



CASE STUDY

Ship/Air Interface Framework

Ground-breaking simulation capability

The development of a ground-breaking simulation capability has for the first time allowed the safe operating limits for a helicopter operating from a new ship type to be predicted, years before the ship even sets sail.

The multi-national Ship/Air Interface Framework (SAIF) project team is led by SEA and managed by the Sea Systems Directorate of the UK MOD Defence Equipment and Systems organisation. 824 Squadron Royal Navy (RN), the Merlin Integrated Project Team (IPT), and Lockheed Martin, who are the prime contractors for the training facility, have also supported the project.

The team has developed a suite of simulation tools that integrate advanced flight simulators with models that predict the characteristics of ship platforms. The resultant system provides experienced test pilots with a realistic environment in which to assess the safe operating limits of the helicopter, years before the real flight trials can be undertaken.

Tests have successfully been carried out using the RN Merlin helicopter simulator at Culdrose, to assess Merlin operations from the new Type 45 destroyer, which is due to enter service in 2009. It is believed that this capability is a world-first in using simulation for the development of an indicative set of operating limits for a new ship/helicopter combination. Chris Evans, the aviation lead engineer for the Type 45 IPT stated: "The programme shows huge potential and I am pleased with the results. SAIF is seen as a major tool for derisking the Type 45 design prior to the first-of-class flight trials, and quantifying the predicted airflow associated with the ship design." The CVF Aircraft Carrier Alliance is also using the SAIF system to assess potential visual landing aid systems to support helicopter operations.

One of the main objectives of SAIF is to provide a piloted system capable of conducting Ship/Helicopter Operating Limit (SHOL) assessments during ship development prior to sea trials. The use of simulation provides a very flexible tool with which to assess operations in any environmental conditions, whereas real trials are limited by the prevailing conditions on offer during a restricted period of time. The results generated by simulation studies ahead of the first-of-class flight trials offer the potential to focus the trials on key areas of the operating envelope, potentially offering an improvement to the quality of the SHOL, or a reduction in the time and cost of generating the SHOL at sea. It is envisaged that a cost-effective combination of simulation and first-of-class flight trials will maximise the helicopter-operating envelope for the various new ship platforms from which it is intended to operate.

The MOD programme manager Dr John Duncan stated: "I am delighted with the results achieved to-date, and expect the programme to continue development for other platforms and applications. The programme has received significant support from the Directorate of Equipment Capability, and has also generated considerable interest from other navies."