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Aerospace Quality Management System

TECHNICAL PROFILE BOOK

Defense, Maritime and Mission Mobility Assurance — Technical Application Book

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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

Lawful industrial assurance for multi-domain platforms, mission road/off-road vehicles, maritime systems, autonomous interfaces, controlled evidence and long-life support.

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 Technical profile and prospective parameter completion

Contract scope; access authority; duty/terrain/environment; modified configuration; human authority; life history; sub-tier sources; support and disposition

Parameter record	Content required before evaluating results
Identity and trigger	Stable criterion ID, source anchor, owner, actual object, phase, mode and reason it applies.
Limit or attribute	Value/range with compatible units and boundary convention, or an observable state with every essential step.
Technical basis	Actual environment, duty, consequence, derivation, qualified evidence and relevant approval.
Method and representation	Inspection, analysis, demonstration or test; method version, article/population, configuration and validity limits.
Uncertainty and decision	Corrections, model, covariance, coverage, pre-agreed rule, sample/scoring logic and hold conditions.
Authority and change	Technical and independent approvals, actual effectivity, preserved earlier basis and reopening triggers.

The fields above are completed for the actual application. A blank limit, undefined domain or unvalidated method prevents the dependent claim; the book deliberately does not invent one severity, tolerance or task threshold for unrelated applications.

3 Subject-by-subject implementation

16.1 — Defense program assurance and contractual obligations

Source p. 34; complete conditions reproduced in Appendix A.

Implementation record: Defense assurance plan; contractual obligation matrix; access arrangements; approval responsibilities.

Application check: Review every source clause and normative annex against actual activity and retained outsourced responsibility. Record affirmative triggers and reasoned exclusions; lack of resources, a small workforce or another certificate is not an exclusion rationale.

Review boundary: An undefined object, unjustified exclusion or unresolved essential criterion holds admission or acceptance. Record each source condition separately in the linked checklist and preserve approved exclusions.

16.2 — Multi-domain platforms and interfaces

Source p. 34; complete conditions reproduced in Appendix A.

Implementation record: Cross-domain interface baseline; integration tests; safe-state definition; authorized test controls.

Application check: Review every source clause and normative annex against actual activity and retained outsourced responsibility. Record affirmative triggers and reasoned exclusions; lack of resources, a small workforce or another certificate is not an exclusion rationale.

Review boundary: An undefined object, unjustified exclusion or unresolved essential criterion holds admission or acceptance. Record each source condition separately in the linked checklist and preserve approved exclusions.

16.3 — Defense-purpose road and off-road vehicles

Source p. 34; complete conditions reproduced in Appendix A.

Implementation record: Vehicle duty profile; integration impact assessment; configuration-specific qualification; maintenance and transport limits.

Application check: Review every source clause and normative annex against actual activity and retained outsourced responsibility. Record affirmative triggers and reasoned exclusions; lack of resources, a small workforce or another certificate is not an exclusion rationale.

Review boundary: An undefined object, unjustified exclusion or unresolved essential criterion holds admission or acceptance. Record each source condition separately in the linked checklist and preserve approved exclusions.

16.4 — Maritime platforms and underwater systems

Source p. 34; complete conditions reproduced in Appendix A.

Implementation record: Maritime requirement basis; critical-boundary records; process and inspection evidence; deterioration- management plan.

Application check: Review every source clause and normative annex against actual activity and retained outsourced responsibility. Record affirmative triggers and reasoned exclusions; lack of resources, a small workforce or another certificate is not an exclusion rationale.

Review boundary: An undefined object, unjustified exclusion or unresolved essential criterion holds admission or acceptance. Record each source condition separately in the linked checklist and preserve approved exclusions.

16.5 — Autonomy, remote systems and human authority

Source p. 35; complete conditions reproduced in Appendix A.

Implementation record: Authority model; domain constraints; intervention validation; simulation limits; change and release records.

