

NOTIFICATION OF PROPOSED RULE MAKING (NPRM) DGTA 02-08

REGULATION 3.5.15 INSTRUCTIONS FOR CONTINUING AIRWORTHINESS

REGULATION 5.1.6 INDEPENDENT MAINTENANCE INSPECTIONS

INTRODUCTION

Applicability

1. This NPRM is applicable to all aerospace Project Offices, Authorised Engineering Offices (AEOs) and Authorised Maintenance Organisations (AMOs) involved in acquisition and in-service weapon system management.

Purpose

2. The purpose of this NPRM is to improve the regulations contained in AAP 7001.053 (AM1) *Technical Airworthiness Management Manual* (TAMM). This NPRM outlines changes to Regulation 3.5.15 and Regulation 5.1.6.
3. The proposed amendments are expected to improve clarity, consistency and specification of Independent Maintenance Inspections (IMIs) through:
 - a. ensuring that maintenance publications for new Aircraft and Aeronautical Product include IMI criteria within their content;
 - b. ensuring that amendments are incorporated to existing Aircraft and Aeronautical Product Instructions for Continuing Airworthiness (ICA) to include IMI criteria; and
 - c. ensuring that both AEOs and AMOs have clear guidance on their respective responsibilities in the requirements for and management of IMIs.
4. **Consultation.** TAMM Regulation 1.1.2 requires that interested persons participate in regulation drafting procedures. The aim of this NPRM is to promulgate the background and details of the proposed changes. Advice on how petitions on this proposal are to be presented to the TAR is also provided.

PROPOSAL

Background

5. In the current aviation maintenance environment, there are three means of specifying a requirement for an Independent Maintenance Inspection (IMI) on Safety Critical Items or Systems (SCIS). The AEO promulgates planned servicing schedules (PSS) for preventative maintenance activities that contain explicit IMI points. The aircraft maintenance manuals, also promulgated by the AEO, may also be used to specify the requirement for an IMI. Finally, AMOs are able to identify specific corrective maintenance tasks that they believe require IMI.
6. The development of the aforementioned documentation has occurred in isolation, with the AEO and AMO responsibilities in this process unclear. This has led to a lack of consistency when undertaking IMIs on SCIS during corrective and preventative maintenance. During

investigation and review by DGTA staff discrepancies have been identified between the IMI requirements identified by the AMO and those promulgated through AEO developed PSS for equivalent, like maintenance tasks. Significantly, the discrepancies identified consisted of the AMO documenting fewer IMI for a SCIS than promulgated by the AEO in a PSS. This outcome has the potential to impact the ability to assure the airworthiness of an aircraft following corrective maintenance.

7. A simple solution to this may appear to be the utilisation of the relevant sections of an extant PSS when performing corrective maintenance on a SCIS. But, not all corrective maintenance tasks will be covered by extant PSS documentation. The solution then is to ensure that the identification of IMI requirements for SCIS is consistently applied across all maintenance tasks promulgated by AEO ICA, which includes PSS and aircraft maintenance manuals. The increased standardisation across preventative and corrective maintenance will ensure that discrepancies in the identification and conduct of IMIs by the AMO are eliminated.

8. There is a clear need to realign maintenance practices and apply consistent IMI for SCIS across both corrective and preventative maintenance activities. This NPRM proposes to remove the IMI inconsistency, and to align IMIs for SCIS in both the preventative and corrective maintenance domains. The primary focus of the amendments is to provide clarification of the extant Regulations to aid the AEO and AMO in achieving regulatory compliant maintenance activities and to formally link the role of both the AEO and AMO in the identification, promulgation and conduct of consistent, complete and standardised IMIs. This NPRM also reinforces that the AMO may specify additional IMIs above those promulgated by the AEO.

Objectives

9. This NPRM proposes changes to Regulation 3.5.15 and associated guidance in Section 3, Chapter 8 that formalise the requirements of AEOs to promulgate IMI requirements, and to ensure that the AEO supports the requirements for AMOs to comply with Regulation 5.1.6.

10. In addition, this NPRM proposes changes to Regulation 5.1.6 and associated guidance in Section 4, Chapter 2 to stipulate the requirement for AMOs to perform IMI activities as promulgated by AEOs, in accordance with the requirements of Regulation 3.5.15.

New or amended regulations

11. The amendments proposed to Regulation 3.5.15, Regulation 5.1.6, Section 3 Chapter 8 and Section 4 Chapter 2 are contained at annexes A through D respectively.

