

RA 1223 – Airworthiness Information Management

Rationale

Effective management of Airworthiness information¹ is required throughout the life of an Air System to sustain Type Airworthiness and contribute to the delivery of Continuing Airworthiness. Without a systematic approach to the management of Airworthiness information, whether using a paper-based system, an electronic system or a combination of the two, the Equipment Safety Assessment (ESA) will be undermined and Air Safety may be adversely affected. RA 1223 supports effective Air Safety Management² and data exploitation³ by providing the minimum requirements for a formal and structured approach to ensure effective Airworthiness Information Management (AIM).

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Regulation

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Establishment of Airworthiness Information Management

1223(1) The Type Airworthiness Authority (TAA) **shall** define the Airworthiness information that is necessary to sustain Type Airworthiness and the manner in which this information is to be managed.

Airworthiness Information Management

1223(2) Aviation Duty Holders (ADHs) and Accountable Managers (Military Flying) (AM(MF)s) **shall** ensure effective AIM, consistent with the TAA's requirements, to sustain and assure the Airworthiness of an Air System within their Area of Responsibility.

Acceptable Means of Compliance

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1. For Air Systems that have not been developed beyond Phase 2 of the Military Air System Certification Process (MACP)⁴, the relevant TAA and ADH/AM(MF) **should** ensure full compliance to this Regulation.
2. It is recognised that full compliance cannot be immediately achieved for Air Systems that have been developed beyond Phase 2 of the MACP and so a graduated enforcement policy is in place for this Regulation; TAAs and ADHs/AM(MF)s **should** reach the following milestones en route to full compliance:
 - a. Within 1 year from publication of this RA: identify the extent to which existing arrangements fall short of the requirements of this Regulation, assess the associated risks and generate a strategy to achieve compliance.
 - b. No later than 3 years after publication of this RA: achieve full compliance in conjunction with any necessary authorized Alternative Acceptable Means of Compliance, Waivers and/or Exemptions.
3. TAAs **should**:
 - a. Define in the Airworthiness Strategy⁵ the safety critical nature⁶ of Airworthiness information that is to be managed through life;

¹ Airworthiness information includes information that contributes to the management of an Air System's Type and Continuing Airworthiness; it may be hosted on paper-based systems, electronic systems or a hybrid combination of the two.

² Refer to RA 1200 – Defence Air Safety Management.

³ Refer to RA 1140 – Military Air System Technical Data Exploitation.

⁴ Refer to RA 5810 – Military Type Certificate (MRP 21 Subpart B).

⁵ Refer to RA 1220(1) – Airworthiness Strategy.

⁶ The importance of Airworthiness information can be determined from the criticality analysis of the Air System; ranked in terms of being safety critical when measured using the probability that a failure occurs, combined with its severity.

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- b. Ensure that the system of AIM fulfils the generic functional and non-functional requirements specified at Annexes A and B respectively, and those Type specific requirements identified by the TAA. An auditable record of compliance **should** be maintained;
 - c. When establishing a system for AIM, analyse how Airworthiness information is reported, recorded and managed for inclusion within the ESA;
 - d. Where an electronic Information System (IS) is employed within AIM, undertake criticality analysis to determine whether it has functions that directly affect the Airworthiness and performance of the Air System and, if assessed as safety critical, it **should** be certified with the Air System⁴;
 - e. Specify in the Air System Document Set (ADS) the safety critical components of the Air System which **should** be individually tracked by AIM;
 - f. Generate and publish in the ADS any AIM constraints or rules that constitute control measures, that will support the ESA;
 - g. Determine and promulgate Airworthiness information assurance and retention requirements;
 - h. Ensure suitable arrangements are in place to validate AIM and its effectiveness in sustaining Type Airworthiness through life;
 - i. Provide the ADH and/or AM(MF) with instructions explaining how to retrieve the Airworthiness information captured during Maintenance activities⁷ conducted outside of the AIM control boundary;
4. ADHs and AM(MF)s **should**, in meeting the intent of the TAA:
- a. Understand the safety critical nature of Airworthiness information as detailed within the Airworthiness Strategy, ADS and the TAA's hazard log and accept any associated risk(s) and control measures²;
 - b. Implement suitable levels of assurance to continuously verify that Airworthiness Dynamic Data (ADD)⁸ is correctly and accurately captured;
 - c. Ensure the applicable Military Continuing Airworthiness Manager (Mil CAM) implements and upholds AIM processes by:
 - (1) Promulgating the orders and procedures required to implement the TAA published support policy and instructions for effective AIM;
 - (2) Specifying any local AIM requirements;
 - (3) Conducting quality assurance activity to maintain enduring adherence to AIM support policies, instructions for use, orders and procedures;
 - (4) Assuring the configuration management, accuracy and availability of all Air System Airworthiness information;
 - (5) Assuring that personnel are satisfactorily trained and competent⁹ to undertake AIM;
 - (6) Validating the effectiveness of AIM and reporting issues and / or emerging trends to the TAA.
 - (7) Reporting any discrepancies in the defined critical Airworthiness information.

