Regulatory Notice

19 Nov 15

MAA/RN/2015/15 (D TECH) – USE OF EXISTING CERTIFICATION EVIDENCE AS CREDIT TOWARDS DEMONSTRATING COMPLIANCE WITH THE MILITARY AIR SYSTEMS CERTIFICATION PROCESS

Issue

1. This RN provides further guidance to the Regulated Community on the use of existing certification evidence from other Airworthiness Regulators as credit towards demonstrating compliance with the Military Air Systems Certification Process (MACP).

Scope

2. This guidance is supplementary to RA 1500 – Certification of UK Military Registered Air Systems[1] and should also be read in conjunction with MAA/RN/2015/08 (D TECH) – Recognition of other Military Airworthiness Regulators.

Aim

3. The aim of this RN is to provide guidance on the circumstances in which existing certification evidence from other Airworthiness Regulators can be used as credit towards demonstrating compliance with the MACP and it describes in more detail the processes that Applicants[2] should follow.

4. The processes described in this RN will be trialled by the MAA and DE&S on 2 nominated pilot projects with the intent of producing further and more detailed guidance in the future based on lessons learned. Any other Applicants wishing to use the processes described in this RN as credit towards demonstrating compliance with the MACP should therefore seek the specific agreement of the MAA beforehand.

Implementation

5. This guidance is effective immediately.

Guidance

6. RA 1500 describes the MACP that should be applied to all new air systems or major changes to existing air systems that operate, or are intended to operate, in the Service Environment. Full application of the MACP can represent a significant undertaking on behalf of both the Applicant and the MAA. The UK MOD routinely procures air systems or adopts design changes that have already been subjected to some degree of independent certification activity. In demonstrating compliance with the MACP, the MAA is therefore prepared to give credit to certification activities performed by Accepted Certification Authorities (ACAs) but only where such activities can be demonstrated by the Applicant to be both acceptable and applicable to UK MOD configuration and intended usage. Such arrangements should avoid unnecessary duplication of effort and enables UK MOD resource to be targeted at the areas of greatest air safety benefit.

7. This RN is written to account for instances when an air system's Certification Programme (CP) is either complete or has been substantially completed under the auspices of an ACA and where that certification has followed a system that has been Recognized by the MAA. However,

[1] Along with the RA 5800 Series once published, which will replace RA 1500 as part of the RA 5000 Series update.
[2] The Applicant would typically be expected to be the Type Airworthiness Authority.

where the CP is less mature then the Applicant may be expected to demonstrate reasonable influence over the conduct and overall outcomes of the CP. Where the Applicant proposes to establish an enduring relationship with an ACA to certify changes to his type design then specific arrangements should be agreed with the MAA before Main Gate or any associated Business Case Approval.

8. Credit towards demonstrating compliance with the MACP may be requested for certification activities only when performed under the auspices of an ACA. The UK MOD has experience of operating civil-derived aircraft based on designs certified by the European Aviation Safety Agency (EASA), the Federal Aviation Administration (FAA) and the UK Civil Aviation Authority (CAA). EASA, the FAA and the UK CAA are therefore considered to be ACAs for the purpose of this RN and as detailed in RA 1500. Where ACAs are considered to have been Validating Authorities[3] then further assessment will be necessary to understand the nature of the original CP and the extent of any additional technical conditions or limitations that the ACA may have imposed as part of its validation. Applicants requesting credit for civil-derived aircraft should also consider carefully the extent to which requirements affecting air safety are contained in, and inherently levied by, the associated civil operating rules[4]. An Applicant wishing to claim credit for certification activities undertaken by a Civil Airworthiness Regulator other than those listed in RA 1500 should seek further guidance from MAA, Certification Division.

9. The MAA has undertaken a structured Recognition process with a number of other Military Airworthiness Regulators and further details and guidance on this is contained in MAA/RN/2015/08 (D TECH). The Recognition process for a Military Airworthiness Regulator must meet the criteria defined in that RN for the Military Airworthiness Regulator to be considered an ACA.