Application check: Review every source clause and normative annex against actual activity and retained outsourced responsibility. Record affirmative triggers and reasoned exclusions; lack of resources, a small workforce or another certificate is not an exclusion rationale.

Review boundary: An undefined object, unjustified exclusion or unresolved essential criterion holds admission or acceptance. Record each source condition separately in the linked checklist and preserve approved exclusions.

16.6 — Controlled technology, ethics and supply integrity

Source p. 35; complete conditions reproduced in Appendix A.

Implementation record: Controlled-technology review; authorized access; due diligence; ethical escalation and disposition.

Application check: Review every source clause and normative annex against actual activity and retained outsourced responsibility. Record affirmative triggers and reasoned exclusions; lack of resources, a small workforce or another certificate is not an exclusion rationale.

Review boundary: An undefined object, unjustified exclusion or unresolved essential criterion holds admission or acceptance. Record each source condition separately in the linked checklist and preserve approved exclusions.

16.7 — Long-life support and obsolescence

Source p. 35; complete conditions reproduced in Appendix A.

Implementation record: Support and obsolescence plan; substitution approvals; field configuration; life and refurbishment records.

Application check: Review every source clause and normative annex against actual activity and retained outsourced responsibility. Record affirmative triggers and reasoned exclusions; lack of resources, a small workforce or another certificate is not an exclusion rationale.

Review boundary: An undefined object, unjustified exclusion or unresolved essential criterion holds admission or acceptance. Record each source condition separately in the linked checklist and preserve approved exclusions.

4 Representative evaluation and adverse evidence

Design, Systems Engineering and Lifecycle Gates

Witness or trace: Review hazards, common causes, resource budgets and assumptions. Validate models for their exact decision domain; identify where simulation cannot observe or bound an essential physical property.

Synthetic challenge: A component qualifies on the bench but the installation changes cooling and power supply. Retain only relevant unchanged evidence. Add installation-specific verification and update hazards and support instructions before an integrated-system conclusion.

Supplier Qualification, Purchasing and Sub-Tier Assurance

Witness or trace: Record approved scope, conditional development, restrictions, suspension or disapproval. Conditional trial status limits work and segregation; it is not unrestricted production permission or a SUB certificate.

Synthetic challenge: A bonded assembly uses an unreported surface-treatment sub-tier. Identify its actual role and affected serials, hold unsupported acceptance and obtain qualified evidence and approved flow-down. Supplier reputation does not replace the missing route evidence.

Maintenance, Repair, Distribution and Retirement

Witness or trace: Use an approved repair or overhaul basis and valid detection for hidden damage. A successful bench test cannot reset missing life history or establish an unsupported as-new claim.

Synthetic challenge: A serviceable-looking part is recovered from a stored vehicle with no exposure history. Retain the unknown history and apply the real eligibility and life assessment. Cosmetic condition or a functional check does not establish unrestricted use.

5 Interface records, decisions and continuing use

Record	Required implementation purpose
AF-FR-9100-014	Risk, Hazard, Criticality and Residual Decision
AF-FR-9100-016	Design, Interfaces, Gates and Engineering Budgets
AF-FR-9100-009	Supplier Flow-Down, Custody and Transfer

Qualification, instance acceptance, current operating capability and independent attestation retain separate evidence and decisions. A new site, material, supplier, digital load, use environment or duty requires a relevant difference and requalification review. No previous result transfers automatically because the name is unchanged.

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.

16.1 Defense program assurance and contractual obligations

SOURCE p. 34 | Normative when applicable

16.1(a) The organization shall define the defense program's quality, safety, security, configuration, verification and support obligations across all assigned domains. Contractual acceptance, mission performance and lawful authorization shall be treated as distinct requirements.

16.1(b) The assurance plan shall identify government or customer quality-assurance access, classified or controlled evidence, delegated authority and required approvals where applicable. Restricted access shall be resolved through authorized procedures while preserving the credibility of evidence.