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5. TAAs must understand the safety criticality of the Airworthiness information associated with the Type Design. This may be undertaken as part of criticality

⁷ Such as Maintenance being undertaken by industry.

⁸ Refer to paragraph 8 of this RA.

⁹ Refer to: RA 1002 – Airworthiness Competent Persons; RA 4806 – Personnel Requirements (MRP 145.A.30); and RA 4945 – Personnel Requirements - MRP Part M Sub Part G.

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analysis, which must be refined through life as emerging hazards become understood. There must be a clear audit trail from the criticality analysis and hazard log to the Airworthiness Strategy and AIM to the ADS and assurance policy.

6. TAAs are to maintain an auditable record of the incorporation of functional and non-functional requirements and ensure it is clearly explained in the ESA.
7. When establishing a system for AIM, the Mil CAMs must provide the TAAs with assurance that compliance with control measures, in support of the ESA, is being maintained. The ADHs and/or AM(MF)s must ensure this is conducted throughout the life of an Air System in order to identify any additional requirements to those specified at Annexes A and B.
8. Airworthiness information is comprised of ADD and Airworthiness Static Data (ASD):
 - a. ADD¹⁰ describes the Airworthiness data that changes as the Air System is operated, such as the “as-flown” configuration, Maintenance records and accumulation of component life. ADHs and AM(MF)s are responsible for the capture, accuracy and integrity of ADD, which is assured by the Military Continuing Airworthiness Management Organization.
 - b. ASD¹¹ describes the data that defines the Type Design and is used to sustain Type Airworthiness of an Air System, such as the approved configuration and Maintenance policy. The TAA is responsible for the specification and generation of ASD whilst ensuring its integrity.

Functional Requirements

9. Functional requirements are AIM Activities, which if not conducted satisfactorily, could undermine the Airworthiness of an Air System. The functional requirements are grouped under 3 headings:
 - a. **Maintenance Certification, Recording and Management (MCRM).** This functional requirement group includes the processes and management of information associated with Maintenance certification¹² and recording. The data being captured and controlled for Maintenance management is ADD.
 - b. **Maintenance Data Management.** This functional requirement group includes the configuration control, audit, archive/retention, exploitation, transfer between maintenance organizations and quarantine of ADD.
 - c. **Approved Data Management.** Where Approved Data is managed within AIM, changes to the data must be implemented through a TAA authorized process to enable delegated authorization of the changes.

Non-functional Requirements

10. Non-functional requirements specify how the system delivers AIM activities.

Analysis of AIM functions

11. All functions of AIM require analysis to determine its safety criticality (ie the integrity of a function managing the Airworthiness information). When constructing the ESA, TAAs must consider how all aspects of AIM, at all levels, contribute to the aggregation of Airworthiness risks. The analysis must include the interfaces and boundaries with other AIM systems.

