# RA 3130 – Air Traffic Management Equipment Safety Management

**Rationale**

*►Air Traffic Management (ATM) Equipment is an essential element in the provision of safe Air Traffic Services (ATS). If ATM Equipment is not managed in accordance with (iaw) recognized Safety practices and processes, it could compromise the provision of safe ATS, eroding a vital barrier to Operating Risk to Life (RtL) in an Aviation Duty Holder (ADH) / Accountable Manager (Military Flying) (AM(MF)) operation. This RA requires new, modified and In-Service ATM Equipment to be procured and managed through life using recognized Safety practices and processes to ensure that it is, or will be, safe to operate and operated safely for its application and operating environment.◄*

**Contents**



**Definitions**

## ►Definitions

1. **ATM Organization.** In the context of this RA an ATM Organization will be considered as the end user of the ATM Equipment being provided by the Delivery Team (DT). An ATM Organization is an Aviation Duty Holder-Facing Organization and an Accountable Manager (Military Flying)-Facing Organization (AA-Facing Organization).

2. **Delivery Team (DT).** In the context of this RA the DT is the delivery agent for ATM Equipment and is an AA-Facing Organization. Any reference to a DT within this RA also includes any organization responsible for delivering ATM Equipment, whether or not they are a Defence Equipment & Support (DE&S) DT; this includes Platform Authorities and other project teams with a similar remit.

3. **ATM Equipment Hazard.** An ATM Equipment Hazard is the presence of a physical condition or incorrectly functioning equipment, which compromises the full and / or safe delivery of an ATS.

4. **ATM Risk.** An ATM Risk is the measure of exposure to a degradation of ATM Safety barriers. This could be through degrading the provision of ATM in support of Aircraft Operations, or through the inability to fully or correctly provide an ATS caused by an ATM Equipment Hazard. An ATM Risk may expose a Risk to the ADH / AM(MF) operation and will therefore, iaw RA 1210[1], be escalated accordingly so that the RtL position can be appropriately assessed.◄

**Regulation 3130(1)**

## ►◄ Delivery Team ►◄ Responsibilities

3130(1) The ►DT◄ **shall** be ►Accountable for the safe delivery, and sustainment of ATM Equipment and systems that are safe to operate, and for their subsequent disposal.◄

[1] ►Refer to RA 1210 – Ownership and Management of Operating Risk (Risk to life).◄

**Acceptable Means of Compliance 3130(1)**

## ►◄ Delivery Team ►◄ Responsibilities

5. The ►DT◄ **should** ensure throughout the life of the ATM systems, services, and equipment that:

a. ►Users[2] are provided with ATM Equipment user instructions, training, and Maintenance procedures.◄

(1) ►◄

b. ►Maintenance and training procedures are detailed in technical documentation to ensure safe practises are adhered to.

c. Support documentation and training documentation are maintained and their Configuration Controlled.

d. Appropriate through-life Safety Management arrangements are established for the ATM Equipment, including Safety Management Systems and plans[3].

e. Arrangements are in place for monitoring and recording Safety performance of the ATM Equipment, and regular reviews are carried out.

f. ADH-Facing Organizations and users understand the Safety implications of any changes, such as DT equipment Modifications or operator procedural changes.

g. ATM Organizations are adequately supported in identifying and managing ATM Equipment Hazards so that any associated Risks are As Low As Reasonably Practicable (ALARP) and Tolerable.

h. All relevant documentation is subject to Configuration Control.◄

6. ►◄

a. ►◄

b. ►◄

c. ►◄

d. ►◄

(1) ►◄

(2) ►◄

(3) ►◄

**Guidance Material 3130(1)**

## ►◄ Delivery Team ►◄ Responsibilities

7. The Project Oriented Safety Management System (POSMS) ►outlines◄ procedures ►for◄ identification and management of the Safety Risks of equipment and services throughout the Acquisition process. ►◄ POSMS is ►only applicable to DE&S, but is considered good practice for other organizations.