Required evidence: Defense assurance plan; contractual obligation matrix; access arrangements; approval responsibilities.

16.2 Multi-domain platforms and interfaces

SOURCE p. 34 | Normative when applicable

16.2(a) Air, land, maritime, space and cyber-connected systems shall be assessed for interface compatibility, environmental exposure, common dependencies and safe degraded behavior. Integration shall address the complete system rather than only separately accepted equipment.

16.2(b) The organization shall define safe states for training, transport, maintenance, storage and non-operational use. Test activities involving hazardous functions shall be separately authorized and controlled. This standard does not specify weapon effects, targeting methods or tactical employment.

Required evidence: Cross-domain interface baseline; integration tests; safe-state definition; authorized test controls.

16.3 Defense-purpose road and off-road vehicles

SOURCE p. 34 | Normative when applicable

16.3(a) Defense-purpose automotive systems shall include chassis, propulsion, braking, steering, energy storage, communications, payload interfaces and support equipment within the assigned scope. Duty cycles, loads, terrain, climate, transport and recovery conditions shall be specified.

16.3(b) Mission equipment integration shall assess effects on stability, structural integrity, electrical capacity, thermal behavior, occupant safety, visibility and maintainability. A commercial chassis approval shall not establish suitability of the modified mission configuration. Civil-road requirements and mission-specific requirements shall both be addressed when applicable.

Required evidence: Vehicle duty profile; integration impact assessment; configuration-specific qualification; maintenance and transport limits.

16.4 Maritime platforms and underwater systems

SOURCE p. 34 | Normative when applicable

16.4(a) Maritime assurance shall identify relevant structural, corrosion, pressure, electrical, propulsion, environmental and human-system requirements. Surface, submerged, unmanned and support-system interfaces shall be addressed according to the actual operating domain.

16.4(b) Welding, coatings, pressure boundaries, watertight integrity and critical machinery shall have appropriate process qualification and inspection evidence. Applicable marine, customer and authority approvals shall be identified independently of AF conformity. Inspection access and through-life deterioration shall be considered during design.

Required evidence: Maritime requirement basis; critical-boundary records; process and inspection evidence; deterioration-management plan.

16.5 Autonomy, remote systems and human authority

SOURCE p. 35 | Normative when applicable

16.5(a) Autonomous or remotely operated defense platforms shall have a bounded operational domain, defined human authority, safe response to lost communications and controls against unauthorized commands. The organization shall validate the ability to intervene within the required response time and information limits.

16.5(b) Changes to autonomy logic, mission data or sensor interpretation shall undergo configuration and safety review. Performance in simulation shall not be assumed to cover the complete operational environment. Assurance of lawful and authorized use shall remain an explicit program responsibility.

Required evidence: Authority model; domain constraints; intervention validation; simulation limits; change and release records.

16.6 Controlled technology, ethics and supply integrity

SOURCE p. 35 | Normative when applicable

16.6(a) The organization shall establish a process to identify applicable export, transfer, end-use, security and information-handling obligations. Access, collaboration, publication and technical-support arrangements shall be reviewed by competent authorized personnel.

16.6(b) Due diligence shall address source authenticity, unauthorized substitutions, bribery, conflicts of interest and misuse concerns relevant to the activity. Neither an AF document nor membership shall be treated as permission to transfer controlled information or conduct restricted work.

Required evidence: Controlled-technology review; authorized access; due diligence; ethical escalation and disposition.

16.7 Long-life support and obsolescence

SOURCE p. 35 | Normative when applicable

16.7(a) Defense systems shall have a support plan addressing long service life, configuration diversity, spares, repair data, training, software support and diminishing sources. Replacement parts and substitutions shall undergo engineering assessment and appropriate requalification.

16.7(b) The organization shall preserve the technical ability to identify and support the actual field configuration. Cannibalization, refurbishment and remanufacture shall retain source, life status and inspection evidence. Unknown life or origin shall be treated as a controlled uncertainty, not reset to zero.

