong current status	Fail reconciliation and correct the affected state.
Appeal used to revive suspended status	No automatic reinstatement or extension.
Suspension clock reset with new number	Reject reset; preserve original resolution deadline.
Closed provider without receiving custodian	Incomplete closure; assign and accept continuing duties.

4 Actual execution and verification record

Test / work item ID and exact source

Actual local system, method or calculation baseline

Preconditions and input / protected test environment

Independently specified expected behavior

Actual steps and observed result / raw evidence

Original defect, consequences and affected prior outputs

Correction, original-case retest and regression

Tester, reviewer and genuine acceptance / unresolved restrictions

Appendix A — Controlling source and evidence

Source: AF 9100:2026, Aerospace Quality Management System, FIRST EDITION, 29 September 2026; supplied 131-page PDF. Source page references below locate the original publication. These excerpts are read with the complete applicable standard; local implementation sequences do not replace it.

2.2 Controlled program and application profile

SOURCE p. 10 | Normative when applicable

2.2(a) Before evaluation or acceptance, the responsible technical authority shall approve an application profile defining the object, configuration, intended use, operational domain, applicable obligations, measurable criteria, verification methods, uncertainty treatment, sampling rationale and release limits. The profile shall be detailed enough for different competent evaluators to reach comparable conclusions.

2.2(b) Product tolerances, loads, environmental qualification levels, service performance limits and role-specific practical tasks shall be derived from the actual application. This standard does not invent one engineering limit for unrelated aircraft, spacecraft, vehicles, ships, plant or occupations. Absence of an adequate profile shall block a claim requiring that profile.

2.2(c) A controlled obligation register shall identify binding law, customer commitments, approved technical data, test procedures and authority decisions with their applicable editions, owners and change triggers. Such inputs may be legally or contractually necessary without becoming external normative references in this AF publication.

Required evidence: Approved application profile; technical rationale; criteria and methods; obligation register; change controls.

M.1 Verification-method and acceptance planning

SOURCE p. 73 | Normative when applicable

M.1(a) The organization shall identify the requirement, method, configuration, conditions, equipment, data, uncertainty, acceptance rule and responsible reviewer for each verification activity. Acceptance and abort criteria shall be defined before execution.

M.1(b) The test basis shall justify environmental profiles and margins using the actual duty, applicable technical requirements and limitations of the test article. This standard does not prescribe a single vibration, shock, fire, thermal-vacuum, EMC or load profile for every product.

M.2 Anomalies, retest and evidence exclusion

SOURCE p. 73 | Normative when applicable

M.2(a) Test anomalies shall be recorded with actual conditions and potential effects on validity. The decision to repeat, modify or exclude a result shall be technically justified and approved. All original results shall remain traceable.

M.2(b) Retesting after a repair or software change shall identify the changed configuration and the extent of regression needed. Repeating only the previously failed check shall not be sufficient when the change can affect other requirements. A pass after uncontrolled tuning shall not be represented as the result of the original plan.

M.3 Qualification by similarity and analysis

SOURCE p. 74 | Normative when applicable

M.3(a) Use of similarity shall identify the reference article, verified evidence, differences and their effects on relevant failure mechanisms. The organization shall demonstrate that the prior evidence bounds the new configuration and conditions.

M.3(b) Analysis-based acceptance shall record the model, assumptions, validation, uncertainty and sensitivity. An independent reviewer shall be able to reproduce material calculations from the retained inputs. Unsupported similarity statements shall remain open evidence gaps.

AA.2 Application profile requirements

SOURCE p. 103 | Normative when applicable

AA.2(a) The profile shall define the evaluated object, version, intended use, operating or task domain, characteristics or competences, acceptance criteria, methods, samples, uncertainty or scoring rules, required

evidence, critical failures, surveillance and change triggers. The technical profile owner shall be identified and competent to approve those criteria.

AA.2(b) A PRD profile shall state relevant performance, environmental, safety, interface and life criteria. A SVC profile shall state delivery outcomes and observation windows. A PRC profile shall state essential variables and qualified ranges. A PER profile shall state tasks, prerequisites, knowledge and practical demonstration. SUB and CAB profiles shall state the actual work or assessment capability.

AA.2(c) The profile shall be approved before evaluation. It may add requirements but shall not waive AF minima or mandatory obligations. Where methods or limits are missing, the application shall be held until competent technical definition is available; broad references to “good quality” or “all aerospace uses” are not adequate criteria.