8. See RA 1032[4] for the responsibilities of an AA-Facing Organization.

9. DSA02-DMR: Defence Maritime Regulations, and Defence Land Safety and Environmental Regulations can be referred to if relevant[5].◄

**Regulation 3130(2)**

## ►Air Traffic Management Organization◄ Responsibilities

3130(2) ►ATM Organizations **shall** ensure that ATM Equipment is operated and maintained◄ iaw the ATM Equipment Safety Case (SC), user instructions and Maintenance procedures.

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[2] ►Throughout this RA the term 'Users' refers to operators and / or maintainers.
[3] Refer to RA 1200 – Air Safety Management; and the Manual of Air Safety.
[4] Refer to RA 1032 – Aviation Duty Holder-Facing Organizations and Accountable Manager (Military Flying)-Facing Organizations - Roles and Responsibilities.
[5] Refer to DSA02-DMR: Defence Maritime Regulations.◄

**Acceptable Means of Compliance 3130(2)**

## ►Air Traffic Management Organization◄ Responsibilities

10. ►ATM Organizations **should**:

a. Ensure that◄ user instructions and Maintenance procedures ►are◄ maintained and Configuration Controlled according to ►◄ DT changes.

b. ►Ensure that◄ ATM Equipment ►is◄ maintained and used iaw ►the Part 4 Safety Case[6].◄

c. Immediately report to the ►◄ DT, via the relevant Front Line Command Organization (eg RAF Engineering Role Office ►(Land-based) / Navy FGen NAvnSO2 ATM Equipment & Safety (Maritime))◄ concerns identified by users, ►and use of Air Safety Information System to make the associated reports.◄ Examples of concerns include unexpected performance or failures.

d. ►◄

11. ►If, for operational reasons, ATM Equipment is required to be operated and / or maintained outside the defined safe Maintenance and performance envelope[7], the Authorizing ATM Organization **should**:

a. Ensure that supporting Risk Assessments and impact statements are produced.

b. Confirm Risk ownership at the appropriate level and inform the Duty Holder chain as required.

c. Inform the DT so that the activity can be Tracked and appropriate advice offered.◄

**Guidance Material 3130(2)**

## ►Air Traffic Management Organization◄ Responsibilities

12. ►See RA 1032[4] for the responsibilities of an AA-Facing Organization.◄

**Regulation 3130(3)**

## Legislation Compliance

3130(3) ►Withdrawn – Requirement covered in RA 3132(2)[8].◄

**Acceptable Means of Compliance 3130(3)**

## Legislation Compliance

13. ►Withdrawn – Requirement covered in RA 3132(2).◄

**Guidance Material 3130(3)**

## Legislation Compliance

14. ►Withdrawn – Requirement covered in RA 3132(2).◄

**Regulation 3130(4)**

## Configuration Management

3130(4) The ►DT◄ **shall** be responsible for Configuration Management (CM) throughout the life of the ATM Equipment.

**Acceptable Means of Compliance 3130(4)**

## Configuration Management

15. The ►DT◄ **should** develop and implement a Configuration Management Plan (CMP). The CMP **should** define how CM is ►conducted and◄ ensure that the ATM Equipment's functional and physical characteristics conform to the requirements throughout the life cycle of the ATM Equipment. As a minimum, a CMP **should**:

a. Be documented.

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[6] ►Refer to RA 3132 – Air Traffic Management Equipment Safety Cases.
[7] As defined in the ATM Equipment Safety Case.
[8] Refer to RA 3132(2): Responsibilities of Duty Holder-Facing Organizations.◄

**Acceptable Means of Compliance 3130(4)**

b. Show the Configuration of an item at any time in its life cycle ►through referencing the Configuration Status Report (CSR) for each ATM Equipment.◄

c. Provide a means for managing Modifications►[9]◄.

d. Involve the principle CM activities of planning, documenting, controlling, accounting for and Auditing the item's configuration.

