



AF 9100:2026

Aerospace Quality Management System

PROCEDURE

First Article and Production-Readiness Verification

AF-PR-9100-017

FIRST EDITION

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Publication identity and application

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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 product or route, relevant change, work transfer, significant interruption or evidence that prior first article is unrepresentative.

Accountable process owner: Manufacturing quality and product authority. 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 Determine full or partial scope

List changed characteristics and dependencies. Justify every unchanged characteristic for which prior evidence will be retained; a partial first article is not an unexplained shortcut.

3.2 Select the representative article

Record the actual site, line, order, material, tooling, software and work instructions. Confirm the sample comes from the intended production route rather than a specially prepared showcase.

3.3 Account for all characteristics

Map drawings, models, specifications, material, process, digital and functional requirements to unique characteristic IDs and methods. Preserve every compound condition.

3.4 Capture valid actual results

Use numeric results for numeric criteria, units, equipment, corrections and uncertainty where needed. Check material and external process records belong to the article.

3.5 Resolve deviations and review

Retain failed, unverified and repaired characteristics. Obtain technical disposition, required independent checks and applicable customer or design authority approval.

3.6 Decide production readiness

Assess capability, tooling, inspection resources, operators, suppliers and ongoing monitoring beyond the individual conforming article. Define early-production controls and objective exit conditions.

4 Decision, interruption and escalation

A missing mandatory characteristic or unsupported production route prevents a complete first-article conclusion.

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-9100-021	Production Route and First-Article Accountability
AF-FR-9100-022	Process Qualification, Execution and Requalification
AF-FR-9100-023	Sample, Verification Campaign and Technical Report
AF-FR-9100-025	Product Release, Labeling and Delivery Dossier

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 firmware identity check matches but its required function test was not performed.

Required reasoning: Identity and function are separate characteristics. Keep the functional row open and complete the required representative test before closure.

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.

Challenge before local use	Expected behavior
Failed mandatory condition with high total score	No compensation; preserve the failure and required action.
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.

8.5.1.3 Production-process and first article verification

SOURCE p. 24 | Normative when applicable

8.5.1.3(a) The organization shall verify that the planned production route, documentation, equipment and tooling can produce an item meeting requirements. Verification shall use a representative item or other justified approach and account for every applicable characteristic, including material, process, software and interface requirements.

8.5.1.3(b) Repeat verification shall be considered after design, process, source, tooling or location changes, significant interruption or evidence that previous results no longer represent production. Partial verification shall identify and justify the unaffected portion. Approval of first article evidence shall not authorize later process drift.

Required evidence: First article record; characteristic accountability; material/process evidence; differences and repeat-verification rationale.

23.4 Production, unit and lot acceptance

SOURCE p. 42 | Normative when applicable

23.4(a) Each released unit or lot shall be linked to the applicable configuration, material and component origin, approved process route, required inspections and authorized disposition. Critical-characteristic evidence shall not be replaced by a generic certificate of conformity. Any permitted sampling shall meet the application profile and Annex AD.

23.4(b) A known nonconforming sampled unit shall be controlled even when a statistical lot rule permits lot acceptance. Repair, rework and concessions shall preserve identity, life consumption and the distinction between original conformity and an authorized departure. Product acceptance shall follow Clause 8.6 independently of an organization's certificate status.

Required evidence: Unit or lot dossier; critical characteristics; sampling decision; controlled departures; final release record.

K.1 Planning and trigger assessment

SOURCE p. 71 | Normative when applicable

K.1(a) The organization shall define when a full or partial first article verification is required, based on new product, new process, design change, source transfer, tooling change, interruption or evidence that prior verification is no longer representative.

K.1(b) The verification plan shall identify the production-representative item, route, design baseline, material, tooling, software and all applicable characteristics. A partial verification shall list the changed portion and justify the continuing validity of the remainder.

K.2 Characteristic completion rules

SOURCE p. 71 | Normative when applicable

K.2(a) Each applicable drawing, model, specification and interface characteristic shall be accounted for. Results shall be numeric where the criterion is numeric, or use a defined attribute evaluation with traceable evidence. "Pass" without the required actual result shall not be accepted for a variable characteristic requiring retained measurement.

K.2(b) The organization shall verify that material and special-process evidence relate to the actual first article. Unverified characteristics shall remain open. A sample selected for excellent appearance shall not replace a representative production article.

K.3 Production-readiness conclusion

SOURCE p. 71 | Normative when applicable

K.3(a) The readiness conclusion shall consider process stability, tooling, inspection capability, operator competence, supplier readiness and closure of nonconformities, not only one conforming item. Where data are insufficient for capability inference, the limitation and compensating verification shall be recorded.

K.3(b) First article acceptance shall not remove continuing process controls, surveillance or the obligation to reassess after change. The organization shall define any enhanced monitoring for initial production and objective criteria for returning to normal control.

Source tables — complete field and decision payloads

Table K-1 — Required first article record sections

Source p. 71 | Required structure when applicable

Section	Minimum required content
Product accountability	Part/service identity; revision; serial/lot; assembly hierarchy; production order; first article reason and full/partial status.
Production route	Actual site, line, equipment, tools, machine programs, work instructions and applicable revisions.
Material and process evidence	Material identity and certificates; authenticity checks; special-process qualifications; external-source approvals.
Characteristic accountability	Unique characteristic ID; design location; requirement; units; criticality; method; actual result; uncertainty/decision rule where relevant.
Functional and software evidence	Functional requirements; software/firmware configuration; build identity; test procedure and actual results.
Nonconformities	NCR links; technical disposition; repair/rework evidence; required customer or design- authority approval.
Review and release	Completeness check; independent review where required; authorized conclusion; remaining restrictions and records index.

Table K-2 — Filled synthetic characteristic-accountability extract

Source p. 71 | Illustrative or explanatory source table

ID / characteristic	Illustrative requirement	Evidence / actual result	Disposition
K-01 / external dimension	50.000 ± 0.030 mm.	50.0040 mm; U=0.00445 mm, k=2; agreed full-interval rule.	Conformity demonstrated under the example rule.
K-02 / hole pitch	80.000 ± 0.050 mm.	80.0120 mm; U=0.0060 mm, k=2; calibrated coordinate method.	Conformity demonstrated under the example rule.
K-03 / material identity	Material specification MAT-17 rev B.	Lot ML-021; certificate MC-021; identity check IV-021.	Identity and lot linkage verified; no strength claim inferred from appearance.
K-04 / bonded process	Qualified route BOND-04 rev C.	Run BR-116; qualified operator OP-18; process record within approved window.	Process evidence complete.
K-05 / firmware identity	Firmware 2.4.1; build manifest BM-241.	Read-back identity and hash match signed release manifest.	Configuration verified; functional evidence also required.
K-06 / functional interface	Controlled interface test IF-09 rev D.	Report TR-009 records all required checks and one resolved anomaly AN-04.	Accepted only after independent retest and NCR closure.

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.