

Continuing Airworthiness Engineering (CAE) 4000 Series and Manual of Maintenance and Airworthiness Processes – 01 (MAP-01) Review – Narrative to accompany CAE 4000 Series and MAP-01 Review Presentation Slides

Slide 1 – CAE 4000 Series and MAP-01 Review

The Military Aviation Authority and the single Service Commands are in the final stages of the Continuing Airworthiness Engineering (CAE) 4000 Series and Manual of Maintenance and Airworthiness Processes – 01 (MAP-01) Review. To inform the defence aviation engineering community about the outcomes and deliverables from the review, the Military Aviation Authority and Commands are conducting a series of roadshows, targeting the main centers of gravity. It is anticipated that most personnel, both Military and Civilian will be briefed in person at these roadshows, but to brief those individuals who are deployed or otherwise unavailable, the MAA is hosting the Roadshow presentation on its websites to ensure the whole community is briefed.

The presentation is structured in a logical sequence and will hopefully address any immediate questions you may have about the review. But if you still have questions that you would have asked at a roadshow, then the final slide of the presentation details points of contact who will be able to assist you.

Slide 2 – Overview

In 2015 it was identified that an end to end review of the CAE 4000 Series and MAP-01 was required. Governance was established through the Continuing Airworthiness Advisory Group (CAAG), a 1* Chaired group led by the MAA's Head of Regulation and Certification. This Steering Group, included Operating Duty Holder Chief Airworthiness Engineers from each Command, established and empowered a Working Group to conduct the Review of the MAP-01. The Working Group was given a set of guiding principles and the scope of the review was detailed in MAA/RN/2015/11. The MAP-01 Working Group (MAP-01 WG) was staffed with personnel from the Command Engineering and Policy sections and the MAA's Regulation Division.

The Review was initiated to deliver 4 main outputs:

1. The uplift of Continuing Airworthiness Acceptable Means of Compliance (AMC) and Guidance Material (GM) from the MAP-01 into Stand-alone CAE 4000 Series Regulation.
2. The removal of Regulation that is no longer required because it is satisfactorily covered elsewhere in Defence Policy, Legislation or Air System Technical Information.
3. The transfer of appropriate Type Airworthiness Regulatory content to the 1000/5000 Series to align with the established structure of the MAA Regulatory Publications (MRP).

4. And arguably the most important output, a refreshed manual of remaining process, focused at shop-floor technicians and engineers, that is aligned with current Regulation.

Up front it is important to highlight that the review has made few significant changes but is now packaged and presented in a manner that is aligned with the rest of the MAA's Regulatory Publications and other Defence Publications. In the majority of areas, you will continue using the well-established processes that you have in place, but this briefing will identify those areas where changes have been made, to prepare you for amendments that will be required to your local level orders and procedures.

Additionally, as the review was progressing, the opportunity was taken to review the Engineering Authorizations hosted in the MAP-01, a review initiated by 22 Gp, and the Manual of Maintenance and Airworthiness Processes Supplement – MOD Form 700 Series of Forms (MAP-02).

Slide 3 – MAP-01 illustrated

So why did the content of the MAP-01 need reviewing?

As you will be aware, the MAP-01 was developed from the JAP 100A-01 and it contains detailed guidance and processes to support compliance with Continuing Airworthiness Engineering 4000 Series of Regulatory Articles. But it also contains a significant amount of material that constitutes the AMC and GM for many of the CAE 4000 Series, Type Airworthiness Engineering (TAE) 5000 Series content and other legacy content.

From a regulator's perspective, this is not coherent with the rest of the MRP that has stand-alone RAs that do not rely on a Manual for their AMC and GM. And for the reader and user of the manual, it is confusing as it is not written in accordance with the conventions in MAA01, that identify AMC through the use of the permissive verb, **should**.

Additionally, it is not appropriate that TAE 5000 Series content remains hosted in a CAE 4000 Series Manual, as the Air System Type Airworthiness Authorities and Delivery Teams focus on the TAE 5000 Series and there is a risk that things can get missed.

As result, the empowered MAP-01 WG systematically went through each chapter extracting information in accordance with a set of guiding principles developed at the CAAG.

Slide 4 – MAP-01 extraction of information

This section was the most time-consuming section of the review.

Content that was assessed as Continuing Airworthiness Regulation, AMC or GM was extracted from the chapter to develop into stand-alone CAE 4000 Series Regulation.

Content that was assessed as Type Airworthiness Regulation, AMC or GM was extracted from the chapter for transfer to the TAE 5000 Series of Regulation.

Content that related to the MOD Form 700 Series and Maintenance Documentation was extracted to be developed into a replacement MAP-02.

