Safety Case Report for the Harrier Air/Ship Interface

The Requirement

The military requirement, set by the Chief of Joint Operations, is for the Joint Force Harrier (JFH) to be capable of operating from ship platforms. The two principal commands involved; CINC Fleet and RAF Strike Command have nominated the Royal Navy’s Invincible Class aircraft carriers (CVS), as the initial platforms for maritime operations of JFH. The Major Warships IPT (MWIPT) commissioned BMT Isis Ltd to develop the Safety Case to support this initiative.

The JFH is a joint Fleet Air Arm and Royal Air Force organisation tasked with operating a fleet of the latest Harrier Ground Attack & Reconnaissance (GR) aircraft. This replaces the former division of land-based RAF aircraft and the Sea Harrier F/A.2, which is retiring from service. The MoD is aiming to achieve significant cost savings by streamlining the Harrier force. It will also make it easier to introduce incremental improvements across the force. The Safety Case plays a key supporting role in delivering these benefits, by ensuring that the resultant military capability has the safest practical operating characteristics.

Our Approach

The BMT Isis Ltd worked with BMT Sigma Limited to successfully complete a Ship Aviation Safety Report for the MWIPT, to justify safe operation of the aircraft on the designated platforms.

The first element of the task was to integrate safety guidance from Naval and Air authorities, encapsulated in the Joint Service Publications JSP430 (MoD Ship Safety Management) and JSP318b (Regulations for the Airworthiness of MoD Aircraft), so that all the work would be consistent with MoD top level safety policy.

The task was further divided into a number of steps to assess the safety risks at the ship/air interface. These included: Providing a safety capability statement for integrating Harrier GR.7/7A and GR.9/9A variants on CVS; Defining the safety issues; addressing documentation updates; clarifying status of Duty Holder actions, developing a Hazard Log, providing safety management traceability and finally writing an emergency contingency statement (required as a result of the new modes of operation of the aircraft).

Balancing issues raised by a range of air and sea operators and the requirement to apply existing safety regulations to the aviation-marine boundary proved a challenging test of the application of the Safety Case methodology.

The results of this work were submitted to MWIPT and the Assistant Director Acquisition Support (Air) for approval, before ADAS(Air) prepared the Letter of Release (LOR), required for full operation of the aircraft in this new role. Progress was reviewed and reported on by BMT Defence Services and in October 2003, Flag Officer Maritime Air (FOMA) signed the LOR, allowing full operation of the aircraft.

The preparation of the Ship Air Safety Report was a splendid example of how individuals with a range of experience covering both ship and air perspectives were able to develop new insights when they are brought into close consultation with each other. BMT Defence Services’ Safety experience and the Safety Case methodology employed proved invaluable in facilitating bringing these key people together.

The Outcome

This Safety Case developed by BMT Isis has helped play its part in delivering a defence capability that straddles the air and sea environments.

The central issue arose from the different behaviour and handling characteristics of the RAF’s GR aircraft compared to the lighter RN Sea Harrier F/A.2.

The draft report raised several safety concerns, which potentially placed constraints on exercising the full range of Harrier air operations from CVS. These findings were accepted fully by the key stakeholders and remedial actions were put in hand and reported on in the formal issue of the SASR.