Acceptable means of compliance

12. Compliance with the requirements of the amended regulations can be achieved through several means. These include: the inclusion of comments, cautions, warnings and notes within applicable ICA, at appropriate points within the specific maintenance tasks that identify or can be used to identify the requirement for an IMI; development and promulgation of a new AAP that specifically addresses IMI requirements for corrective maintenance activities; development and promulgation of IMI cards (IMIC), an example is included at enclosure 1; or promulgation of IMI requirements via SI or other directive means to the AMO.

13. At a minimum, regardless of the means utilised, AEOs must promulgate the following information:

- a. Unique reference number that aligns each IMI to the associated TMP/PSS for that safety critical item or system;
- b. Description of safety critical item or system;
- c. AEO approval registration number;
- d. AEO approval date;
- e. Amendment status;
- f. Maintenance manual or instruction referenced;
- g. Specific task/s for which a Independent Maintenance Inspection is mandated;
- h. Serviceability criteria against which technical conformance or quality of workmanship shall be assessed (stated explicitly or through reference) for each Independent Maintenance Inspection; and
- i. Cross reference to any associated IMIs, as appropriate.

Transition

14. The transition activities required to achieve compliance with the amended regulations will vary between aircraft type and across each stage of the asset lifecycle. Some in-service managers already have maintenance publications that contain information that can be used as a basis for promulgating IMIs, whereas others will be required to commence more detailed analysis to develop this level of data. Other in-service managers will face the prospect of managing contract changes to achieve these outcomes, while others will be able to perform the work in-house. Projects that are in the acquisition phase will have their own unique requirements, and may not be directly and immediately driven by the impending regulatory changes. Projects should remain cognisant of these changes as compliance will be a consideration as aircraft service release approaches, and the in-service management phase commences.

15. A tailored approach to compliance will need to be adopted that corresponds to the stage of an assets life cycle. For projects and acquisition activities, contractual obligations and milestones may take precedence over these requirements; however planning should aim to achieve compliance for service release. In-service managers, whether utilising defence personnel or contractor agencies, will be required to achieve regulatory compliance. The approach taken by in-service managers must ensure that compliance activities and transition planning are integrated with the proposed timeline for the roll-out of AL6 to AAP 7001.059(AM1), which among other changes will formally introduce AEO promulgated IMI of SCIS to the AMO. At present, the issue date for AL6 to AAP 7001.059(AM1) is scheduled for Nov 08.

16. Transition for in-service managers is expected to occur in two phases. The first phase will achieve compliance with TAD 01/2008, the second will implement additional compliance activities if required.

17. **TAD 01/2008.** To enable in-service agencies to achieve compliance with TAD 01/2008, required by Nov 08, AEOs must conduct the following activities:

- a. Identify the SCIS for the platform, validating and rationalising those SCIS against the requirements of AAP7001.038(AM1) where applicable (ie to remove duplication, prioritise SCIS);
- b. Identify IMI for each SCIS, for both preventative and corrective maintenance. PSS data is to be used as a baseline. Where a maintenance task is not contained within an existing PSS, IMI may be developed through review of the appropriate maintenance manual and extraction of relevant instructions, or from other approved technical documentation; and
- c. Promulgate the IMI.

Note: To comply with the requirements of TAD 01/2008, development and promulgation of the serviceability criteria at sub-paragraph 13 h. is not required.

18. **Additional compliance activities.** Once the requirements of the TAD have been completed, the AEO will then be in a position to commence further compliance activities if required. These activities should include the following:

- a. developing serviceability criteria for each IMI,
- b. conducting validation and verification activities, in conjunction with the AMO, of notes, warnings, cautions, and QA / inspection points contained within aircraft maintenance manuals to ensure consistency with AEO promulgated IMI for SCIS, and
- c. development of a transition plan detailing the strategy and timeline for the completion of the aforementioned activities.

19. Once completed, a copy of the transition plan is to be provided to AMMS-DGTA. DGTA will utilise the transition plan to regularly assess AEO progress against their IMI transition schedule. DGTA will request that each AEO formally advise DGTA on completion of all activities captured in their transition plan.

20. DGTA is considering the issue of a TAD to direct additional compliance activities including the development and execution of the transition plan by AEOs. The decision to issue a TAD for this purpose will be made following the receipt of feedback on this NPRM, in particular AEO comment on transition planning activities.

HOW TO SUBMIT COMMENTS ON THIS NPRM

Format

21. Responses to the NPRM are to be submitted electronically using the NPRM response sheet as published on <http://www.defence.gov.au/dgta/NPRM.htm>. Responses are to be e-mailed to NPRM_DGTA_02-08@defence.gov.au. Hardcopies of the NPRM response sheet are not required.

