

20 Mar 18

MAA/RN/2018/03 - Advance Notice of Re-Categorisation of Aviation Activities Within the Defence Air Environment and Implementation of Niteworks Air System Safety Case Recommendations (MAA01, RA 1120 Series and RA 1205)

Issue

1. This Regulatory Notice (RN) informs the Regulated Community (RC) that the MAA intends to update the MAA Regulatory Publications (MRP) to ensure that similar aviation activities within the Defence Air Environment (DAE) that result in a similar level of risk or risk exposure, attract the same level of regulation, assurance and scrutiny, regardless of ownership of, or who is operating, the specific Air System.

Aim

2. The aim of this RN is to inform the RC about the intended changes being made and explain the rationale.

Scope

3. This RN provides the RC with background information detailing the rationale behind the MAAs intent to re-categorise aviation activities within the DAE and to implement recommendations from the Niteworks study on Air System Safety Cases (ASSC). Additionally, it serves to alert the RC to on-going work to rewrite the RA 1120 Series relating to the registration and safety requirements for Air Systems on the UK Military Aircraft Register (MAR), and RA 1205¹ which details the requirements for an ASSC.

Implementation

4. This guidance is effective immediately.

Background

5. **Context.** The MAA is empowered through the Defence Safety Authority's Charter from the Secretary of State for Defence to regulate all Air Systems on the UK Military MAR. It sets out its requirements in the MRP which apply to all activities within the DAE, whether military or civil. This requires those accountable for Risk to Life (RtL) in the Armed Forces to use a Safety Case to demonstrate how that risk is managed². However, within the air domain the term Safety Case has, over time, been applied liberally, inconsistently and with a variety of prefixes, potentially leading to confused, incoherent and thus ineffective safety management. Moreover, the practical management of ASSCs often remains an equipment-centric, Defence Equipment & Support (DE&S) Delivery Team led activity. In the Nimrod Review, Haddon-Cave criticized the length, language and lack of operator involvement with Safety Cases within the MOD. Recent MAA-led audits demonstrated that the development and utility of a robust ASSC is poorly defined and understood, especially during the acquisition and introduction of new capability into service.

¹ RA 1205 - Air System Safety Cases

² See Paragraph 8a

Furthermore, the current MRP was largely written to reflect the legacy arrangements under which contractors only operated military registered Air Systems during development, then handed them to the military Front Line Commands to operate them once 'in-service'. The mechanisms used by Defence to deliver capability within the DAE have since evolved and these distinctions no longer correlate reliably with exposure to risk.

6. **Niteworks Report on Air System Safety Cases.** Against this context, the MAA tasked Niteworks to investigate the links between the MOD's capability development process and the establishment of effective ASSCs, and the development of a new process for governance of activities conducted by Air Systems destined for, or already on, the UK MAR. The Niteworks report³ concluded that more effective ASSCs and governance of activities for Air Systems on the UK MAR can be delivered through

- a. Clearly defining the development of an argument based, context driven, through-life and pan-Defence Lines of Development (DLOD) ASSC;
- b. Introducing regulation to ensure that the ASSC influences capability acquisition;
- c. Broadening regulatory scope to include capability staffs;
- d. Adopting a common, risk-based process for aircraft classification and registration across the DAE;
- e. Enabling MAA provision of an assurance function at key milestones;
- f. Aligning other Defence policy and guidance to be coherent.

7. **Changing Landscape within the DAE.** Over recent years, activities within the DAE have slowly shifted away from the legacy arrangements whereby contractors conducted Test & Evaluation (T&E) activity on military registered Air Systems and only the Military operated them once they were in-service and delivering the intended capability for which they were procured. Development activity is now conducted under both civilian and military Aircraft Operating Authorities (AOA), and there is an increasing appetite for enduring in-service operations to be delivered by civilian AOAs as well as by the Front Line Commands. Whilst bespoke updates to individual Regulatory Articles (RAs) have historically been made to accommodate specific arrangements as they were identified, it is now clear to the MAA that such a piecemeal approach is not the most appropriate way to ensure that the MRP reflects current and future shape of the DAE. In order to provide Defence with the required flexibility over how future capabilities are both procured and employed, a re-categorisation of activities within the DAE is required to ensure that all options are adequately captured.

8. **Overarching Principles.** The two work packages outlined within this RN have been developed in line with the following:

- a. DSA Policy⁴, which states that: *'If the work-related Defence activity takes place on, or involves, a complex system (aircraft, ship or other complex platform) a simple risk assessment will not be sufficient to assess the potential impact on the health and safety of the workforce or public or impact on the environment. The use of a safety case provides the ability to understand the cumulative or interrelated risks from the use of the complex system and for this to be captured in a body of evidence.'*

³ Niteworks Report NW/PR/0820/014 MAA Regulatory Research Project Final Report dated 21 October 2016.