Review Process

10. To be eligible to request credit towards compliance with the MACP an Applicant will need to successfully complete a structured 2-part Review. This Review should be comprehensive, fully documented, auditable and involve the MAA. The proposed outline details of this Review should be included in the initial endorsed Airworthiness Strategy for the platform. The Part A Review includes an assessment of the acceptability and applicability of the original certification activities, taking in to account such factors as intended UK usage and configuration (Figure 1). Where such activities are agreed by the MAA to be both acceptable and applicable then a more detailed Part B Review will be undertaken, which may include a technical examination of the original CP. The breadth and depth of this Part B Review should be agreed with the MAA in advance, based on the findings of the Part A Review. The Applicant is responsible for facilitating access to the information, artefacts, facilities and stakeholders necessary to support the Review. It should be noted that:

a. The Part A Review should be completed and the findings agreed with the MAA before Main Gate or any equivalent Business Case Approval.

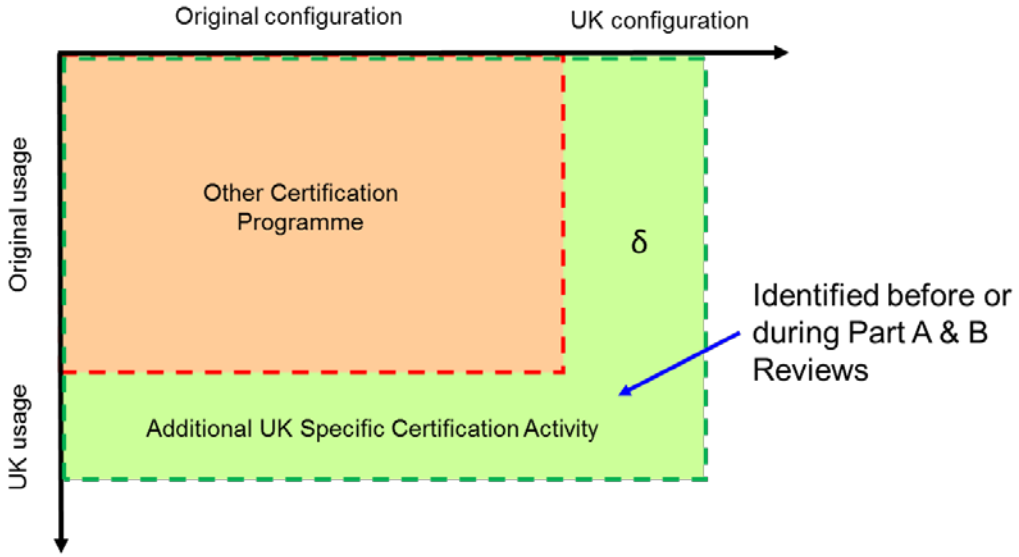
b. If the Part A Review identifies significant issues that could only be satisfactorily understood through a more detailed Part B Review then that specific element should also be completed before Main Gate or any equivalent Business Case Approval.

c. If for any reason the Part A Review cannot be successfully completed then the MAA may decline to give credit to any or all of the previous independent certification activities.

[3] An Airworthiness Regulator is considered to be a Validating Authority when its certification relies upon the compliance findings of another Airworthiness Regulator.

[4] Such as equipment essential to safe operation or minimum instrument, data and equipment requirements that are mandated in the civil configuration and therefore assumed.

Figure 1: Key Factors to Consider in Part A and B Reviews



It is critical to understand differences in the platform **design** for the UK MOD and where how we intend to **use** it differ from the assumptions made by the original designer and the original certification authority. The use of δ indicates differences in either configuration and/or usage.

Part A Review

11. The MAA will have established the policies, processes and capabilities in use by an ACA through either Recognition, documentary evidence or experience. However, it is incumbent upon the Applicant to establish the specific arrangements that applied for each air system including the scope of the air system that was covered. This is of particular significance for older air systems that may have been assessed using substantially different criteria from that currently employed by the ACA, noting that most Military Airworthiness Regulators, like the UK MAA, have been created in their current form only in the last decade and have evolved practice from there. Where ACAs issue their own organizational approvals then these may potentially be considered as providing credit towards an application for an MAA-approved organization scheme in support of the MACP. Pre-requisites for the use of an organizational approval issued by a Military Airworthiness Regulator are defined in MAA/RN/2015/08 (D TECH). An Applicant intending to claim credit for the ACA's independent certification activity as satisfying the MAA's requirement for Independent Technical Evaluation should submit an appropriate application to the MAA.

