FACTSHEET – TECHNICAL EVALUATION OF ROLE EQUIPMENT

AIM

The aim of this factsheet is to explain the technical evaluation of role equipment to assist with decision making under DASR ORO.75 *Use of Aircraft Role Equipment*.

INTRODUCTION

DASR ORO.75 prescribes the requirements for the carriage and operation of role equipment on Defence aircraft. Under DASR ORO.75, the MAO may only carry and use role equipment in accordance with approved OIP. To support approval of role equipment carriage and use, a technical evaluation of the potential impact on aircraft safe flight is required.

This technical evaluation is conducted either under DASR 21 certification processes, where the role equipment forms part of the certified type design, or using the DASR ORO.75 process where the role equipment does not form part of the certified design. These two approaches are respectively called 'Certified' or 'Specific Approval'.

Regardless of the role equipment category, risks associated with carriage and use must be eliminated or otherwise minimised so far as is reasonably practicable (SFARP). The technical evaluation of the role equipment supports the Risk Management Authority (RMA) in making this determination.

CATEGORISATION OF ROLE EQUIPMENT

Categorising role equipment as 'Certified' or 'Specific Approval' would normally be based on the hazards posed by the role equipment and their impact on safe aircraft operations. Certification of role equipment provides the following benefits, in terms of identifying, analysing and treating hazards:

- a high level of confidence that the design meets the applicable design (airworthiness) requirements
- verification of compliance with design requirements is provided by a competent design organisation, possessing a detailed knowledge of the aircraft design and role equipment interfaces/impact on safety
- the technical assessment is subject to independent safety assurance oversight
- continued and continuing airworthiness requirements are comprehensively identified and implemented.

Technical evaluation of role equipment under the 'Specific Approval' category may achieve some of these outcomes. However, evaluation conducted outside of the formal certification process under DASR 21 will be variable, and may not be sufficient to provide the RMA with a sound basis for confirming that risks associated with role equipment operation have been eliminated or otherwise minimised SFARP for complex/interfacing role equipment.

Categorisation of role equipment as 'Specific Approval' is likely to be appropriate where the equipment has the following characteristics (per ORO.75):

- *Equipment that has been anchored to the aircraft, but is not certified under DASR 21.* This equipment is temporarily fitted using non-certified attachment means, and the equipment itself will normally not be certified either. Specific Approval may be defensible where the role equipment hazards/risks can be readily identified and risk exposure is minimised (eg role equipment that is seldom expected to be used, or temporarily approved pending completion of a certified design)
- *Equipment that has been anchored via a certified means or is electronically connected via a certified interface, but the equipment itself is not certified.* In this case, the role equipment type and configuration is often unpredictable and/or not controlled by Defence. Individual item approvals would normally be supported by pre-agreed MAO hazard based decision criteria.
- *Equipment that is unconnected (either electronically or physically) to the aircraft.* This type of role equipment often does not have a single configuration, but belongs to a generic category of equipment that is known and therefore the hazards and associated controls can be readily identified.

The following sections provide guidance to design organisations in producing Certified designs for role equipment, and guidance to individuals or organisations involved with technical evaluations of role equipment.

EVALUATION OF CERTIFIED ROLE EQUIPMENT

The Certified category includes all role equipment that forms part of the certified aircraft design and thus is subject to DASR 21 requirements.

Certified category role equipment must meet the applicable airworthiness design requirements prescribed in the aircraft's Type Certification Basis (TCB) or, where Certified category role equipment includes design characteristics that are not included in the host aircraft's TCB, the TCB must be supplemented with applicable design requirements. The Airworthiness Design Requirements Manual (ADRM) Section 5 Chapter 6 provides guidance in establishing these additional requirements. This includes the conduct of a system safety analysis to identify and manage any novel hazards introduced by the role equipment.

The design approval holder is responsible for the development and approval of initial and/or continued airworthiness of the certified role equipment, including the development and provision of Instructions for Continuing Airworthiness (ICA).

Once this category of equipment is granted certification, the MAO may approve its use on the relevant Defence aircraft without further technical input.