AIM Composition and Approach

12. Airworthiness information may be managed using paper-based systems (eg MOD Form 700), electronic (eg ALIS¹³) systems or a hybrid combination of the two (eg GOLDesp). The Air System Maintenance policy and its process documentation must specify which approach is mandated for each Airworthiness function and which has

¹⁰ Data captured and recorded during Maintenance or operation of an Air System.

¹¹ Approved Data sourced from the ADS.

¹² Refer to RA 4812(1) – Certification of Air System Release (MRP 145.A.50(a)).

¹³ ALIS – Lightning II Autonomic Logistics Information System.

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primacy. If Airworthiness information is available in more than one format, information primacy must be specified by the TAA in the ADS¹⁴.

Tracked Items

13. When specifying the components to be tracked, it is good practice to include components with a high value or in short supply.

Airworthiness Information Retention

14. When determining and promulgating Airworthiness information retention requirements, TAAs are to consider defining Airworthiness information retention categories to ease storage constraints, whilst ensuring Airworthiness information is retained for periods coherent with Regulatory and safety requirements.

AIM Implementation and Sustainment

15. Air System TAAs may utilize corporate or contractor-supplied AIM solutions but they remain accountable for the safety, suitability, integrity and availability of the solutions implemented. Where other agencies are selected by TAAs to undertake AIM functions on their behalf, suitable internal or external contractual arrangements must be established to enable effective AIM.

16. The TAA must ensure suitable interface arrangements are in place with organizations undertaking Maintenance activity⁷ outside of their AIM control boundary, and the measures required to support the retrieval and assurance of Airworthiness information upon completion of that activity. The Mil CAM, on behalf of the ADH and AM(MF), remains responsible for retrieving the necessary Airworthiness information captured during such Maintenance activity.

17. Examples of 'local AIM requirements' may include information managed in databases, spreadsheets or local forms.

¹⁴ For example, in a Topic 2(N/A/R)1 leaflet.

ANNEX A to RA 1223
FUNCTIONAL REQUIREMENTS¹⁵

1. Activities detailed in Annex A as required 'Y' maintain the status of AMC. Activities detailed as required 'N' are to be considered as GM.

Primary Function	Sub Function / Ser No	Activity	Required
Maintenance Certification, Recording and Management (MCRM)			Required
Preventive Maintenance			
	1.	Specify (forecast) preventive/scheduled Maintenance operation due.	
	2.	Record and Certify ¹⁶ preventive/scheduled Maintenance activities.	
	3.	Specify (forecast) Special Instruction (Technical) (SI(T)) compliance due.	
	4.	Record and Certify satisfaction of SI(T)s.	
	5.	Specify (forecast) component replacement due.	
	6.	Record and Certify component replacement completed.	
	7.	Specify (forecast) flight servicing due.	
	8.	Record and Certify flight servicing completed.	
	9.	Specify (forecast) supplementary flight servicing.	
	10.	Record and Certify supplementary flight servicing completed.	
	11.	Where AIM incorporates a prognostic or health monitoring and reporting system, specify indication disposition procedures.	
	12.	Record and Certify miscellaneous activities ¹⁷ .	
Corrective Maintenance			
	13.	Record all arisings ¹⁸ and incorporate a defined process to prevent the Air System being released for flight in an unsafe condition.	
	14.	Manage Air System fault code reporting (Health monitoring).	
	15.	Record and Certify corrective Maintenance completed.	
	16.	Record and Certify Repairs carried out.	
Maintenance General			
	17.	Record and Certify Maintenance organization check of Technical Information configuration standard.	
	18.	Record and Certify Environmental Damage Prevention and Control (EDPC) activities.	
	19.	Record and Certify Maintenance tasks requiring Air System prep (eg pre-wash).	
	20.	Record and Certify Independent Inspections.	
	21.	Record and Certify Stage Checks.	
	22.	Record and Certify vital checks.	
	23.	Record and Certify post-Maintenance loose article, tool and panel checks.	
Maintenance Deferment			
	24.	Record and Certify serviceability state - Limitations.	
	25.	Record and Certify serviceability state - Acceptable Deferred Faults.	
	26.	Record and Certify waiver of flight servicing.	
	27.	Record and Certify pre-flight Faults.	
	28.	Record and Certify Aircrew acceptance of Faults.	
	29.	Host a loose article register.	