⁴ Defence Safety Authority DSA01.1 'Defence Policy for Health, Safety and Environmental Protection', Version 1, dated Aug 16; Chapter 4, Para 3.

- b. The principle that similar aviation activities within the DAE that result in a similar level of risk or risk exposure, should attract the same level of regulation, assurance and scrutiny, regardless of ownership of, or who is operating, the specific Air System.

Re-categorisation of Aviation Activity within the Defence Air Environment.

9. All aviation activity within the DAE (ie activity on a UK Military Registered Air System and therefore regulated by the MAA) will fall into one of the following categories⁵ (see diagram at Annex A):

a. **UK Military Registered Air Systems Operating for MOD Benefit:**

(1) **Development Air Systems.** Air Systems, or airborne equipment, will be categorised as in Development during the Concept, Assessment, Demonstration and Manufacture phases of the CADMID cycle. Development Air Systems may be MOD-owned⁶ or MRCOA⁷, and may be operated by a Military AOA or a Civilian AOA (through CFAOS⁸).

(2) **In-Service Air Systems.** Air Systems, or airborne equipment, will be categorised as In-Service throughout the In-Service phase of the CADMID cycle; that is the Air System is being used to provide the capability for which it was intended, be that training or operations. In-Service Air Systems may be MOD-owned or MRCOA, and may be operated by a Military AOA or a Civilian AOA (through CFAOS). In-Service Air Systems which undergo modification will be re-categorised as a Development Air System during the Concept, Assessment, Development and Manufacture phases of the modification.

b. **UK Military Registered Air Systems NOT Operating for MOD Benefit.**

(1) **Special Case Flying.** UK Military Registration may be granted to civil-owned, or foreign-military owned, Air Systems employed on non-MOD tasks, when in the best interests of the UK Government and the Civil Aviation Authority is unable to approve civil registration. The operation of such aircraft falls within the DAE and is categorised as Special Case Flying. By definition, Special Case Flying will only be conducted on Air Systems which are not owned by the MOD, and are operated under a Civilian AOA (CFAOS). Special Case Flying may encompass any or all phases of the CADMID cycle.

10. In order to implement this re-categorisation of aviation activity, the following changes to the MRP are anticipated:

a. **MAA01.** The descriptions of 'Flying Operations' and 'Flying Operations on the MAR' within MAA01 will be rewritten to reflect and clearly articulate the new categories of aviation activity within the DAE; the update will also remove ambiguity between the terms Defence Aviation and DAE, and the MAAs corresponding role wrt oversight and regulation respectively. Where required, the associated definitions within MAA02 will be updated.

b. **RA 1120 Series.** The RA 1120 series will be rewritten, such that the RAs detail both the route to military aircraft registration and the overall air safety requirements for Air Systems within each of the categories. Unlike the current MRP structure, all activities on UK

⁵ Note: the term Service Environment will remain in use in the short-term whilst this work is undertaken – see para 10.d for further details.

⁶ For the purposes of this RN, it is assumed that MOD-owned Air Systems will be on the UK Military Register.

⁷ MRCOA – Military Registered Civil Owned Aircraft: a civilian-owned aircraft with a Certificate of Usage issued on behalf of the SoFS that the aircraft is to be treated as a military aircraft for the purposes of the Air Navigation Order.

⁸ Contractor Flying Approved Organisation Scheme.

military Air Systems will fall into one of the new categories. The requirement for all MRCOA to have a Certificate of Usage (CofU) as a military aircraft signed by the Sponsor as detailed in RA 1023⁹ will remain unchanged. Similarly, Air Systems on the UK MAR will continue to be operated in accordance with either an Release to Service (RTS), Military Permit to Fly (MPTF) or, for Special Case Flying, a Contractor's Flight Limitations Document, all of which shall continue to be assured as required by the MRP. However, the scope of the MPTF will likely be extended to ensure that enduring operations by MRCOA without an RTS are adequately catered for.

c. **RA 5880 - Military Permit to Fly.** Noting the potential for an increase in the scope of the MPTF, the current RA will be reviewed to ensure that the application process and assurance underpinning the Safety Case remain appropriate for extended use. As a minimum, the amendments will provide additional guidance material on the Declaration of Compliance, the airworthiness artefacts required (including legacy platforms) and the level of assurance required across the DLODs. It is not anticipated that RA 5810 (Military Type Certificate) or the RA 1300 series (Release to Service) will be affected by this change.

d. **Coherency Review.** The re-categorisation of aviation activity and the associated changes to the RA 1120 series have the potential to introduce inconsistency with other regulations within the MRP. Work will be undertaken to identify those additional regulations that need amending and publish these in accordance with the extant MRP publication schedule¹⁰. Specifically, it is recognised that under the current categorisation the terms 'Service Environment' and 'not in the Service Environment' are used in many RAs. The MAA intends to review the rationale behind the use of each term (ie duty holding, flight clearance documentation and/or 'not for MOD benefit') and clarify accordingly¹¹.