And finally, the remaining content, which was largely shop-floor process, reference material, useful information, and the Engineering Authorizations, was extracted to develop into a replacement MAP-01

Slide 5 – Summary of Deliverables – MAM-P

Before we expand on some of the detail we will look at a summary of the replacement MAP-01 and the other deliverables. The name of the replacement Manual for the MAP-01 is the *Manual of Airworthiness Maintenance – Processes (MAM-P)*.

Currently the MAP-01 is owned and reviewed by the MAA, but the MAM-P will undergo a change of ownership. It will be, co-owned and sponsored by the Commands, but will continue to be maintained & published by the MAA on its websites for ease of use and navigation.

It will no longer contain information that is considered as AMC & GM, and the scope of the content will be 'shop floor' process that support CAE RA compliance.

Due to the extraction of a significant amount of AMC and GM, it will reduce from 160 chapters to 76, with a reduction in page count of 53%.

It will have a new amendment process, that uses an amended MOD Form 765 process that will be more responsive to change.

And finally, it will have an updated Authorizations table that has seen a 34% reduction and the identification of Pt 145 & Pt M authorizations.

Slide 6 – MAM-P Precedence

This slide highlights that the MAM-P is now 'Primus inter pares' or 'first among equals' and that its status (as per MAA01) has now changed – ie not an MRP Manual.

As it is co-sponsored and owned by the Commands, it now has the status of mid-level orders. As a result, it will be more responsive to change.

Slide 7 – Summary of Deliverables – MAM-D

The name of the replacement Manual for the MAP-02 is the *Manual of Airworthiness Maintenance – Documentation (MAM-D)*.

It has an updated structure and although it will host the Maintenance Documentation Governance chapters from the MAP-01, it will be a leaner manual aligned with current MRP Regulation such as RA 1223 – Airworthiness Information Management.

The MAM-D will continue to be owned and sponsored by the MAA and will continue to be amended by the MOD Form 765.

Slide 8 – Summary of Deliverables MRP

In addition to the changes already introduced during Notice of Authorized Amendment (NAA) 16/25 (the withdrawal of 15 CAE 4000 Series RAs covered elsewhere in Defence Policy) and NAA 18/37 (the update of MRP Part 145 and MRP Part M to make them stand-alone from the MAP-01). A further 13 CAE 4000 Series RAs have been updated to be stand-alone without relying on a manual for their AMC and GM.

There has also been a significant reduction in the amount of Regulation in the CAE 4000 Series with an additional 53 RAs being withdrawn.

- 37 as a result of associated transfers to the TAE 5000 Series
- 2 as a result of transfer to the GEN 1000 Series
- 14 withdrawn as they are satisfactorily captured elsewhere in defence publications

The withdrawals and the transfer of information into more appropriate locations will deliver a far more coherent suite of Regulation. And more importantly all the Regulation is now Stand-alone.

But again, it is important to stress that nothing has significantly changed to the content, just where it has been located.

Looking at the TAE 5000 Series, the 37 RAs being withdrawn from the CAE 4000 Series associated with transfers to the 5000 Series have not resulted in 37 new TAE 5000 Series RAs. The majority of the information is already there. But 10 are being updated to remove reference to the MAP-01 and include some additional detail.

In the Gen 1000 Series, there will be 2 new RAs, and RAs associated with Engineering Authorizations are being reviewed to remove reference to the MAP-01.

More detail on each of these areas will be covered in later slides.

Slide 9 – MAM-P, MAM-D & MRP timeline

The publication of the MAM-P, MAM-D and the Changes to the MRP will all be published on the 29th of November 2019.

Further to this presentation, a Regulatory Notice, MAA/RN/2019/12, titled 'Progress Update - Review of MAA Regulatory Publications (MRP) Continuing Airworthiness Engineering (CAE) 4000 Series and Manual of Maintenance and Airworthiness Processes – 01 (MAP-01)', has been released and is hosted on the MAA's websites.

It provides detailed mapping documents that:

- Update on changes between the MAP-01 to MAM-P
- Detail the Manual of Airworthiness Maintenance – Process (MAM-P) Structure
- Detail a table of Authorization Changes
- And provide a Summary of Changes 4000 Series Regulations

It also details the transition arrangements and timescales for compliance with the deliverables from this review. Highlighting that Organizations will achieve compliance by the 30th of June 2020.

Slide 10 – MAM-P. MAP-01 vs MAM-P

An empowered MAP-01 WG reviewed every chapter, but also reached out to Subject Matter Experts where required.

And that resulted in the structure that you see on the slide.

In addition to the reduction in Chapters from 160 to 76, and an associated 54% reduction in page count, there has also been a review of the structure.