Content

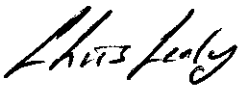
22. DGTA request that comments on this NPRM be tailored to provide specific feedback on the scope of this regulatory change, the understanding of the intent of this change, the wording used in the regulations to convey the intent, the anticipated cost implications for implementing the measures necessary to achieve compliance, and the timeframes provided to achieve compliance. Comments provided are to be limited to those activities not mandated by TAD 01/2008. Any additional feedback may also be provided at this time.

Timing

23. Comments to NPRM DGTA 02-08 are to be received by close of business 27 Jul 08.

Additional information

24. Additional information concerning this NPRM is available from MMS3, SQNLDR Matthew Kennedy, Tel: (03) 9256 3300, e-mail matthew.kennedy@defence.gov.au.



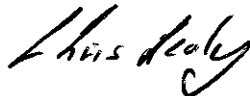
for

T. SAUNDER A.O.L.

GPCAPT

DAIRENG

Directorate General Technical Airworthiness – Australian Defence Force



C.A. FEALY

CAPT, RAN

DAIRMAINT

02 Jul 08

Annexes:

- A. Proposed Regulation 3.5.15
- B. Proposed changes to AEO Guidance Section 3 Chapter 8
- C. Proposed Regulation 5.1.6
- D. Proposed changes to AMO Guidance Section 4 Chapter 2

Enclosure:

1. MPSPO Draft IMIC

PROPOSED REGULATION 3.5.15

3.5.15 Instructions for Continuing Airworthiness (ICA)

- a. Each applicant for the issue of an EAC with applicability under this regulation shall establish procedures to:
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- (4) ensure approval of ICA or amendments to those instructions is granted only if an authorised person is satisfied that:
- (i) the instructions include all required Independent Maintenance Inspections (IMIs) on Safety Critical Items and Systems (SCIS) to enable AMO compliance with Regulation 5.1.6;
 - (ii) the instructions are suitable for their intended purpose, are technically sound and have been adequately validated;
 - (iii) any design change being implemented has been properly approved and accepted as provided in Regulation 3.4; and
 - (iv) the instructions or amendment accurately reflects the design change being implemented.

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PROPOSED AEO GUIDANCE FOR REGULATION 3.5.15

REGULATION GUIDANCE

REGULATION 3.5.15 INSTRUCTIONS FOR CONTINUING AIRWORTHINESS

Explanation and Amplification

29. The acquisition process for State Aircraft encompasses measures that ensure that the Type Design of the aircraft or aircraft related equipment is established prior to introduction into service. Whilst in service, Type Design and departures, are managed through design control processes and ICA.

30. Maintenance Requirements Determination (MRD) is a set of defined processes to develop the preventative and corrective maintenance requirements for technical equipment. The key outputs of the MRD process are ICA that detail the maintenance activities essential to ensuring ongoing airworthiness. In the preventative maintenance domain the primary forms of ICA are the Technical Maintenance Plan and Planned Servicing Schedule. In the corrective maintenance domain the primary ICA are the technical equipment maintenance manuals. As part of its responsibilities the AEO must ensure that these ICA are consistent, coherent and complete across the preventative and corrective maintenance domains to ensure standardisation of Independent Maintenance Inspections of Safety Critical Items or Systems for all maintenance activities. Doing so is also required to allow AMO compliance with Regulation 5.1.6. Further guidance and assistance on the MRD processes can be obtained directly from AAP 7001.038(AM1) *Maintenance Requirements Determination Manual* or the ADF MRD specialists within DGTA.

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PROPOSED REGULATION 5.1.6

5.1.6 Independent Maintenance Inspections

- a. The SMM shall ensure that only personnel authorised in accordance with Regulation 4.5.6 (Maintenance Inspector/Supervisor) perform independent maintenance inspections.
- b. As a minimum, and as specified by the relevant AEO in accordance with Regulation 3.5.15, Independent Maintenance Inspections shall be performed whenever any of the following Safety-Critical Items or Systems are replaced, adjusted or reconnected:
 - (1) flying controls and associated equipment;
 - (2) engine controls and associated equipment;
 - (3) undercarriage controls, brake and steering controls, and associated equipment;
 - (4) installed airborne oxygen equipment;
 - (5) aircrew escape and survival equipment;
 - (6) explosive ordnance and associated equipment; and
 - (7) AEO specified safety-critical items, equipment and systems.
- c. The relevant AEO, and/or the SMM shall specify additional Independent Maintenance Inspections as required.
- d. Independent Maintenance Inspections performed in accordance with Regulation 5.1.6.a, b and c shall be performed to ensure that all items:
 - (1) are correctly assembled, adjusted and locked;
 - (2) operate with full range and freedom of movement, and in the correct sense;
 - (3) have no loose or foreign objects; and
 - (4) meet other criteria specified by the AEO or SMM.
- e. Only authorised personnel who have not been involved in the maintenance task being inspected shall perform Independent Maintenance Inspections.
- f. Independent Maintenance Inspection requirements as detailed in this regulation shall be stated, either directly or by reference, in the MMP.