¹⁵ Functional requirements are AIM Activities, which if not conducted satisfactorily, could undermine the Airworthiness of an Air System.

¹⁶ Refer to RA 4813 – Maintenance Records (MRP 145.A.55) and RA 4812 - Certification of Aircraft and Component Release (MRP 145.A.50).

¹⁷ Miscellaneous Activities – activities that must be recorded in AIM but which do not necessarily need to be reported for fault analysis purposes, eg tool control entries, movement of ejection seat safety pins and manual folding/spreading of helicopter rotor blades.

¹⁸ Arising – an indication of a potential requirement (eg potential Air System fault or exceedance) to perform Maintenance.

	30.	Host a damage/corrosion register.	Y
	31.	Record and Certify concessions applied to the Air System.	Y
Configuration Management			
	32.	Record Air System type and registration mark.	Y
	33.	Record leading particulars.	Y
	34.	Record Air System and asset usage status.	Y
	35.	Record Air System serviceability status.	Y
	36.	Incorporate a log of Maintenance records (eg Aircraft Maintenance Log (AML)).	Y
	37.	Capture component replacement minimum traceability data (eg nomenclature, serial number and, where applicable, lifing data).	Y
	38.	Record the life accumulated on life limited and safety critical components.	Y
	39.	Incorporate a process for management of component records and log 'cards', including component 'activity' outside the scope of AIM.	Y
	40.	Calculate Air System weight and moment.	N
	41.	Record Air System weight and moment.	Y
	42.	Calculate, record and monitor the appropriate structural life usage, eg Fatigue Index (FI).	Y
	43.	Record software configuration.	Y
	44.	Record and Certify role change/weapon loading.	Y
	45.	Record and Certify refuel/defuel/fuel status.	Y
	46.	Record and Certify mission data load.	Y
	47.	Specify (dis)/embodiment of Modifications.	Y
	48.	Record and Certify (dis)/embodiment of Modifications.	Y
	49.	Record Modification embodiment status.	Y
	50.	Record SI(T) satisfaction status.	Y
Engineering Operations Management			
	51.	Record Certification of Air System Release.	Y
	52.	Specify and Record Flight Testing.	Y
	53.	Record and Certify Aircrew acceptance of Air System for flight.	Y
	54.	Record and Certify Continuous Charge operations.	Y
	55.	Record aero-engine or Auxiliary Power Unit (APU) ground running.	Y
	56.	Manage Air System usage reporting.	N
Administrative Functions			
	57.	Enable amendment of Technical Information (eg MOD Form 765).	Y
	58.	Enable Fault reporting (eg MOD Form 760).	Y
	59.	Record man-hours expended on Air System tasks.	Y
	60.	Record Administration Tasks ¹⁹ .	N
	61.	Host Military Airworthiness Review Certificate (MARC).	N
	62.	Host quality occurrence reporting and quality management functions.	N
Logistics Functions			
	63.	State authenticity and serviceability of Air System parts (eg Authorized Release Certificate, EASA Form 1, Certificate of Conformity).	N
	64.	Record logistics/sustainment metrics (eg man-hours per flying hour, mission capability, cannibalization).	N
Maintenance Data Management			
	65.	Retain the 'Programme of Record' prime data for Air System fleet configuration.	Y

¹⁹ Administration Task – Where a requirement exists to make a 'For recording purposes only' entry to record an administrative task that does not render the Air System unserviceable, once an Air System has been prepared for flight or is on continuous charge.