12. The UK MOD maintains its own Design Airworthiness Standards in the form of Def Stan 00-970, which constitutes the UK MOD's preferred Primary Certification Code (PCC) for the design and development of UK military air systems. However, it is likely that air systems being considered under this RN will have already been designed and developed using a different PCC. The MAA does not automatically accept other PCCs and their use must therefore be agreed. In considering the use of alternative PCCs, Applicants should define, at a high-level[5], the requirements that would have been applicable using Def Stan 00-970 as the PCC, including establishing the need for Special Conditions (SCs). The intent of this analysis is to provide a benchmark against which to compare and assess the ACA's Type Certification Basis (TCB) and not to establish a fully-developed UK TCB[6]. An Applicant will be expected to demonstrate that the ACA's TCB is

[5] This review would include identification of: the Def Stan 00-970 Parts and Amendment States applicable at the date of application to the MAA; the key standards and design philosophies contained therein; and the scope of requirements covered.
[6] Note that the European Military Airworthiness Certification Criteria (EMACC) Guidebook and Handbook can provide guidance for the production of a TCB and groups many different civil and military airworthiness standards by areas of subject interest. Whilst the EMACC does not provide an exhaustive list of airworthiness standards, nor is it a full guide to demonstrating equivalence, its production was supported by the MAA.

appropriate and that it delivers an acceptable level of safety. This overall assessment should be informed by a UK Statement of Operating Intent[7] and a UK System Requirements Document.

13. In determining the appropriateness of the ACA's TCB for UK military air systems then the Applicant will need to satisfactorily address differences in:

a. Configuration.

b. Role.

c. Usage.

d. Operating environment including electromagnetic exposure.

e. Armament and stores.

f. Applicable legislation.

14. In making the argument for achieving an acceptable level of safety, the Applicant will need to demonstrate that the PCC and associated standards specified in an ACA's TCB:

a. Have been published and maintained by an established authority.

b. Are accessible, comprehensive and supported by appropriate means of compliance.

c. Have been used for air system designs that have achieved an acceptable safety record.

d. Can deliver an outcome consistent with the intent of the benchmark requirements derived from Def Stan 00-970 (as set down in Para 12)[8].

15. Where the PCC or standards specified in the ACA's TCB pre-date those in force at the date of application to the MAA then the Applicant should assess the key air safety benefits introduced by later amendments and explain the implications of not applying them to the MAA[9]. Where an air system has been designed and developed to a bespoke suite of airworthiness requirements[10] then a more detailed assessment will be required in order to understand the selection process, provenance and completeness of the applicable requirements.

16. Where appropriateness and achievement of an acceptable level of safety cannot be demonstrated then an assessment of the implications will need to be submitted for agreement with the MAA. Where design changes are considered necessary to satisfy any UK differences then the TCB and subsequent certification arrangements should be agreed with the MAA in the form of a UK-specific CP Plan (CPP). Alternatively, a more detailed assessment to address any specific questions, problems or issues that arise may be deferred until the appropriate Part B Review with the agreement of the MAA. Any of these considerations may be considered to constitute Part A Findings.

17. The Applicant should assess the breadth and depth of the original CP undertaken including the processes for finding and documenting compliance. Particular attention should be paid to the processes applied to establish and define SCs. The extent to which exemptions, deviations, equivalent safety findings or risk acceptance against compliance with the TCB have been agreed by the ACA, and the reasons behind them, should also be examined and understood. Where the air system has accumulated a service history then the details of that service history should be

[7] Or a UK Statement of Operating Intent and Usage for in-service air systems.
[8] Further guidance on potential methodologies for demonstrating delivery of such an outcome will be developed as part of the nominated pilot projects.
[9] It is anticipated that this would be a top-level review intended to highlight the most significant developments of the respective standards. For example, earlier versions standards may not have required consideration of high intensity radiated fields or the effects (both direct and indirect) of lightning.
[10] Such as might be developed to meet a performance-based specification.

considered including the management of any unsafe conditions. The safety assessment processes employed should be reviewed and a strategy should be developed that defines how any existing safety information can be effectively used to satisfy the UK MOD's requirement for evidence. Any safety requirement shortfalls should be addressed including consideration of omissions or conflicts. All of these elements should be considered to constitute Part A Findings.