The process contained in the MAM-P is now in a more logical structure that will make it more user-friendly to the shop-floor maintainers and engineers.

The following slide will detail the methodology used by the MAP-01 WG during their review.

Slide 11 – MAM-P review methodology

The MAM-P was reviewed iaw the Ten guiding principles detailed in MAA/RN/2015/11 and the following review methodology:

- Review
- Uplift
- Withdraw
- Transfer
- Merge

Some brief examples examples:

Review

Where content assessed as valid process to support compliance with CAE 4000 Series RAs, it was reviewed and retained for inclusion in the MAM-P.

Uplifted

An example of this is the current MAP-01 Chapter 7.3 - Logistic Information Systems, which was reviewed and uplifted into an RA. The Requirements are now detailed in RA 1223 – Airworthiness Information Management

Withdrawn

An example of a MAP Chapter that has been withdrawn is MAP-01 Chapter 3.7 - Compressed Gas and Pneumatic Lubricating Equipment Precautions. This Chapter withdrawn as information is suitably covered in extant defence publications. The information is held in JSP 317 375 and DSA 01.1 Defence Policy for Health, safety and Environmental Protection.

Transferred

An example of a MAP Chapter that has been transferred is MAP-01 Chapter 7.1 - Certification of Aircraft Maintenance Documentation. This has been reviewed and the amended content moved to MAM-D. And is now captured in the MAM-D Part 1 Chapter 2.1 Maintenance Recording –General Principles.

Merged

And finally, an example of where MAP Chapters have been merged. MAP-01 Chapter 11.5 Non-Destructive Testing and MAP-01 Chapter 11.5.1 Non-Destructive Testing – Tasking Procedures. These have both been merged into a single chapter. In the MAM-P these will be Chapter 5.8 Non-Destructive Testing.

Slide 12 – Engineering Authorizations

The command initiated review of the Engineering Authorizations in the MAP-01 was requested due to the significant number of Authorizations and the associated managerial burden that accompanies them.

The review has resulted in a 34% reduction in total number of Engineering Authorizations

- Total number has reduced from 332 → 218
- Additionally, 8 new authorizations are being introduced to address shortfalls

The A-K system has been maintained, but all engineering Authorization numbers will be changed to reflect the change in scope of some authorizations and the new MAM-P structure. The STARS managers will load these new Authorizations onto STARS nlt 29 Nov 19.

The next slide highlights the review methodology of the Engineering Authorizations.

Slide 13, 14 & 15 – Engineering Authorizations review methodology

The review of the Engineering Authorizations was carried out by the MAA staff with input from the Commands. The review focused on the following methodology:

- New Authorizations where required
- Keep - No change (with the exception of id number)
- Keep and Update the authorization wording to:
 - Align authorization description with authorization intent
 - Updated references or regulatory requirements
 - Merger with other authorization(s)
- Delete
 - Deleted via merger
 - Deleted as they are associated with Health and Safety, with no Airworthiness need for authorization
 - Deleted as they are applicable to single Service only
 - Deleted - not required

The Ground Support Equipment authorizations are being removed from the MAM-P and will be incorporated within the JAP 100E-10 - Military Airfield support Equipment Management and Policy from the 29 Nov 19.

Slide 14 gives an example of 'Keep - No Change' and Slide 15 gives an example of 'Delete Via Merger'.

MAA/RN/2019/12 provides a table of authorization changes if further detail is required.

Slide 16 and 17 – Of note

The authorizations for preventive Maintenance and lifing extensions have been amended to remove the previously defined latitudes (10%, 25%) instead referring the user to the appropriate Technical Information (TI) for latitudes. The DE&S Airworthiness Team (DAT) have been informed of the changes and the Delivery Teams (DT) will be notified by a DAT Information Notice (DATIN) of the requirement to provide permissible latitudes in the TI. This will also be controlled by a change in the Regulation contained in RA 1220(5) – Support Policy Statements.

Slide 18 – Life Extension Authorizations

This slide has a dual purpose.

Firstly, it highlights the changes to the way in which Engineering authorizations associated with lifing extensions in the MAM-P now point to TI.

Secondly, it highlights another example of a delete via merger.

Slide 19 – MAM-D

As highlighted earlier, the replacement for the MAP-02 will be the MAM-D. It will continue to be hosted in 2 parts. The Governance and Guidance section in PDF format, and a catalogue of Forms.

It will continue to be hosted on the MAA's websites, just under a different name.