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PROPOSED AMO GUIDANCE FOR REGULATION 5.1.6

REGULATION GUIDANCE

5.1 – CONDUCT OF MAINTENANCE

REGULATION 5.1.6 – INDEPENDENT MAINTENANCE INSPECTIONS

Philosophy and Concept

42. Some maintenance tasks carry significant risk (probability and consequence) where error could jeopardise airworthiness and/or aircrew safety. To ensure the integrity of maintenance, those tasks that carry a high degree of risk need to be identified and independently inspected prior to certifying that maintenance is complete. Independent inspections are required to ensure the quality of workmanship, integrity of equipment and detection and subsequent correction of errors. Independent Maintenance Inspections (IMIs) may be mandated by the relevant AEO, required as a result of disturbance of Safety Critical Items or Systems (SICS), or specified by the AMO for other factors or reasons where the consequence of a potential maintenance error is unacceptable. In all cases, the independence of a person performing an IMI task from the work performed is paramount.

Cross References

43. The regulation addresses the subjects embodied in the following civil regulations and reference:
- Civil Aviation Regulations 1988, Regulation 42G;
 - ~~Draft Civil Aviation Safety Regulation (CASR), Subpart 43.D; and~~
 - ~~Civil Aviation Draft Advisory Circular 43.12(0) – Duplicate Flight Control Checks.~~
44. The following ADF references address the requirement of this regulation:
- AAP 7001.059 (AM1) – ADF Aviation Maintenance Management Manual Section 7, Chapter 1; and
 - AAP 7055.001-99 – Liquid and Gaseous Dry Breathing Oxygen Maintenance Instructions (Instruction 13).

Explanation and Amplification

45. IMIs are mandatory where any preventative or corrective maintenance activity disturbs an item or system that is safety critical. When an independent inspection is done, the inspector needs to check for correct *assembly* and/or *function*, and any mandated criteria specified in publications, instructions, orders and data issued by the responsible AEO. AEO criteria take precedence over general serviceability criteria of correct assembly and function. A *check for correct assembly* means a check as to whether a particular flight control system and its parts have been correctly assembled and adjusted; and all locking devices have been made safe. A *check for correct function* means a check as to whether the flight controls have full and free movement, in the correct sense, throughout their operating range.

46. The safety critical systems referred to in this regulation are further defined as:
- Flying Controls.** Flying controls include all components and parts, the movement of which, in the functional sense, whether manual, power operated or power assisted, or electric/fibre (fly by wire/light), results in operation or locking of the aircraft's movable aerodynamic surfaces (including flaps, airbrakes, trimming controls, helicopter rotor pitch change gear and dual control systems, together with their associated hydraulic and electrical systems).
 - Engine Controls.** Engine controls include all components and parts, the movement of which, in the functional sense, controls the power output of the engine (including propeller pitch, fuel delivery and control systems, engine air inlet controls and reverse thrust controls, together with their associated systems).

- c. **Undercarriage Controls.** Undercarriage controls include all components and parts, the movement of which, in a functional sense, results in operation of the aircraft undercarriage (including retraction, lowering, up and down locking, steering and wheel braking, together with their associated systems).
- d. **Associated Equipment.** All systems and equipment such as power flying control reversing systems, artificial feel systems, pitot-static systems, autopilots, flight augmentation systems, fuel dump systems, fire extinguishing systems, power-train (including engine and transmissions) lubrication systems and other equipment which is connected with, and has a direct effect on, the aircraft flying, engine or undercarriage control systems.
- e. **Installed Airborne Oxygen Equipment.** Airborne oxygen equipment includes gaseous and liquid distribution systems, on board oxygen generating systems (OBOGS), emergency systems and portable oxygen storage and distribution systems. Any maintenance operation (other than replenishment) performed on these systems will require an independent maintenance inspection.
- f. **Egress and Survival Equipment.** Escape and survival equipment includes all aircraft systems that are designed to function in an emergency to prevent injury to personnel or the loss or damage of an aircraft.
- g. **Explosive Ordnance and Associated Equipment.** The tasks associated with explosive ordnance requiring independent maintenance inspections include maintenance of equipment which contains explosive ordnance (aircrew escape systems, guillotine cable cutters), maintenance of equipment operated by explosive ordnance when the equipment cannot be otherwise functionally tested and where correct operation of the equipment is critical to the safety and survival of personnel and/or the aircraft, and loading and unloading explosive ordnance when specified in the applicable loading manual.
- h. **AEO Specified Safety Critical Items, Equipment and Systems.** The AEO may specify other items, equipment or systems that they determine to be safety critical.