16. ►JSP 945[10]◄ provides details regarding the contents and structure of a typical CMP, as a minimum, the CMP **should** address:

a. Purpose, scope and programme.

b. Organization structures, committees and responsibilities.

c. Configuration change management procedures.

d. Change control of the CMP.

e. Relationships with other plans.

f. Configuration Audit.

17. The ►DT◄ **should**:

a. Review and take decisions on changes to ATM Equipment specification or design which could significantly affect project Safety, performance, cost, timescales or delivery.

b. Agree project / ATM Equipment Modification policy and the associated timescales.

c. Document all Configuration changes and maintain an auditable trail of all proposals, reviews and decisions.

d. Ensure that the impact of individual Modifications is assessed across the whole ATM Equipment range and that an annual review process maintains the agreed progress of embodiment.

e. Ensure that a focal point for the Maintenance of CM is appointed and a statement included in staff terms of reference identifying individual authorities and responsibilities for CM within a ►◄ DT.

f. Ensure that, where items of ATM Equipment are shared across multiple ►◄ DTs, CM is strictly maintained and duplicated activities are avoided.

g. Ensure that all Modification procedures conform to the guidelines and procedures described in the MRP, single-Service ►publications◄ and any subordinate Business Procedures.

18. For Service Modifications, the ►◄ DT ►**should**◄ ensure that all relevant parties are made aware of the amendment and relevant documentation (including Maintenance) is updated accordingly.

19. ►Where an ATS is provided using a system comprising of ATM Equipment delivered by a number of DTs, the DT **should** support the Site / Platform Engineering Authority in Configuration Management[11] of the overall System.◄

**Guidance Material 3130(4)**

## Configuration Management

20. CM will need to be applied by the ►◄ DT in order to maintain effective control of the approved Configuration. CM ►will◄ also prevent unauthorized changes being made without the valid Authorization via ►a◄ DT Change Management Process. Change Management will need to be applied in order ►to◄:

a. Ensure that change proposals are processed in a timely manner and are justified in terms of:

(1) Safety.

[9] ►Refer to RA 3120 – Air Traffic Management Equipment Standards.
[10] Refer to JSP 945 – MOD Policy for Configuration Management.
[11] eg contributing to Site / Platform Configuration Control Boards.◄

**Guidance Material 3130(4)**

(2) Performance.

(3) Whole-life costs.

(4) Support.

(5) Project timescale.

b. Apply a ►priority◄ classification ►that considers:◄

(1) Applicability of change.

(2) ►Significance of the change.◄

(3) Possible need for retrospective action.

(4) Degree of urgency.

c. Evaluate the impact of major deviations and Modifications.

d. Enable the implementation of Authorized changes and make use of Configuration status accounting to track progress from concept through to completion.

21. Initial Configuration Control is vested in the Designer, who provides the Configuration Status Record (CSR). This contains the indexes to master sets of drawings, amendments, Modifications, ancillary equipment and Service-supply items. It ►needs to◄ be kept up-to-date throughout the life of the ATM Equipment, on behalf of the ►◄ DT, by the Designer. The CSR provides a baseline for defining the as-fitted and Modification state throughout the life of the ATM Equipment.

22. ►It is recognized that where ATM Equipment is supporting an ATS as a secondary function[12], the DT responsible for the ATM Equipment element will only be responsible for that element of the system. It is the ATM Equipment's performance in the ATM function that the DT Leader (DTL) will be responsible for, in respect of their obligations to meet the requirements of this Regulatory Article, to the Platform Authority.◄

**Regulation 3130(5)**

## Safety Documentation Retention

3130(5) ►Heads of AA-Facing Organizations **shall** ensure that◄ all Safety documentation relating to ATM Equipment ►is◄ retained for a minimum of 5 years beyond the equipment's Out Of Service Date.

