

**STATEMENT OF REQUIREMENT****CHINOOK SHIP AIR INTEGRATION MODELLING AND SIMULATION SUPPORT****INTRODUCTION**

1. This Statement of Requirement (SoR) defines tasks and deliverables required to support Defence Equipment and Support (DE&S) Chinook Project Team (ChPT) Ship Air Integration (SAI) modelling and simulation support.

2. The tasks defined within this SoR are in support of Boeing as the Design Organisation (DO) SAI simulation and modelling activities. The simulation and modelling provides a method of assessing key aircraft handling qualities prior to physical shipborne flight trials of Chinook HC Mk5 to MARS Tanker. This allows for the development of a safe and progressive approach to shipborne flight trials and subsequent air system operating clearances.

**BACKGROUND**

3. The ChPT has contracted Boeing as part of the Chinook SAI Project to provide DO endorsed clearance for Chinook 'All Marks' to various maritime vessels. To reduce the time, resource and cost impact of up to 14 flight trials, Boeing in liaison with the ChPT have identified the opportunity to utilise the Boeing Chinook Engineering Simulator. This simulator has been previously used to support UK Chinook Digital Automatic Flight Control System (DAFCS) and operating envelope expansion, therefore proving its functionality and capability in support of UK Chinook operations.

**ISSUE**

4. The simulator currently only has a limited SAI capability that has been provisionally assessed and issues identified with the software capabilities for inclusion of UK maritime vessels representative models, Air Flow/Air Pattern (AFAP) modelling and environmental sea state conditions.

**SOLUTION**

5. Provide Boeing through the ChPT the relevant hardware and software as Government Furnished Equipment (GFE) to upgrade the Boeing simulator to provide, Air Flow/Air Pattern (AFAP) modelling and environmental sea state conditions representative models.

**REQUIREMENTS**

6. The requirements will be required to be satisfied to support the successful satisfaction of the proposed solution.

**7.1 Project Inputs**

7.1.1 The following items will be provided by the Authority upon contract award in order to perform the required task:

7.1.1.1 SAI Flight Simulator Interface Control Document (ICD).

7.1.1.2 AFAP Pattern data files for the MARS Tanker.

7.1.2 In order to meet the requirement, prior knowledge of SAI flight simulator modelling and simulation technology is deemed essential.

7.1.3 In order to meet the requirement the tenderer shall detail the capability to design, develop, build, evaluate, test and successfully deliver to a Project Schedule SAI Flight Simulator modelling simulation and data.

7.1.4. The Project Schedule will identify formal Authority and Boeing reviews that are required to be completed to ensure successful completion of the Project.

7.1.5 Project communications and engagement will be managed through a Communications Plan.

## 7.2 SAI Flight Simulator Hardware Procurement

7.2.1 The tenderer shall identify and procure the following items:

7.2.1.1 PC hardware that meets the following requirements:

- a. 128GB of RAM;
- b. 64-bit Windows 7 Operating System mounted on a separate internal drive;
- c. Minimum 2 CPUs with 6 cores;
- d. At least 1TB of internal RAID storage;
- e. High quality graphics card (e.g. nVidia GeForce GTX 1060).
- f. 1 x 1GB network switch to provide connection between the SAI Flight Simulator PC and the Boeing flight simulator device
- g. 1 x Keyboard-Video-Mouse (KVM) switch devices and supporting cabling to allow remote connection up to 20 metres to the SAI Flight Simulator PC

7.2.2 The following software licences to be installed on the above SAI Flight Simulator PC hardware:

7.2.2.1 MS Visual Studio 2013 development environment

7.2.2.2 MS Office 2016

7.2.3 The above items shall be procured in such a timescale to support the development and test activities at requirement 7.3.

## 7.3 UK System Development and Test

7.3.1 The tenderer shall complete the following tasks:

7.3.1.1 Incorporate 3D visual models of the Chinook helicopter and MARS Tanker provided by Boeing into the SAI Flight Simulator visualisation federate software. If these models are not available from Boeing, then the tenderer will source the required 3D models.

7.3.1.2 Install and test the SAI Flight Simulator software on the hardware procured at requirement 7.2.1.1.

7.3.1.3 Provide an interim version of the SAI Flight Simulator software to the MoD for onwards supply to Boeing US by the MoD. This will provide Boeing with an initial version to support their development and test activities.

7.3.1.4 Test the supplied ship AFAP data files for the MARS Tanker ship to check that they are fully compatible with the SAI Flight Simulator software and hardware configuration.

7.3.1.5 Deliver a final release of the SAI Flight Simulator software and hardware to the DE&S ChPT at Abbey Wood, for onwards supply to Boeing US by the MoD.

7.3.1.6 Provide remote support to Boeing US for integration testing of the SAI Flight Simulator hardware and software with the Boeing Chinook simulator.

#### 7.4 US System Integration and Test

7.4.1 The tenderer shall complete the following tasks:

7.4.1.1 Supply two suitably qualified engineers to support on-site integration testing of the SAI Flight Simulator hardware and software with the Boeing Chinook simulator in Philadelphia, US, for a duration of 5 working days in total before contract completion.

7.4.1.2 As required, update the SAI Flight Simulator software during the integration testing.

7.4.1.3 Supply two suitably qualified engineers to support the Chinook/MARS Tanker Simulation Trials using the Boeing Chinook simulator in Philadelphia, US, for a duration not to exceed 5 working days in total before contract completion.

#### 7.5 Deliverables

7.5.1 The following shall be the formal deliverable items to the Authority under the terms of DEFCON 703:

7.5.1.1 Interim version of SAI Flight Simulator software delivered to ChPT. (4 weeks post CA).

7.5.1.2 Final version SAI Flight Simulator hardware with installed software delivered to ChPT (10 weeks post CA).

7.5.1.3 Generate a summary report on the outputs of the SAI Flight Simulator integration activities (12 weeks post CA).

7.5.1.4 SAI Flight Simulator Chinook/MARS Tanker simulation summary report (19 weeks post CA).