47. Where a reinspection is required, the authorised person who conducted the initial inspection may carry out the reinspection, providing that person is not directly involved in the maintenance task.

Acceptable Means of Compliance – Regulation 5.1.6

48. **Clause a.** The person performing an independent inspection needs to be authorised in accordance with Regulation 4.5 (Personnel Requirements).

49. **Clause b.** The MMP should refer to instructions or a procedure that details the process used to identify and authorise IMIs.

50. **Clause c.** Any additional IMIs should be confined to those maintenance tasks that carry a significant risk where error would jeopardise airworthiness. The term 'specify' denotes not only the formal promulgation of the tasks but also the directive to perform those inspections and the criteria to be met.

51. **Clause d.** Compliance with this clause shall be evident through correct completion of IMI tasks, and IMI certification in maintenance records and documentation of conformance to the specified and/or general serviceability criteria.

52. **Clause e.** Authorised personnel who perform an IMI must not perform maintenance or maintenance certification for any task on which the IMI is being performed.

53. **Clause f.** This clause is self-explanatory.

**ENCLOSURE 1 TO
NPRM DGTA 02-08
DATED 2 JUL 08**

MPSPO DRAFT IMIC

MPSPO MANDATED INDEPENDENT MAINTENANCE INSPECTION

BOOSTER SHIFT CONTROL HANDLE ASSEMBLY (AILERON, ELEVATOR and RUDDER)

Introduction

This Independent Maintenance Inspection Card (IMIC) specifies the mandatory IMIC's for installation and rigging of the booster shift control handle assembly (aileron, elevator and rudder). This card is to be inserted into AAP 7215.005-2-2B2 (AM1) facing Para's 17-76 and 17-33.

Reference Number: 01-A056Y

Item: Booster Shift Control Handle Assembly (Aileron, Elevator and Rudder)

Emerald IRN:

Date Authorised:

Amendment Status: AL0

Maintenance Manual Referenced:

These inspections apply to AAP 7215.001-2-2B3 (AM1) ORION AP3-C and P3C Aircraft Airframe Group. Booster Shift Control Handle Assembly (Aileron, Elevator and Rudder) installation work package and. Booster Shift Control Handle Assembly (Aileron, Elevator and Rudder) rigging and adjustment work package.

Mandated Independent Maintenance Inspections:

Installation

- a. Installation of locking nuts items 19. Ensure lock nuts comply with requirements of AAP 7021.001-1B2 A/C Structural Hardware Book 2 of 2 Section 5 paying particular attention to Thread protrusion, Self Locking Nuts and Application of self locking nuts paragraphs.
- b. Installation of pulley guard pins Items 21 and 22. Ensure pulley guards are fitted securely and not impacting boost handle cables.

Operational / Functional Checks

- c. Rigging and adjustment verify cable tension of boost shift mechanism is 45 (+/- 5) pounds and force to move boost shift handle does not exceed values listed in table 17-3 of AAP 7215.001-2-2B3 (AM1) ORION AP3-C and P3C Aircraft Airframe Group.
- d. Move booster shift handle from boost on to boost off. The hydraulic pressure at the booster must not drop until the handle has moved 1-3/8 to 2-1/2 inches, as evidenced by the feel of the related control. Move handle from boost off to boost on. Boost on must occur between 2 and 1-3/16 inches from full boost on (handle down) as evidenced by feel of the related controls.

Replacement of booster spring cartridge

- e. Replacement of booster spring cartridge Pn 480557-1 requires IMI to ensure the longer portion of the guide is pointing to the cartridge cap. Once the cartridge cap has been replaced and tightened ensure the cartridge cap bottoms on the cartridge barrel.
- f. Ensure turn barrels are secured utilising either lock wire or lock pins IAW of AAP 7021.001-1B2 A/C Structural Hardware Book 2 of 2 Section 16.