**Acceptable Means of Compliance 3130(5)**

## Safety Documentation Retention

23. Documentation **should** be clearly marked, ►including Meta Data, securely saved and protected; or stored if in legacy configurations to avoid accidental deletion or destruction.◄

**Guidance Material 3130(5)**

## Safety Documentation Retention

24. Scanned copies of documents are ►acceptable.◄

25. Electronic storage can be used providing documents are protected to prevent accidental deletion.

**Regulation 3130(6)**

## Independent Safety Auditor

3130(6) The ►DT◄ **shall** ►ensure◄ the appointment of an Independent Safety Auditor (ISA) at the outset of a Project, in consultation with the Project Safety Panel (PSP).

[12] ►For example, a Multi-Function Radar (that has an approved ATM capability iaw Civil Aviation Publication (CAP) 670: Air Traffic Services Safety Requirements) For example, a Maritime Fire Control Radar (that has been assured iaw RA 3134) whose primary role provides a Recognised Air Picture, but is also used to provide ATS as a secondary function.◄

**Acceptable Means of Compliance 3130(6)**

## Independent Safety Auditor

26. The ►◄ DTL **should** ensure that an auditable trail of the ►tasking for the◄ ISA ►appointment◄ exists►[13]◄.

27. The ISA **should**:

a. ►Have a well-defined role that is documented and clearly understood by all parties.

b. Be independent of the Organization being supported and have a good understanding of Safety issues related to systems under review.

c. Sit as a full member of the PSP and their role and function **should** be defined in the Safety Management Plan (SMP).

d. Undertake the task of Audits and other assessment activities to:

(1) Provide Assurance that Safety activities comply with planned arrangements.

(2) Provide Assurance that Safety activities are implemented effectively and are suitable to achieve objectives.

(3) Confirm whether related outputs are correct, valid and fit for purpose.◄

28. The ISA's independence **should not** be compromised by involving them in activities such as setting Safety requirements, tender assessment or providing specific advice on engineering changes.

**Guidance Material 3130(6)**

## Independent Safety Auditor

29. ►◄

30. ►◄

31. The primary role of an ISA is assessment and Validation of the ATM Equipment SC work. This is usually carried out through Audit of the following:

a. The Safety management arrangements set out in the SMP and ATM Equipment SC.

b. The Safety activities set out in the Contractor's Safety programme plan in response to the SMP.

32. ►The ISA role may include providing Assurance by Auditing the Safety process being followed, or by conducting a Safety Assessment independently to check the primary assessment. The role may change at different points through the life cycle.

33. The use of an ISA can reaffirm a DT's Assurance arrangements, by assisting with the Maintenance of Safety integrity across large and / or high Risk projects.◄

**Regulation 3130(7)**

## Air Traffic Management Equipment Risk Classification

3130(7) ►The DTL **shall** ensure that◄ ATM Equipment ►Risks are◄ classified and handled using the ATM Equipment Risk Classification Matrix.

**Acceptable Means of Compliance 3130(7)**

## Air Traffic Management Equipment Risk Classification

34. This Regulation **should** be read in conjunction with RA 1210►[1]◄ and Defence Standard (Def Stan) 00-056►[14]◄.

35. This Regulation **should** be used by ►AA-Facing Organizations.◄

36. ►For ATM Risks in the Naval environment the DMR **should** be consulted in conjunction with the ATM Equipment Risk Classification Matrix[6].◄

[13] ►Refer to RA 3132(6): Air Traffic Management Equipment Safety Case Independent Assessment.
[14] Refer to Def Stan 00-056 – Safety Management Requirements for Defence Systems.◄

**Acceptable Means of Compliance 3130(7)**

37. Annex A of this RA contains ►definitions of◄ the ATM Equipment Risk Severity Classifications ►◄ (Table 1) and Risk Classification Matrix (Table 2). The information at Annex A **should** be used for ATM Risks that have an ATM Equipment element, but can also include people, procedures and environment elements, for example in the mitigations. For ATM Risks that are unrelated to ATM Equipment, RA 1210►1◄ **should** be used ►◄ (see RA 3130(8)).