	66.	Incorporate a robust data lockdown/quarantine process in case of Air System accident/incident, compliant with Defence Accident Investigation Branch requirements.	Y
	67.	Incorporate robust and repeatable access to Airworthiness data for audit.	Y
	68.	Incorporate a process for the retention and/or archive of ADD. Data storage facilities must comply with security regulations and must be capable of preserving the data for the specified retention period. Authorization requirements for access to archived data must be considered.	Y
	69.	Incorporate a process for Airworthiness data exploitation/trending. To include the provision of appropriate tools and personnel to access archived data.	Y
	70.	Incorporate a compliant process for transfer of Air System Maintenance records between organizations, including civilian contracted Maintenance organizations.	Y
	71.	Incorporate a compliant process for transfer of data between IS in the event of IS upgrade.	Y
	72.	Incorporate a compliant ²⁰ process for the correction, deletion and subsequent disposal of ADD. Authorization requirements must be considered.	Y
Approved Data Management			
	73.	Host/suggest Maintenance Approved Data.	N
	74.	Host/suggest Modification Approved Data.	N
	75.	Host definitive/configuration-controlled approved parts catalogue.	N
	76.	Host definitive/configuration-controlled approved Maintenance schedule.	N
	77.	Host/suggest Repair data.	N
	78.	Host definitive/configuration-controlled Minimum Equipment List (MEL).	N
	79.	Host/generate pre-printed expendable work cards.	N

²⁰ Including data disposal security requirements published in JSP 440 – The Defence Manual of Security, Resilience and Business Continuity, and JSP 441 – Managing Information in Defence.

ANNEX B to RA 1223
NON-FUNCTIONAL REQUIREMENTS²¹

1. Activities detailed in Annex B as required 'Y' maintain the status of AMC. Activities detailed as required 'N' are to be considered as GM.

Category / Ser No	Requirement	Required
Design / Certification / Acquisition		
1.	Where an electronic IS is used, the IS should be designed by a competent organization. The requirements of RA 1005 – Contracting with Competent Organizations, should be considered for safety critical functions.	Y
2.	Electronic IS applications should be developed to a recognised software standard, commensurate with the safety criticality of the IS outputs. ²²	Y
3.	The 'look and feel' of the system employed should be independently assessed as being clear, unambiguous and logical.	Y
4.	Where an electronic IS is used, it should be tested using operationally representative data (Validated and Verified) before introduction to Service.	Y
Airworthiness Data Integrity		
5.	AIM should have data integrity validation checks, journaling and associated data auditing to support design integrity requirements that are coherent with the safety criticality of the data. Audit procedures should include explicit checks for the corruption or tampering with ADD.	Y
6.	AIM should incorporate user access control arrangements that place appropriate degrees of control on data entry, manipulation, access and retrieval coherent with the safety criticality of the data and the Maintenance documentation certification requirements ¹⁷ . Where an electronic IS is used, each terminal should contain programme safeguards against unauthorized alteration of the database and should also have traceability features (eg two factor authentication).	Y
7.	The Maintenance management function should incorporate logical junctures (ie 'certification points') at which Maintenance certification of completed activities is recorded (by signature or electronically).	Y
8.	The Maintenance management function should provide an audit trail of activities carried out and those responsible for the Maintenance activity. The Maintenance certification of the activity should link the individual responsible to the activity itself. The system should enable the correct authority level to certify the Maintenance activity.	Y
9.	The Maintenance management function should enable a complete reviewable data set to which the Maintenance certification attests, including any additional certified data on which the certification is dependent.	Y
10.	Where applicable, AIM should have functionality and/or business processes that minimise likelihood and manage (indicate) the instance of duplicate asset creation, coherent with the safety criticality of the information.	Y
11.	AIM should utilize a single universal time zone for Maintenance certification and recording.	Y
12.	Where health management algorithms are incorporated in AIM, they should be assured to the satisfaction of the TAA.	Y
Security and Legal		
13.	AIM should meet the applicable security requirements ²³ .	Y
14.	Where Maintenance certification is recorded using electronic signatures, applicable legislation should be complied with ²⁴ . TAAs should ensure that their	Y

²¹ Non-functional requirements specify how the system delivers AIM activities.

²² When using the requirements of Def Stan 00-055, the means of compliance selected to meet the requirements must be agreed with the authority.

²³ In accordance with JSP 440 and Air System-specific security requirements (eg International Traffic in Arms Regulations - ITAR).