Required evidence: Approved profile with technical criteria; method and decision matrix; critical-failure list; profile change history.

AD.1 Decision basis and non-compensable conditions

SOURCE p. 112 | Normative when applicable

AD.1(a) Before evaluation, the responsible authority shall define the object, applicable requirements, criterion for each characteristic or competence, evidence needed, uncertainty treatment, required independence and permitted outcomes. Criteria shall not be selected retrospectively to obtain a favorable result.

AD.1(b) Every applicable mandatory criterion shall be fulfilled for a positive initial conformity attestation. No aggregate score, favorable delivery performance, commercial benefit or passing result in an unrelated area shall compensate for an unmet mandatory requirement, missing critical evidence or unresolved unacceptable risk.

AD.1(c) A technical release may include a lawful, explicitly approved concession for a bounded departure where the underlying technical and contractual framework permits it. The record shall identify that departure; it shall not falsely state that the original requirement was fulfilled. A concession cannot waive a mandatory legal approval or alter the AF requirements for an attestation.

Required evidence: Pre-agreed decision basis; complete criterion register; blocker review; concession and release distinctions.

Source tables — complete field and decision payloads

Table M-1 — Test-plan and report data requirements

Source p. 73 | Required structure when applicable

Area	Required content
Identity	Program; requirement IDs; test/report IDs; revision; article serial/lot; hardware/software configuration.
Objective	Claim being evaluated; acceptance criteria; excluded claims; required confidence or coverage.
Method	Procedure; setup; sequence; conditioning; instrumentation; sampling; data processing; approved deviations.
Environment	Relevant physical conditions, profiles, tolerances, duration, interfaces and monitoring locations.
Measurement	Equipment identity, calibration, range, resolution, uncertainty, correction and decision rule.
Safety and authority	Test authorization, hazards, limits, abort criteria, emergency arrangements and responsible personnel.
Execution	Actual date/time, performer, observations, raw data, environmental records, anomalies and interruptions.
Analysis	Calculations, software/tools, assumptions, exclusions, uncertainty, comparison with criteria and limitations.
Review	Technical review, independent review when required, anomaly disposition and authorized conclusion.
Retention	Raw and processed data, configuration, photographs where useful, records location, access and retention.

Table M-2 — Qualification-domain matrix

Source p. 73 | Required structure when applicable

Domain	Program-specific basis to establish	Evidence limitations to address
Mechanical / structural	Loads, dynamics, fatigue duty, attachment, shock/vibration and structural acceptance.	Boundary conditions, scaling, article representativeness and cumulative damage.
Thermal / climatic	Temperature, humidity, icing, dust, salt, altitude and cycling as applicable.	Dwell, gradients, condensation, combined environments and service duration.
Space environment	Vacuum, thermal balance/cycling, radiation, charging and contamination.	Mission equivalence, dosimetry, material behavior and inaccessible damage.
Electrical / EMC	Power quality, transients, emissions, immunity, grounding, ESD and relevant external fields.	Installation effects, cable configuration, modes, frequency coverage and failure criteria.

Domain	Program-specific basis to establish	Evidence limitations to address
Fire / hazardous energy	Applicable ignition, containment, propagation, smoke or emergency requirements.	Scale, ventilation, material state, energy inventory and authorized facility capability.
Software / digital	Requirements, interfaces, timing, robustness, security and configuration.	Coverage, target equivalence, systematic defects and tool limitations.
AI / autonomy	Domain, scenario coverage, data quality, performance, fallback and intervention.	Distribution shift, rare conditions, confidence and authority boundaries.
Human-system / operations	Representative users, tasks, workload, emergency and maintenance conditions.	Participant representativeness, learning effects and simulated-environment limits.

Table AA-2 — Minimum profile fields

Source p. 103, 104 | Required structure when applicable

Field group	Required information
Identity and ownership	Profile ID, revision, route, owner, technical approver, issue date and affected claims.
Object and domain	Exact object/configuration, sites, relevant users, operating or task conditions and exclusions.
Obligations and criteria	Requirement IDs, quantitative limits or defined attributes, legal and customer constraints, essential controls.
Evaluation design	Methods, test conditions, samples, representativeness, uncertainty, validity checks, required independence.
Decision	Pre-agreed passing rules, critical failures, treatment of unavailable evidence and nonconformities, decision authority.
Continuing basis	Surveillance, expiry or instance boundary, change triggers, renewal and retained support obligations.
Records and claims	Required reports, retention, authorized public statement, privacy and mark restrictions.