38. The ATM Equipment SC **should** set out and justify the process for making ALARP decisions.

39. Whenever there are changes to an ATM Equipment's design, role, operating environment and / or changes in legislation there **should** be a re-assessment of all Risks falling within the scope of the changes.

**Guidance Material 3130(7)**

## Air Traffic Management Equipment Risk Classification

40. EUROCONTROL Safety Regulatory Requirement 4 (ESARR4) states that the Maximum Tolerability (of ATM direct contribution) to a Severity Class 1 Incident in the European Civil Aviation Conference Region, is 1.55 x $10^{-8}$ per flight hour (controlled). It is agreed that this is broadly suitable for use in a Military / Civil Joint and Integrated ATM environment►15◄.

41. It is important to note that 'Tolerability' does not mean 'acceptability'. It refers to a willingness to live with a Risk to secure certain benefits in the confidence that it is being properly controlled. To tolerate a Risk means that it is not regarded as insignificant or something that could be ignored, but rather as something that needs to be kept under review and reduced further if possible.

**Risk Management Process**

42. The aim of Risk Management aims to ensure and demonstrate that all foreseeable Risks have been identified and reduced so that they are ALARP and Tolerable. It is an iterative process that will continue throughout the life of a system.

43. The essential steps required to manage Risks successfully can be found in the Guidance Material of RA 1210►16◄. All steps to manage Risks ►need to◄ involve the PSP.

**Risk Classification**

44. A qualitative or quantitative approach can be used to determine the appropriate Risk classification. Where possible, a quantitative approach ►will◄ be used when a system poses significant Risk.

45. Annex A contains specific details for ATM Equipment Risk classification. It has both quantitative figures and qualitative descriptions.

46. Whether a qualitative or quantitative approach is used, demonstration that a target has been achieved, or bettered, may not always be practicable. It may be used to indicate the level of performance / integrity expected from the system, and as a baseline against which to argue the ATM Equipment SC.

**Regulation 3130(8)**

## Air Traffic Management Equipment Risk Management

3130(8) ►Withdrawn – Intent is covered in RA 1210(3)[17] and RA 1032[4].◄

**Acceptable Means of Compliance 3130(8)**

## Air Traffic Management Equipment Risk Management

47. ►Withdrawn – Intent is covered in RA 1210(3) and RA 1032.◄

[15] ►ESARR 4 was transposed into European Community law by Regulation 1035 / 2011 - Common Requirements for the Provision of Air Navigation Services, which in turn was repealed by Regulation 2017 / 373 in 2020.
[16] Refer to RA 1210(2): Risk Management and RA 1210(3): Standardized Approach to Risk.
[17] Refer to RA 1210(3): Standardized Approach to Risk.◄

**Guidance Material 3130(8)**

## Air Traffic Management Equipment Risk Management

48. ►Withdrawn – Intent is covered in RA 1210(3) and RA 1032.◄

## Annex A

## ATM Equipment Risk Classification

1. ATM Equipment Risks ►**should**◄ have their severity classified using the information in Table 1. The definitions in Table 1 provide descriptions of possible outcomes.