²⁴ Guidance on admissibility of electronic signatures is contained in the Electronic Communications Act 2000 Chapter 7; the strength of admissibility may be dependent on the level of authentication, authorization and integrity control applied within the electronic IS.

	electronic signature solution will withstand legal scrutiny if matters relating to Airworthiness or culpability of an individual come under investigation ²⁵ .	
15.	ADD should be secured and handled in a way that supports investigations and/or legal proceedings in the event of an incident or accident.	Y
Configuration Management		
16.	Any AIM hardware should be configuration managed to a level coherent with the safety criticality of the system's functional outputs.	Y
17.	Any AIM software application employed should be configuration managed to a level coherent with the safety criticality of the system's functional outputs.	Y
18.	Where an electronic IS is used, initial release of and changes to ASD should be documented as approved by the TAA and implemented by appropriately authorized personnel.	Y
19.	There should be an auditable record (eg journaling, additional Maintenance Work Orders (MWO)) created to reflect changes, corrections, additions or deletions of MCRM data that may be required after initial recording.	Y
20.	MWO ²⁶ , including MAP-02-based formats ²⁷ , Work Cards ²⁸ and any other electronic system-generated formats should be configuration controlled.	Y
21.	AIM should have defined procedures for component record creation, alteration and deletion, which should only be carried out by an appropriately authorized person.	Y
22.	AIM should conform to a Minimum Data Capture List ²⁹ determined by the TAA.	Y
Operation		
23.	AIM should have adequate redundancy/reversionary arrangements. Electronic IS elements should have cyber-attack defence and recovery measures in place as detailed within the platform Risk Management and Accreditation Documentation Set (RMADS).	Y
24.	Where electronic IS are used, they should have off line procedures, which are specified in AIM instructions and the Air System Business Continuity and Disaster Recovery Plans.	Y
25.	Where appropriate, AIM must have a portable capability that is robust and approved. If an electronic IS Maintenance management function is to be used whilst on deployed operations, access to the main IS may not be continuously available; there must be a timely and robust method of synchronization during deployment and on subsequent return to the home Stn/Ship/Unit.	N
Documentation		
26.	AIM through life management arrangements should be captured in the Through Life Management Plan.	Y
27.	AIM should have a current Business Continuity and Disaster Recovery Plan.	Y
28.	AIM should be included in the Air System Support Policy Statement.	Y
29.	AIM should have effective and current processes and procedures (for example, change management, AIM instructions/user manual).	Y
Training		
30.	AIM should have a training programme ³⁰ for personnel (to include users and administrators).	Y
Safety Management		
31.	AIM should be included in the Air System ESA.	Y
AIM Interfaces		
32.	Where applicable, AIM is to interface effectively with the Air System training/authorization management system.	N
33.	Where applicable, AIM is to interface effectively with other Air System Maintenance systems (eg low observable systems).	N

²⁵ Further clarification may be sought from Defence Legal Services. Examples of electronic signatures are Smart Card and Personal Identification Number (PIN), Physical Input Devices (PID), Biometrics and physical signature capture/recognition.

²⁶ Maintenance Work Orders do not include pre-populated Technical Information.

²⁷ A format is an electronic copy of a standard MOD Form 700 form.

²⁸ Work Cards (eg Maintenance procedures, F2988, MOD Form 707MS) include pre-populated work content.

²⁹ A Minimum Data Capture List is a controlled and TAA-approved list of parameters that must be captured within AIM to sustain Type Airworthiness, achieve the Support Policy and allow effective Data Exploitation, in accordance with the Air System Safety Case.

³⁰ In accordance with JSP 822 – Defence Direction and Guidance for Training and Education.

34.	Where applicable, AIM is to interface effectively with the Air System mission planning system.	N
35.	Where applicable, AIM is to interface effectively with the Air System supply chain/inventory management system.	N
36.	Where applicable, AIM is to interface effectively with the Air System performance management system.	N
37.	Where applicable, AIM is to interface effectively with Commodity Delivery Team component management systems.	N
38.	Where applicable, AIM is to interface effectively with civilian supplier information management systems.	N