Re-write of RA 1205 - Air System Safety Cases.

11. The current version of RA 1205 constrains ASSC to Operating Duty Holder (ODH) ownership post-RTS¹², which contributes to disproportionate regulatory scrutiny against the changing landscape within the DAE as discussed at paragraph 7. This also undermines the utility of the ASSC to enable balanced pan-DLOD air safety considerations to influence capability design/selection before handover to Generate/Operate domains (as a *fait accompli*) at Initial Operating Capability (IOC). Furthermore, differing interpretation results in over-emphasis on evidence at the expense of an explicit and holistic argument, which undermines coherency across DLODs.

12. The Niteworks report recommended that the regulations pertaining to ASSCs should consciously promote an explicit argument, provide an ASSC model and associated assurance framework around which to build it, but without prescription regarding the use of tools/techniques. In order to implement these recommendations, the following changes to the MRP are anticipated:

a. **Definitions.** The definition of an ASSC used throughout the MRP will be aligned to that used in Defence Standard 00-56 and DSA Policy: *'An ASSC is defined as a structured argument, supported by a body of evidence that provides a compelling, comprehensible and valid case that an Air System is safe for a given application in a given operating environment.'* Definitions for related terms such as 'safety case argument' and 'safety case report' will be included within MAA02.

b. **RA 1205.** RA 1205¹ will be rewritten to effect development of through-life ASSCs with a pan-DLOD focus from the outset of the CADMID cycle; this will enable the early

⁹ RA 1023 - Chief Air Engineer – Air Safety Responsibilities

¹⁰ MAA/RN/2018/02 - Advance Warning of Changes to MAA Regulatory Publication Schedule.

¹¹ Specific short-term guidance on the applicability of these terms will be available from the MAA during this transition.

¹² Noting that RA 1205 Guidance Material does point to through-life management and the end-user ODH influencing the developing ASSC throughout the CADMID cycle.

identification of air safety risks within the development process, ensure a more holistic approach to air safety across the DLODs, and promote Duty Holder ownership and influence during the procurement cycle. The new RA 1205 will explicitly emphasise the following:

- (1) **Through-life Applicability.** Through-life applicability of the ASSC, including clear responsibilities for ownership at each stage through the CADMID cycle. Sponsors/Senior Responsible Officers (SROs) will be responsible for the development and management of the ASSC during capability development (including major change) prior to RtL being incurred through operation. Before RtL is incurred, the ASSC will be handed to the ODH/Accountable Manager (Military Flying) (AM(MF)) responsible for T&E flying, and then to the end-user ODH/AM(MF) for ownership and management within their Area of Responsibility (AoR) as a means to support RtL judgements for which they are accountable.
- (2) **Applicability across the DAE.** Cognisant that a key tenet of an effective ASSC is to ensure it is proportional to the activity being undertaken and the associated risk to life, the requirement to own and manage an ASSC for each Air System on the UK MAR will apply throughout the DAE, regardless of Air System ownership or AOA (military or civilian). Consequently, both ODHs and AM(MF)s will be required to own and manage an ASSC for each type within their AoR that is proportional to the activity being conducted, ie development flying or in-service flying.
- (3) **Pan-DLOD Applicability.** The safety case argument and the supporting evidence presented throughout the development of the ASSC must be pan-DLOD, not equipment centric.
- (4) **Primacy of the Safety Case Argument.** The relationship between safety claims, argument and evidence is critical. The emphasis must be on an explicit argument to demonstrate how the system can be deemed acceptably safe from the evidence available; however, supporting evidence that provides justification that the argument is valid remains important.
- (5) **Defence ASSC Model.** A Defence ASSC Model will be introduced. The central tenet is that all RtL is As Low As Reasonably Practicable (ALARP) and Tolerable because the Air System is both 'safe to operate' and being 'operated safely' within a clearly defined context; the supporting evidence to support these sub-claims will encompass type airworthiness, continuing airworthiness, support solutions, training, operations and regulatory compliance.
- (6) **Assurance Framework.** The Defence ASSC model will be accompanied by an assurance framework which will serve two purposes: areas of focus for internal or external review/audit of the ASSC, and the basis of an explicit safety argument. The assurance of the ASSC will span the MAA, RTS Authority and Aviation Duty Holder (ADH) areas of responsibility, and will touch all aspects of the MRP.
- (7) **Safety Case Reports at Key Project Milestones.** A Safety Case Report (SCR) is the document that summarises all the key components of the Safety Case and *references* all supporting documentation in a clear and concise format. Key milestones in the project which will require SCRs include the ASSC Strategy at Initial Gate, the ASSC Acquisition Basis at Main Gate, the Live ASSC for T&E Flying and the Live ASSC for in-service flying.

c. **Manual of Air System Safety Cases.** In concert with the re-write of RA 1205, the MAA will produce a Manual of Air System Safety Cases (MASSC) which will form the basis

of the guidance material to RA 1205¹ in a similar way to how the Manual of Air Safety supports RA 1200¹³.