*Table 1. ATM Equipment Risk Severity Classifications.*

| Severity | Definitions[18] |
|---|---|
| Catastrophic<br>1 | - One or more catastrophic Accidents.<br>- One or more mid-air collisions.<br>- One or more collisions on the ground between two Aircraft.<br>- One or more Controlled Flight Into Terrain.<br>- Total loss of flight control. (No independent source of recovery mechanism, such as surveillance or Air Traffic Control (ATC) and / or flight crew procedures can reasonably be expected to prevent the Accident(s)).<br>- ATC issues instruction or information which can be expected to Cause loss of one or more Aircraft (no reasonable and reliable means exists for the Aircrew to check the information or mitigate against the Hazards).<br>- Continued safe flight or landing prevented. |
| Hazardous<br>2 | - Large reduction in separation (eg a separation of less than half the separation minima), without crew or ATC fully controlling the situation or able to recover from the situation.<br>- One or more Aircraft deviating from their intended clearance, so that abrupt manoeuvre is required to avoid collision with another Aircraft or with terrain (or when an avoidance action would be appropriate).<br>- The ATC separation service provided to Aircraft that are airborne or are inside a Runway Protected Area in one or more sectors is suddenly, and for a significant period of time, completely unavailable.<br>- Provision of instructions or information which may result in a critical near mid-air collision or a critical near collision with the ground.<br>- Many losses of acceptable separation possible. |
| Major<br>3 | - Large reduction (eg a separation of less than half the separation minima) in separation with crew or ATC controlling the situation and able to recover from the situation.<br>- Minor reduction (eg a separation of more than half the separation minima) in separation without crew or ATC fully controlling the situation, hence jeopardising the ability to recover from the situation (without the use of collision or terrain avoidance manoeuvres).<br>- The ATC separation service provided to Aircraft that are airborne or are inside a Runway Protected Area in one or more sectors is suddenly, and for a significant period of time, severely degraded or compromised (eg contingency measures required or Controller workload significantly increased such that the probability of human error is increased).<br>- The ATC separation service provided to Aircraft on the ground outside a Runway Protected Area is suddenly, and for a significant period of time, completely unavailable.<br>- Provision of instructions or information which may result in the separation between Aircraft or Aircraft and the ground being reduced below normal standards.<br>- No ATS action possible to support Aircraft emergency. |
| Minor<br>4 | - Increasing workload of the Air Traffic Controller or Aircraft flight crew, or slightly degrading the functional capability of the enabling Communications, Navigation and Surveillance (CNS) system.<br>- Minor reduction (eg a separation of more than half the separation minima) in separation with crew or ATC controlling the situation and fully able to recover from the situation.<br>- The ATC separation service provided to Aircraft that are airborne or are inside a Runway Protected Area in one or more sectors is suddenly, and for a significant period of time, impaired.<br>- The ATC separation service provided to Aircraft on the ground outside a Runway Protected Area is suddenly, and for a significant period of time, severely degraded.<br>- ATS emergency support ability severely degraded. |
| Negligible<br>5 | - No Hazardous condition (ie no immediate direct or indirect impact on the operations).<br>- No effect on ATC separation service provided to Aircraft.<br>- Minimal effect on ATC separation service provided to Aircraft on the ground outside a Runway Protected Area.<br>- Minimal effect on ATS emergency support ability. |

[18] Definitions taken from a combination of ESARR 4 and ►CAP 670.◄

*Table 2. ATM Equipment Risk Classification Matrix.*

| **ATM Probability** | | | **ATM Severity** | | | | |
|---|---|---|---|---|---|---|---|
| ATM Frequency | ATM Qualitative Description | Probability per controlled flying hour (CFg Hr[19]) | 1 | 2 | 3 | 4 | 5 |
| | | | **ATM Risk Class** | | | | |
| Frequent | Likely to occur often | >$2.8x10^{-3}$ | **A** | **A** | **A** | **B** | **C** |
| Probable | Likely to occur many times | $2.8x10^{-3}$ - $2.8x10^{-4}$ | **A** | **A** | **B** | **C** | **D** |
| Occasional | Likely to occur sometimes | $2.8x10^{-4}$ - $2.8x10^{-5}$ | **A** | **B** | **C** | **D** | **D** |
| Remote | Unlikely to occur | $2.8x10^{-5}$ - $2.8x10^{-6}$ | **A** | **C** | **D** | **D** | **D** |
| Improbable | Very unlikely to occur | $2.8x10^{-6}$ - $1.55x10^{-8}$ | **A** | **D** | **D** | **D** | **D** |
| Incredible | Extremely unlikely to occur | <$1.55x10^{-8}$ | **B** | **D** | **D** | **D** | **D** |

2. ►◄

[19] A controlled flying hour is an hour of an Aircraft's flight time for which an ATS is received.