Of note:

The Instructions for Use will either:

- Transfer to the MOD Form 799 series
- Transfer to the MOD Poster series
- Deleted, where the information is no longer valid

Slide 20 – CAE 4000 Series Changes

As discussed earlier, In addition to the changes already introduced at NAA 16/25 and NAA 18/37, as part of the CAE 4000 Series review, a further 13 RAs have been updated to be stand-alone without relying on a manual for their AMC and GM. The following slide will highlight the new suite of CAE 4000 Series Regulation, but it should also be highlighted that RA 4809 – Acceptance of Components is being updated to include the NETMA DAIN as an equivalent to the MOD Form 731, and that RA 4815 – Maintenance Procedures and Safety and Quality Policy is being updated to include the Repair categories that are currently hosted in the MAP-01.

Additionally, MRP Part M is being updated to include updates requested by RFC and to introduce RA 4966 – Military Continuing Airworthiness Maintenance Organization Instructions to replace RA 4462 – Aviation Local Technical Instruction which will be withdrawn.

The publication date for these changes at NAA will be 29 Nov 19 and as a result of the volume of change in the November drop of Regulation, there will be no programmed CAE 4000 Series updates in May 20.

Slide 21 – CAE 4000 Series post 30 Nov 19

Following the release of the NAA on 29 Nov 19, the CAE 4000 Series will reduce in size from 108 RAs to 52 RAs.

The review has achieved a leaner more efficient series that focuses on MRP Part 145, M and the 13 lower level military delta RAs to address areas of Airworthiness decision making that are not adequately covered in the Air System TI.

The RAs will now be aimed at the Mil CAM to ensure that orders and / or procedures are in place but should cause minimal impact when released.

For Military Registered Air Systems operated in the Service Environment, the impact is likely to be limited to the requirement for Mil CAMs to ensure that the measures necessary to achieve compliance with the proposed amendments are in place. It is expected that the measures themselves will already exist, as they have been derived from existing MAP-01 requirements. For Military Registered Air Systems not operated in the Service Environment, the proposed changes impose new requirements on the Mil CAM to ensure that approved Continuing Airworthiness post holders are detailing the required orders and procedures in their Maintenance Organization Exposition.

For each of the RAs, the detail of the required measures has been derived from current MAP-01 content. The orders and procedures themselves need not be issued under the authority of the Mil CAM, and in the Service Environment, are likely to include a combination of Manual of Airworthiness Management – Processes (MAM–P), Topic 2 leaflets, Aviation Engineering Standing Orders and the relevant Continuing Airworthiness Management Exposition.

Slide 22 – GEN 1000 Series Changes

The main changes to the Gen 1000 Series will be:

The introduction of RA 1164 – Transfer of Aircraft & Equipment to replace RA 4401 – Transfer of Aircraft & Equipment as it was inappropriate to host this in the CAE 4000 Series as the regulation is aimed at the Aircraft Operating Authority.

And the development of a broader RA 1201 – DAE Quality Policy Regulation to replace the existing RA 4700 – Military Air Environment Quality Policy Regulation.

Also:

RA 1002 – Airworthiness Competent Persons, RA 1006 – Delegation of Engineering Authorizations and RA 1023 – Chief Air Engineers – Air Safety Responsibilities are being up issued to align with the authorization changes and remove MAP-01 references.

And RA 1220 – Delivery Team Airworthiness and Safety is being up issued to include the requirement for Preventative Maintenance and Lining extension latitudes to be detailed in the Technical Information.

Slide 23 – TAE 5000 Series Changes

As highlighted earlier, the changes to the TAE 5000 Series include the uplift of TAA and DT responsibilities from the CAE 4000 Series. As part of this review it has been highlighted that a new Aviation Ordnance Munitions and Explosives (OME) RA may be required to cover those elements of Aviation OME not regulated by the Defence

OME Safety Regulator. This work is ongoing and will not be part of the Nov 19 publication release.

Additionally, there will be other changes to remove reference to the MAP-01 and MAP-02.

The Publication date for the TAE 5000 Series changes is 29 Nov 19.

Slide 24 – Transition Timeline

Due to the extent of the impending changes, allowance is being given to enable procedures, processes and authorization to be amended.

You will have until the **30 Jun 20** to ensure all relevant orders, procedures, processes and authorizations have been amended to reflect the Nov 19 publication updates detailed in this presentation.

To allow time to incorporate and assimilate these changes, there will not be a planned CAE 4000 Series release in May 20 (unless there is a requirement to release an Air Safety related Regulatory change) with the next planned CAE 4000 Series RA update instead being Nov 20.

To prevent confusion, Units and personnel **must** be aware of which set of Regulations, processes and Authorizations they are working to during this transition period and have a plan for transition completion by the 30 Jun 20.

Your Command Engineering and Policy Staff will also be able to provide more specific detail if required.