



# AF-HB-9300-001

## Qualification Review and Decision Handbook

Space / Aviation / Defense

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FIRST EDITION

AF 9300 SUPPORTING DOCUMENT

## Document identity and use

FIRST EDITION MANUSCRIPT - Prepared for Aerospace Federation review

| Field                  | Controlled identity                                                                                                      |
|------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Document               | AF-HB-9300-001 - Qualification Review and Decision Handbook                                                              |
| Parent standard        | AF 9300 - Aerospace Testing, Verification & Qualification                                                                |
| Edition / language     | FIRST EDITION / English master text                                                                                      |
| Family                 | Manuals                                                                                                                  |
| Primary source anchors | 5-7, 15-19, 28-31; Annex L                                                                                               |
| Suggested local owner  | Qualification authority                                                                                                  |
| Authority              | Publisher approval and effective date are not assigned. Local use requires authorized adoption and completed parameters. |

### Use with the main standard

This document implements the identified AF 9300 clauses and annexes. Read the complete applicable requirements in the main standard. The source anchors are navigation references; a template does not replace technical judgement, evidence, permission or eligible approval.

AF-ML-9300-001 lists the complete supporting set. AF-CM-9300-001 maps the main clauses and annexes to working documents. AF-TP-9300-001 establishes the common local parameter baseline; add the relevant discipline profiles.

### Record control

Identify the object, configuration, record owner and dates. Reference attachments by stable identifier and version. Keep superseded evidence and decisions traceable. Use the approved local retention, access and authentication arrangements. No test level, numerical limit, interval or acceptance value is assigned by a blank template.

Implementation model: Translate the stated responsibilities and controls into the actual organization. Informative examples remain explanatory; use approved programme-specific values for operational decisions.

# 1 Frame the decision before collecting evidence

Qualification establishes a bounded basis for a design, process or defined configuration to satisfy specified requirements in stated conditions. The authority first identifies the claim, evaluated level, intended use, configuration and population. The plan distinguishes development learning, formal qualification, item acceptance and operational validation.

## 1.1 Build an explicit evidence strategy

Use AF-FR-9300-003 and AF-RG-9300-001. Decompose compound requirements and select suitable test, analysis, inspection or demonstration methods. Account for environments, interfaces, credible interactions, life and degradation. Define which evidence demonstrates each condition and which assumptions must remain valid. Identify independent review and witness points before execution.

## 1.2 Qualification article philosophy

Use AF-FR-9300-004 to identify articles, their selection and representativeness. Explain departures from production hardware, firmware, materials, interfaces, processing and use. Consider whether instrumentation or over-test changes the object. Record life consumed by qualification and controls on any subsequent use. A convenient available sample is not automatically representative.

# 2 Review the dossier through separate gates

## 2.1 Gate A - baseline and completeness

Confirm exact requirements, programme, method and article baselines. Identify missing work, interrupted exposures and changed conditions. Compare planned and achieved coverage. Missing evidence retains an affected decision on HOLD rather than becoming N/A. Use AF-CL-9300-013 to record individual gaps and owners.

## 2.2 Gate B - evidence validity

Trace accepted results to native observations, achieved conditions, measurement capability and processing lineage. Confirm uncertainty and preapproved decision rules. Examine invalid runs, anomalous observations and retest rationale. Require an evidence-based distinction between an invalid measurement and a valid article failure.

## 2.3 Gate C - requirement dispositions

Review every applicable mandatory condition using AF-FR-9300-002. A favorable overall proportion cannot offset a failed condition. Confirm that N/A has a positive applicability argument and eligible approval. Record how limitations affect the proposed envelope, life, population or permitted use.

## 2.4 Gate D - the qualification decision

Use AF-FR-9300-016. An eligible authority states the approved scope, limitations, unresolved blocked portions and continuing conditions. Where evidence supports only a bounded subset, describe that subset explicitly and identify excluded claims. The decision must not imply unassessed service permissions or a general recognition of the organization.

## 3 Special evidence and challenges

### 3.1 Statistical demonstrations

Use AF-FR-9300-014 and the quantitative companion AF-TR-9300-001. Check population, sampling, model, independence, stopping rules, confidence and censoring. Separate independent demands from repeated testing of one article with common causes. A zero-failure result supports only the bound implied by the model and exposure; it does not establish perfect reliability.

### 3.2 Models and simulation

Use AF-FR-9300-015. Assess intended decision use, model implementation verification, calibration, independent validation, uncertainty and domain. Hold out evidence appropriate to the intended prediction. Do not treat agreement with calibration data as independent validation. State where extrapolation is unsupported and identify physical evidence needed to close the gap.

### 3.3 Reused, supplier and witnessed evidence

Use AF-FR-9300-018. Compare original and receiving configurations, conditions, criteria and methods. Verify access to enough provenance to assess validity. A witness statement records what was actually observed; it does not imply continuous observation. Record unobserved changes and restricted access as limitations that may prevent closure.

## 4 Qualification and item acceptance

### 4.1 Maintain separate decision records

AF-FR-9300-016 records the design/process qualification. AF-FR-9300-017 records acceptance of the identified serial item or lot. The acceptance plan selects checks suitable for manufacturing and delivery defects without assuming those checks demonstrate the complete design life or environment envelope.

### 4.2 Reconcile deviations and concessions

Identify each deviation, its technical effect, permission and scope. A permitted delivery concession does not change the original test outcome or erase a failed design requirement. Where a local acceptance decision is allowed, preserve the exact bounded authority and receiving-party conditions. Ensure the report and configuration records tell the same story.

### 4.3 Final wording of the claim

State what is qualified, against which baseline, within which envelope, on which evidence, by whom and subject to which conditions. Avoid unbounded phrases such as universally suitable or fully compliant when the record contains exclusions. The main standard supplies process and decision controls; actual product performance values come from the approved programme.

## 5 Change, bridging and requalification

### 5.1 Trigger and containment

Use AF-FR-9300-020/021 and AF-RG-9300-010 for design, supplier, material, process, software, use-envelope or evidence changes. New knowledge of a method defect also triggers review. Identify affected configurations and delivered populations, then set provisional restrictions when the existing claim is no longer adequately supported.

## 5.2 Mechanism-based bridge

Compare old and new states through affected mechanisms, interfaces, assumptions and common dependencies. Retain prior evidence only through an explicit applicability argument. Plan new tests or analyses for the actual gaps and include regression where changes can influence apparently unaffected functions. Cost or similarity of names is not a technical bridging argument.

## 5.3 Restoration and notification

Reconcile new evidence, residual limits and receiving documents before restoring or extending the claim. Record approval, effective scope and recipients. Preserve superseded decisions and report amendments. Use the assurance programme to check that actual production, delivery and use remain within the approved essential variables.

# 6 Review meeting and decision record

Circulate the indexed dossier and unresolved questions before the review. Record attendees, eligibility, conflicts, evidence examined, challenges, responses and dissent. Assign each open item an owner and blocked decision. The chair records a bounded conclusion rather than substituting consensus for missing evidence.

**Required evidence:** The signed or otherwise authenticated decision record references the exact evidence package and approval mechanism. Typed names in these templates are attribution fields and do not authenticate themselves.

**Decision control:** Qualification is released only when every necessary condition for the claimed scope is resolved by eligible authority; a partial dossier cannot be promoted by a report title or a favorable summary.