



AF 9100:2026

Aerospace Quality Management System

PROCEDURE

Resources, Facility Integrity, Equipment and Tooling

AF-PR-9100-007

FIRST EDITION

30 September 2026 | English master text

Publication identity and application

Control	Publication value
Title	Resources, Facility Integrity, Equipment and Tooling
Document code	AF-PR-9100-007
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	Operations and facility technical manager
Primary source anchors	7.1, 7.4, 8.5.1.1, 17
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.

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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 Scope, responsibility and source priority

Applies to the responsible function and exact evaluated object selected from the source. Use only the duties triggered by actual activity and retained responsibility.

Boundary	Required implementation decision
Object and route	Identify ORG, PRD, SVC, PRC, PER, SUB or CAB separately. Combined records do not merge outcomes.
Activity	Apply source technical modules by performed or retained responsibility, including relevant outsourced work.
Authority	Technical release, employer task permission, independent attestation and statutory authorization remain distinct.
Source priority	AF 9100:2026 and all compatible binding obligations control. This companion does not import ASTRA programme rules or external normative schemes.

2 Trigger, inputs and handover

Trigger: New equipment, capacity increase, facility change, maintenance intervention or loss of essential utility.

Accountable process owner: Operations and facility technical manager. Actual named appointments and deputies are maintained locally.

Input to verify	Required output / receiving function
Exact request, object and source profile	Accepted scope and controlled work package, or a reasoned hold/refusal.
Current people, authority, data and equipment	Authorized assignment and evidence-access boundary.
Original execution, adverse evidence and source history	Attributable result, identified limitations and required action.
Relevant source clocks and actual event times	Genuine due/completion history and timely recipient communication.

3 Operating sequence

3.1 Establish duty and capacity

Define product or service demand, inspection and rework load, technical limits, specialist staffing, utilities and independent review demand. Count actual available capacity, not installed nameplate totals.

3.2 Qualify the infrastructure

Check the approved design and installation basis, foundations and alignment where relevant, compatible utilities and environmental conditions. Identify hidden work needing acceptance before concealment.

3.3 Validate tools and programs

Link each tool, fixture, machine and controlling program to intended use, range, configuration and demonstrated output capability. Include failure behavior and unauthorized-edit prevention.

3.4 Commission protectively

Use an authorized readiness plan for completion, functional and integrated tests. Separate test acceptance from protective stop conditions; a failed interlock remains a blocking item.

3.5 Maintain and manage temporary states

Record maintenance, storage, checks, calibration, bypasses and repairs. Temporary changes need bounds and restoration evidence; schedule pressure does not authorize indefinite overrides.

3.6 Accept return and reassess outputs

After repair, relocation or software change, verify relevant functions and output validity. Assess prior affected work independently of equipment restoration and update the asset record.

4 Decision, interruption and escalation

Missing protective-function evidence or insufficient actual capability prevents operational acceptance.

State or event	Action and limit
Evidence valid and criteria met	Record the bounded result and pass it to the authorized receiving function; do not enlarge scope.
Evidence missing, invalid or inconclusive	Keep the dependent conclusion not yet demonstrated / HOLD, preserve the reason and define competent next work.
Valid evidence demonstrates failure	Record nonconformity and protect the affected population; follow actual technical disposition and source status controls.
Trigger genuinely absent	Record the exclusion and its approved responsibility basis. Resource shortages do not justify N/A.
Interrupted or changed work	Preserve prior state and actual configuration; complete impact and revalidation before claiming completion.

5 Required records and receiving checks

Document	Record purpose
AF-FR-9100-017	Resources, Facility and Tool Commissioning
AF-FR-9100-018	Calibration, Method Validity and Uncertainty Budget
AF-FR-9100-029	Cyber Incident, Update and Assured Recovery

At handover the receiver checks object, scope, current version, original evidence, open conditions, true event chronology and the action they may authorize. An email sent, field marked complete or invoice paid is not acceptance of that handover.