EVALUATION OF SPECIFIC APPROVAL ROLE EQUIPMENT

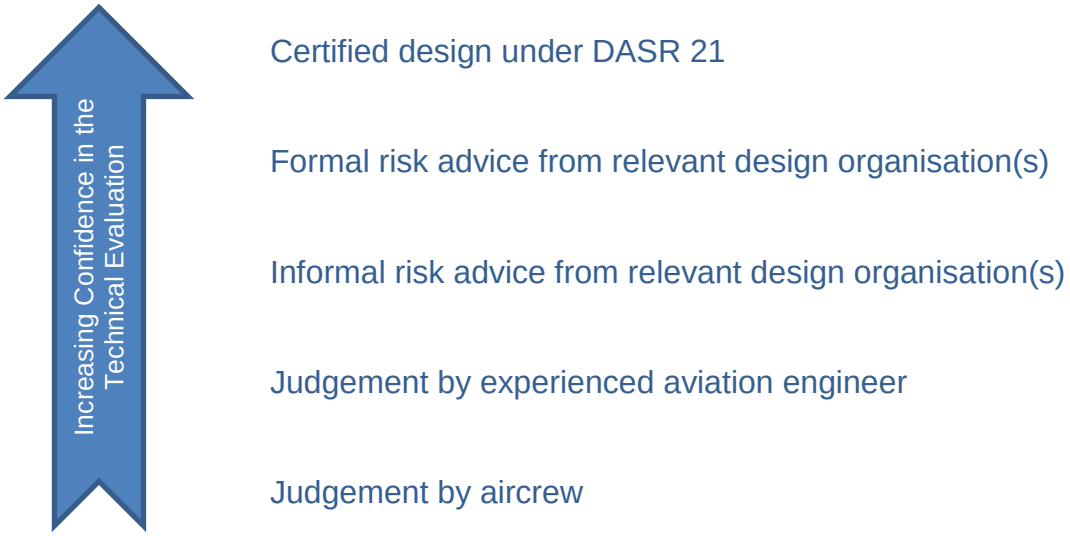
'Specific Approval' category role equipment is not part of the certified aircraft design and therefore is not subject to DASR 21 processes. The regulatory requirements for the technical input to approval of 'Specific Approval' role equipment are contained entirely within DASR ORO.75. Guidance Material to the DASR states that, "*the MAO should seek advice through its CAMO on the degree of engineering rigour necessary to inform any role equipment approval*". In other words, the CAMO is helping to inform the MAO's risk management decisions, cognisant of the context of use of the role equipment.

For the CAMO to contribute meaningfully to these decisions, the CAMO would undertake, or engage another organisation to undertake, a technical evaluation of the equipment, with particular emphasis on identifying the hazards to aircraft safety presented by the role equipment, and identifying all possible risk controls. Consistent with the requirements of DASR SMS, the technical evaluation should consider, amongst other things:

- potential hazards that the role equipment may pose to the aircraft, including electromagnetic compatibility, electrical compatibility, fire hazards, leakage hazards, and so on
- potential hazards that the role equipment may pose to aircraft occupants, including electrical safety, sharp protrusions, turbulence and crash restraint, inadvertent/incorrect operation (e.g. for aeromedical evacuation patients), and so on
- novel characteristics of the role equipment that may present novel hazards
- potential design/engineering, maintenance and/or operating controls that could be implemented to treat the above identified hazards
- requirements for the installation and operation of the role equipment
- requirements for maintenance and support of the role equipment

The ADRM Section 5 Chapter 6 and Annex A presents a suite of role equipment design requirements that may contribute to this technical evaluation, including a pragmatically tailored system safety assessment.

Importantly, where the role equipment poses hazards to the aircraft or occupants having higher order consequences, the required rigour (and therefore confidence) in the technical evaluation would normally be expected to increase commensurately. The following diagram presents some of the options available to the CAMO for providing technical evaluations, and the qualitative confidence that might result.



ESSENTIAL INFORMATION

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