13. **Organisational and Practical Implications.** The implementation of this policy and regulation change will require potential changes within the Type Airworthiness Authority (TAA) and ADH organisations, noting the potential for enduring activity under a MPTF. There will be a need to stand up or engage the ADH early in the CADMID cycle, and the TAA will require access to Suitably Qualified and Experienced Personnel (SQEP) within the area of duty holding and pan-DLOD assurance. This will be implemented over time as the policy is matured. Additionally, the acquisition process will need to be examined to mature documentation such as the Statement of Operating Intent and Usage (SOIU) and support solution much earlier and as part of the design review process.

Engagement

14. The re-categorisation of aviation activities within the DAE will ensure that the MRP reflect and capture all activities conducted on UK Military Registered Air Systems, and consistently correlate regulation and assurance with exposure to risk. Similarly, the re-write of RA 1205 and the introduction of the MASSC will result in more consistent and robust assurance to the SofS by requiring a robust safety case to be prepared for all Air Systems prior to entry on the military register.

15. It is anticipated that these two work strands will take approximately 12 months to implement fully, including the required MRP coherency review. This will include full engagement with the RC through the normal Notice Proposed Amendment process for each RA update. Furthermore, as these work strands mature, the MAA will engage with DE&S Delivery Teams, Duty Holders and Accountable Managers to assess any impact on extant programmes, and to agree applicability and appropriate transitional arrangements as required. Finally, work will be undertaken to refresh associated training material including the Duty Holder Air Safety Course and other air safety related courses to align with the new regulations.

Queries

16. Any observations or requests for further guidance on the content of this RN should be submitted by email to DSA-MAA-MRPEnquiries@mod.gov.uk.

17. A copy of the Niteworks Report is available on request from the MAA.

¹³ RA 1200 - Defence Air Safety Management

The Defence Air Environment

		Concept	Assessment	Demonstration	Manufacture	In-service	Disposal (Transfer)	
Military AOA	Operating for MOD Benefit							
		Development (Military Operated) <i>Air Systems which are 'in development' (ie not yet in-service wrt <u>CADMID</u>) and operated by a Military AOA.</i> <ul style="list-style-type: none"> • MOD-Owned or MRCOA • Military Operated (Military AOA) • Military ADH • MPTF • ASSC Strategy and Acquisition Basis (Owned by Sponsor/SRO - ASSC Manager) • Live ASSC for T&E Flying (Owned by T&E ODH) 				In-Service (Military Operated) <i>Air Systems which are 'in-service' (ie being employed as intended wrt <u>CADMID</u>) and operated by a Military AOA.</i> <ul style="list-style-type: none"> • MOD-Owned or MRCOA • Military Operated (Military AOA) • Military ADH • RTS (or potentially MPTF) • Live ASSC (Owned by ODH) 		
Civilian AOA	Operating for MOD Benefit							
		Development (Civilian Operated) <i>Air Systems which are 'in development' (ie not yet in-service wrt <u>CADMID</u>) and operated by a Civilian AOA.</i> <ul style="list-style-type: none"> • MOD-Owned or MRCOA • Civilian Operated (Civilian AOA) - CFAOS • AM(MF) • MPTF • ASSC Strategy and Acquisition Basis (Owned by Sponsor/SRO - ASSC Manager) • Live ASSC for T&E Flying (Owned by AM(MF)) 				In-Service (Civilian Operated) <i>Air Systems which are 'in-service' (ie being employed as intended wrt <u>CADMID</u>) and operated by a Civilian AOA.</i> <ul style="list-style-type: none"> • MOD-Owned or MRCOA • Civilian Operated (Civilian AOA) - CFAOS • AM(MF) • MPTF • Live ASSC (Owned by AM(MF)) 		
		Special Case Flying (<u>NOT</u> Operating for MOD benefit):						
		<i>Aircraft on UK Military Aircraft Register, but not operating for MOD-Benefit, and operated by a Civilian AOA. Note: may be during any or all phases of <u>CADMID</u>.</i> <ul style="list-style-type: none"> • MRCOA • Civilian Operated (Civilian AOA) – CFAOS • Accountable Manager (Military Flying) - AM(MF) • Contractor's Flight Limitations Document • ASSC Strategy and Acquisition Basis (Owned by Contractor) – if/as required to support subsequent flying on UK MAR • Live ASSC for Flying aspects (Owned by AM(MF)) 						