6 Worked case and adverse challenge

Synthetic scenario: A test stand starts after maintenance but its protective isolation check fails.

Required reasoning: Hold the affected operation, preserve the failed test and correct and retest isolation. Successful ordinary operation is not evidence of restored protection.

Challenge before local use	Expected behavior
Missing essential input	Dependent conclusion remains held; no favorable default.
Wrong configuration or performer	Detect the mismatch and reassess relevant evidence.
Expired or conflicted authority	Block the prohibited assignment or decision; later renewal cannot validate earlier unauthorized work.
Failed mandatory condition with high total score	No compensation; preserve the failure and required action.

Challenge before local use	Expected behavior
Correction without original history	Reject an apparent closure that erases relevant earlier evidence.

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.

7.1 Resource and capacity assurance

SOURCE p. 17 | Normative when applicable

7.1(a) The organization shall determine and provide resources necessary for planned work and credible contingencies. Capacity reviews shall consider competent personnel, equipment availability, maintenance, inspection, independent review, supplier capacity and expected rework. Inspection capacity shall not be assumed unlimited when production volume increases.

7.1(b) Before accepting accelerated schedules or significant volume changes, the organization shall verify that resources and controls remain adequate. Unfunded assurance activities shall be escalated rather than silently removed. Resource plans shall include lifecycle support and retention of necessary technical knowledge.

Required evidence: Capacity reviews; staffing and equipment plans; constraint decisions; lifecycle-support commitments.

7.4 Infrastructure, utilities and facility integrity

SOURCE p. 18 | Normative when applicable

7.4(a) Facilities, utilities, equipment, communication systems and supporting software shall be suitable for intended operations and maintained. Critical infrastructure shall have defined operating limits, inspection or maintenance requirements, condition monitoring and contingency arrangements.

7.4(b) Changes to foundations, equipment layout, utilities, environmental controls or network connections shall undergo impact review. Commissioning shall verify configuration and protective functions before production or service use. Where facility condition can influence measurement or process output, the condition shall be recorded or monitored.

Required evidence: Infrastructure register; maintenance and commissioning records; utility limits; facility change reviews.

8.5.1.1 Equipment, tooling and production software

SOURCE p. 24 | Normative when applicable

8.5.1.1(a) Equipment, tooling, fixtures and software used to create, control, inspect or measure outputs shall be verified or validated before release for use. The assessment shall include the actual application, configuration, interfaces, failure behavior and ability to maintain required characteristics.

8.5.1.1(b) Maintenance, storage, preservation and periodic condition checks shall be defined. Tool repairs, software updates, relocation and changes to compensation parameters shall trigger an impact-based revalidation decision. Access to editable machine programs shall be restricted and changes traceable.

Required evidence: Tool and software qualification; controlled programs; maintenance; storage checks; revalidation records.

17.1 Industrial system boundary and lifecycle integrity

SOURCE p. 35 | Normative when applicable

17.1(a) The organization shall define the industrial asset or service boundary, design basis, operating limits, interfaces and lifecycle responsibilities. Heavy machinery, process equipment, energy infrastructure, lifting systems and supporting civil works shall be included when they affect the assured output.

17.1(b) Applicable engineering codes, statutory inspections and operating authorizations shall be identified in the program register. This standard provides assurance requirements, not a replacement design code for structures, pressure systems, nuclear installations or lifting equipment.

Required evidence: Asset design basis; boundary drawings; applicable-code register; lifecycle responsibility allocation.

17.2 Mechanical integrity and essential services

SOURCE p. 35 | Normative when applicable

17.2(a) Critical equipment shall have design, material, fabrication, inspection, maintenance and degradation-management evidence appropriate to the duty. Pressure, temperature, load, corrosion, fatigue, vibration and protective-function limits shall be identified as relevant.

17.2(b) Essential utilities and protective systems shall be evaluated for dependency and common-cause failure. Bypasses, overrides and temporary repairs shall have authorization, duration, compensating controls and restoration verification. An operational plant shall not be presumed conforming because it has not yet failed.