Required evidence: Support and obsolescence plan; substitution approvals; field configuration; life and refurbishment records.

R.1 Defense program dossier

SOURCE p. 81 | Normative when applicable

R.1(a) The organization shall connect contract obligations, technical requirements, controlled-information duties and lifecycle support to named authorities and records. All relevant platform domains and interfaces shall be included.

R.1(b) The assurance dossier shall distinguish technical acceptance, contractual acceptance, security authorization and any required operational approval. One decision shall not be represented as satisfying all four unless the responsible authorities explicitly establish that scope.

R.2 Mission-vehicle integration review

SOURCE p. 81 | Normative when applicable

R.2(a) For a modified automotive platform, the review shall identify changes in mass distribution, power demand, thermal behavior, structural interfaces, visibility, operator tasks and service access. Program-specific limits and validation shall be established by competent technical authorities.

R.2(b) Any road-use approval, mission qualification and customer acceptance shall be tracked separately. A vehicle shall not be claimed suitable for every jurisdiction, terrain or mission on the basis of an AF system assessment.

R.3 Controlled evidence access and independent review

SOURCE p. 81 | Normative when applicable

R.3(a) Where information is restricted, the program shall appoint suitably authorized and competent reviewers and define what evidence may be released. An assessment summary shall identify limitations without disclosing protected technical details.

R.3(b) Independence shall not be abandoned because the program is sensitive. The organization shall establish an authorized challenge path and retain the decision basis in the permitted secure environment.

R.4 Support and configuration reconciliation

SOURCE p. 81 | Normative when applicable

R.4(a) Field modifications, replacement parts, cannibalization, software updates and repairs shall be reconciled with the configuration record. Support decisions shall use actual life and condition history.

R.4(b) When evidence is missing, the organization shall record uncertainty and obtain an authorized disposition. A component moved to a new platform shall not inherit an unsupported zero-life or fully qualified status.

Source tables — complete field and decision payloads

Table R-1 — Defense and mission-vehicle evidence topics

Source p. 81 | Required structure when applicable

Area	Minimum program evidence	Decision focus
Contract and quality assurance	Requirements, source-inspection duties, customer access, evidence rights, release and notification obligations.	Confirm actual contractual responsibilities.
Configuration and mission integration	Platform baseline, payload/service interfaces, software, data and effectivity.	Assess system-level effects of modifications.
Land mobility	Duty cycle, loads, terrain, climate, transport, braking/steering, stability, occupant and maintenance interfaces.	Verify the modified vehicle, not only the base chassis.
Maritime systems	Environmental and operating basis, integrity boundaries, corrosion, machinery, electrical and human interfaces.	Preserve applicable marine/authority requirements.
Air and space components	Applicable aviation/space modules and approval interfaces.	Do not assume defense status removes relevant assurance.
Remote/autonomous operation	Human authority, communication loss, domain limits, safe states, intervention and configuration.	Demonstrate bounded and controllable behavior.
Energy and protection	Energy-system hazards, isolation, containment, emergency support and approved test conditions.	Ensure coupled hazards are addressed.
Manufacturing and authenticity	Qualified critical processes, material origin, sub-tier controls and counterfeit prevention.	Prevent hidden substitutions and unapproved sources.
Controlled information	Classification/handling basis, access, authorized transfer, collaboration and publication review.	Membership or commercial interest does not authorize access.
Training and non-operational states	Transport, storage, maintenance, demonstration and training configurations and safe conditions.	Assess hazards outside nominal mission operation.
Long-life support	Spares, obsolescence, software support, repair data, life status and configuration diversity.	No unsupported “as new” or life-reset claims.
Retirement and disposition	Reuse restrictions, sensitive data, hazardous inventories, disposal and retained records.	Prevent unauthorized re-entry or disclosure.

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.