18. The first key output of a successful Part A Review will therefore include a determination of the requirement for any additional UK-specific certification activity. Such additional certification activity should be conducted in accordance with an MAA-agreed CPP. The second key output is a list of findings that will inform the breadth and depth of the Part B Review of existing compliance evidence. The Part B Review must satisfactorily address all of the Part A Findings to enable the Applicant to request the appropriate MACP credit.

Part B Review

19. The aims of the Part B Review are to:

a. Satisfactorily resolve all of the findings identified during the Part A Review.

b. Validate the original assessments made by the ACA.

c. Determine the amount of credit that can be claimed by the Applicant towards demonstrating compliance with the MACP.

The depth of the Part B Review for each design aspect, system or subject area of the air system will therefore vary depending upon the nature of the Part A Findings. In order to meet the wider non-airworthiness responsibilities, the Applicant may need to conduct a broader or more detailed analysis than is required by this RN.

20. It Is envisaged that there will be broadly 3 levels of Part B Review to consider and the MAA will agree the level required with the Applicant as follows:

a. **Level 1 (Minimal) Review**. When the Part A Review has been successfully completed without identifying any significant findings then a Level 1 (Minimal) Review may be appropriate. A Level 1 Review would not normally be expected to assess the technical data developed during the CP and may be restricted to an examination and assessment of the associated 'top-level' documentation such as the Type Certificate and accompanying Data Sheet, Master Compliance Record Document or Approved Flight Manual.

b. **Level 2 (Limited) Review**. When the Part A Review identifies that there are findings that need to be resolved then a deeper Level 2 (Limited) Review may be required. The intent of a Level 2 Review is to examine the technical data developed during the CP in a limited number of specific areas in sufficient detail to be able to fully address the Part A Findings.

c. **Level 3 (Comprehensive) Review**. When the Part A Findings are considered to be either more significant, broader in scope or are anticipated to require greater effort to resolve than a Level 2 Review, then a more detailed Level 3 (Comprehensive) Review may be required. The scope of the Level 3 Review may be so significant as to replicate, or even exceed, the original ACA's certification activity. However, the overall intent of the Level 3 Review remains to validate the ACA's finding of compliance.

21. During the Part B Review it is likely that either new findings or unresolved Part A Findings will be identified. These will be considered to constitute Part B Findings. Where these Part B Findings affect compliance with the MACP and are unlikely to be fully and satisfactorily resolved before Release to Service (RTS) then the Applicant, having consulted other applicable stakeholders, will need to agree a mitigation process with the MAA. This process may propose accepting the issue indefinitely or involve the implementation of a resolution following RTS. In any case, the Applicant will be required to demonstrate that the associated air safety risk has been suitably managed and that any residual risk has been transferred to an appropriate Aviation Duty Holder.

22. The Part B Review may require an element of live or synthetic flight examination. If this is the case then the Applicant will be responsible for making the appropriate arrangements. Flight examination may be necessary, for example, to permit limited examination of the operational envelope or to provide a handling qualities baseline to assess the subsequent effect of UK-specific design changes or operation by UK-trained aircrew.

23. Following conclusion of the 2-part Review the Applicant will be expected to submit a Report to the MAA detailing the overall conduct and endorsed conclusions of the Review. The MAA will use this Report together with its overall involvement in the assessment to determine the amount of credit that can be claimed by the Applicant towards demonstrating compliance with the MACP. Where further certification activity is considered necessary then this should be added to the UK-specific CPP.

Queries

24. Any queries or requests for further guidance on the content of this RN should be submitted in the first instance to DSA-MAA-Cert-DepHd via DSA-MAA-MRPEnquiries@mod.uk.

D (TECH)