Required evidence: Integrity-management plan; equipment dossiers; degradation assessments; override and temporary-repair controls.

17.3 Fabrication, installation and construction interfaces

SOURCE p. 35 | Normative when applicable

17.3(a) The organization shall control materials, fabrication procedures, welds or joints, inspection stages, dimensional interfaces and installation sequence. Construction or installation changes shall be assessed against the approved design basis before concealment or energization.

17.3(b) Foundation, alignment, anchorage, lifting, access and utility interfaces shall be verified where relevant. Hidden work shall have inspection evidence before it becomes inaccessible. The final as-built record shall reflect actual installed conditions, not only the original drawings.

Required evidence: Fabrication and installation records; hidden-work inspections; alignment and interface checks; as-built configuration.

17.4 Commissioning and operational readiness

SOURCE p. 36 | Normative when applicable

17.4(a) Commissioning shall follow an approved plan separating completion checks, functional verification, integrated testing and operational acceptance. The plan shall define safe test conditions, competent personnel, isolation, emergency arrangements and acceptance criteria.

17.4(b) Before handover, protective functions, alarms, interlocks, training, maintenance, spare parts and operating instructions shall be verified. Open items shall be classified according to whether they prevent safe or conforming operation. Production pressure shall not reclassify a blocking item as cosmetic.

Required evidence: Commissioning plan; test records; protective-function verification; open-item disposition; handover acceptance.

17.5 Asset inspection and condition-based maintenance

SOURCE p. 36 | Normative when applicable

17.5(a) Inspection and maintenance intervals shall be based on applicable obligations, consequence, degradation mechanisms, duty and evidence. Condition-monitoring models shall be validated for their decision purpose and shall not remove mandatory inspections without authorized justification.

17.5(b) Inspection findings shall be trended and connected to remaining-life or repair decisions made by competent technical authorities. Changes in duty or environment shall trigger reassessment. Absence of an alarm shall not establish integrity when the monitoring system cannot detect the relevant failure mode.

Required evidence: Inspection strategy; condition data; detection capability; remaining-life or repair decisions; interval review.

17.6 Industrial modernization and decommissioning

SOURCE p. 36 | Normative when applicable

17.6(a) Retrofits and modernization shall assess compatibility between legacy and new systems, undocumented conditions, cybersecurity, protection functions and operational procedures. Existing equipment shall not be assumed equivalent to current design records without verification.

17.6(b) Decommissioning shall plan isolation, hazardous inventories, structural stability, data retention, waste handling and prevention of unauthorized reuse. Transfer or sale of used equipment shall accurately state condition, known limitations and missing evidence.

Required evidence: Modernization assessment; verified legacy baseline; decommissioning plan; disposition and transfer records.

Appendix B — Local implementation and release

Readiness condition	Evidence before consequential use
Authority and responsibility	Actual legal operator, owner, competent technical authority, independent reviewer and permitted result class are recorded.
Scope and criteria	Object, configuration, site, period, trigger, every technical value or observable attribute, units and prospective approval are complete.
Evidence and methods	Original accessible evidence, representative observations, valid methods, uncertainty, adverse cases and limitations support the intended conclusion.
People and independence	Competence is current for each task; genuine conflicts, relevant prior work and needed separation have been checked.
Records and tools	Field meanings, unique IDs, original history, access, retention, recovery and actual deployed workflows have passed local validation.
Decision and public use	All relevant blockers are resolved; required independent decision and written permissions precede the exact public claim.
Continuity and handover	Receiving custody, unresolved duties, corrections and historical decisions survive transfer, retirement or provider closure.

Record the completed local readiness and actual authorization in AF-FR-9100-032 or an equivalent controlled record. Preserve the unchanged source standard and each earlier decision basis. A blocked activity may continue only within a genuinely permitted development boundary, not as a provisional conformity certificate.