

RA 5825 – Fault Reporting and Investigation

Rationale

Accurate and timely reporting and effective investigation of technical Faults is essential to identify Airworthiness Risks and deliver effective mitigation. Unreported Faults, or failure to correctly capture, analyze and act on such reporting, could compromise Air Safety and potentially increase Risk to Life (RtL). This RA requires a Type Airworthiness Authority (TAA)¹ / Commodity Chief Engineer (CE)², to have a system in place with the users and their Design Organizations (DO), that reports Faults in a timely fashion, ensure the proper handling of affected materiel and support related Fault investigations. The reporting of Faults by MOD personnel is addressed in RA 4814³.

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Regulation

5825(1)

Fault Reporting and Investigation

825(1) A TAA / Commodity CE **shall** ensure a system is in place for reporting and investigating Faults that warrant specific investigation due to their potential impact on Air Safety.

Acceptable Means of Compliance 5825(1)

Fault Reporting and Investigation

Fault Reporting

1. The TAA / Commodity CE **should** have a system in place that ensures that reported failures, malfunctions and defects are managed, analyzed and appropriate action taken⁴.
2. The TAA / Commodity CE **should** ensure the DO has a system is in place for:
 - a. Collecting, investigating and analyzing reports of and information related to failures, malfunctions, defects or other occurrences which cause or might cause an unsafe condition in the Air System.
 - b. Providing appropriate rectification advice in a timely manner.
3. The TAA / Commodity CE **should** notify the Aviation Duty Holder (ADH) / Accountable Manager (Military Flying) (AM(MF)) of any increased RtL⁵ resulting from a failure, malfunction or defect.

Fault Investigation

4. The investigating authority **should** normally be the TAA but, where arrangements have been made, can be a DO.
5. When failures, malfunctions or defects are reported on materiel which has been procured as both Contractor Furnished Equipment and Government Furnished Equipment, a common investigation and reporting procedure **should** be used.

Quarantine

6. The TAA / Commodity CE **should** ensure that there are appropriate processes in place to:
 - a. Quarantine, protect and dispose of faulty materiel.
 - b. Clearly identify and cross-reference faulty materiel to the relevant Fault report.

¹ Where the Air System is ►not UK MOD owned, Type Airworthiness (TAW) management◀ regulatory responsibility by either the TAA or Type Airworthiness Manager (TAM) needs to be agreed within the Sponsor's approved model ►◀; refer to RA 1162 – Air Safety Governance Arrangements for Civilian Operated (Development) and (In-Service) Air Systems or refer to RA 1163 – Air Safety Governance Arrangements for Special Case Flying Air Systems. Dependant on the agreed delegation of TAW responsibilities TAM may be read in place of TAA as appropriate throughout this RA, noting the TAM may not issue or amend the Air System Document Set or approve Special Instructions (Technical) (SI(T)).

² Refer to RA 5013 – Air System Management of Equipment and Commodity Items.

³ Refer to RA 4814 – Occurrence Reporting (MRP 145.A.60), for the reporting of Faults by MOD personnel.

⁴ This reporting requirement is in addition to the need to report Occurrences in accordance with RA 1410 – Occurrence Reporting and Management.

⁵ Refer to RA 5011 – Type Airworthiness Safety Management System.

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- c. Ensure quarantined items are not repaired or used before the conclusion and outcome of the investigation.
- 7. The TAA / Commodity CE **should** provide disposal instructions for materiel under quarantine.

Flammability Reduction Means (FRM)

- 8. TAA's who have FRM⁶ in the Type Design **should** assess, on an on-going basis, the effects of Air System component failures on FRM reliability. This **should** be part of the system for failure or Fault data collection, investigation and analysis.
- 9. The TAA **should**:
 - a. Demonstrate effective means to ensure collection of FRM reliability data, investigation and analysis. These means **should** provide data affecting FRM reliability such as component failures.
 - b. Develop SI(T)⁷ or revise the applicable Instructions for Sustaining Type Airworthiness⁸ to correct any failures of the FRM that occur In-Service that could increase any fuel tanks Fleet Average Flammability Exposure to more than that specified by the applicable Certification Specifications.

Guidance Material 5825(1)

Fault Reporting and Investigation

Fault Reporting

- 10. A MOD Form 760 – Narrative Fault Report or equivalent may be used for Fault reporting.

Unsafe Condition

- 11. An 'unsafe' condition exists if there is factual evidence (from In-Service experience, analysis or tests) that:
 - a. An event may occur that would result in an increased RtL, or reduce the capability of the Air System or the ability of the crew to cope with adverse operating conditions to the extent that there would be:
 - (1) A large reduction in Safety margins or functional capabilities, or
 - (2) Physical distress or excessive workload such that the flight crew cannot be relied upon to perform their tasks accurately or completely; or
 - (3) Serious or fatal injury to one or more occupants unless it is shown that the probability of such an event is within the limit defined by the applicable Certification Specification; or
 - b. There is an unacceptable Risk of serious or fatal injury to persons other than occupants; or
 - c. Design features intended to minimize the effects of survivable accidents are not performing their intended function.

Fault Investigation

- 12. Fault investigation priorities will be determined by the TAA / Commodity CE.
- 13. The TAA / Commodity CE will agree with the DO the format and distribution of investigation reports resulting from data analysis requests.
- 14. Apart from a design change, the corrective actions, if found necessary, may consist of amendments of the manuals, inspections, training programmes, and / or information to the operators about particular design features. The TAA or Commodity CE may decide to make mandatory such corrective action if necessary⁸.

⁶ Refer to the Federal Aviation Administration Advisory Circular 25.981-2A.

⁷ Refer to RA 5405 – Special Instructions (Technical).

⁸ Refer to RA 5815 – Instructions for Sustaining Type Airworthiness.