



# Medium Support Helicopter Aircrew Training Facility (MSHATF)





# Introduction to CAE's MSHATF

The Medium Support Helicopter Aircrew Training Facility (MSHATF) was developed by CAE in partnership with the UK Ministry of Defence. Responsible for the design, construction and financing of the facility that opened in 1999, CAE operates the MSHATF under a 40-year private finance initiative (PFI) contract.

CAE's MSHATF is delivering the total spectrum of synthetic aircrew training demanded by the UK Joint Helicopter Command Support Helicopter Force. The turnkey training program includes academic classroom training and simulator training delivered by experienced instructors. The MSHATF is equipped with six full-mission simulators configured for CH-47 Chinook, AW101 Merlin and Puma helicopters. Under the terms of its PFI contract, CAE also has the ability to provide turnkey training to third-party users. This enables approved military and civil operators across the globe to take advantage of the advanced simulation, training and mission rehearsal capability at the MSHATF on a highly cost-effective basis.

Other NATO nations and wider alliances also regard the MSHATF as part of their normal training regime. For example, Royal Netherlands Air Force Chinook crews routinely train alongside their Royal Air Force (RAF) counterparts before operational deployments. In addition, Royal Navy crews operating the UK Merlin and other operators of the AW101 helicopter such as the Royal Canadian Air Force, Royal Danish Air Force, and Portuguese Air Force use the advanced Merlin simulators for a range of training applications, including battlefield and search and rescue (SAR) roles. The MSHATF also offers Puma helicopter training where the customer base includes the RAF and several Middle Eastern customers.

While there is still considerable demand for initial type conversion and recurrent training, the development of individual, team and collective training to form 'whole crew' mission training continues to be a driving force behind the MSHATF. CAE is currently investing in the new technologies and capabilities at the facility, such as upgraded visual systems, to ensure the MSHATF maintains its status as a world-leading provider of synthetic helicopter training.

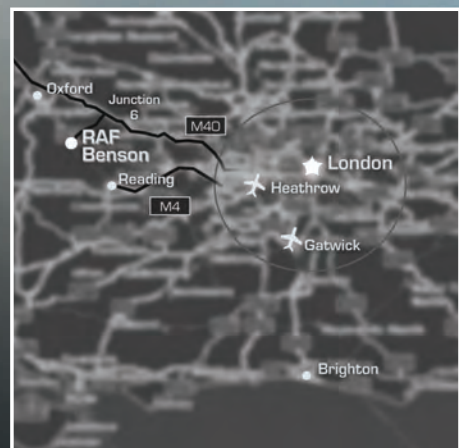




## Location and the training experience

As well as providing the most advanced simulation-based training available today, CAE's MSHATF is also a very pleasant environment in which to learn. Set in some of England's most beautiful countryside, the facility is close to famous historic attractions, including the world-renowned university city of Oxford and charming country towns.

- Modern, purpose-built training facility;
- State-of-the-art computer-based groundschool;
- Six full-mission simulators – three Chinook, two Merlin and one Puma;
- World-leading Tactical Control Centre (TCC), which facilitates networked mission training;
- Dedicated brief/debrief facilities for each full-mission simulator;
- Training management information system;
- Highly capable and experienced ex-military instructors.



# MSHATF – the centre for operational training

Training at CAE's MSHATF offers significant cost advantages while helping to optimise the safety of aircrew and prepare them for the full spectrum of operational situations.

## Our fully integrated training programme

- Covers the entire training spectrum, from type conversion through to pre-deployment, operational training and mission rehearsal;
- Develops the individual and team skills of pilots and rear crew;
- Delivers training under all environmental conditions, including a diversity of topographical and seasonal conditions;
- Accurately replicates the helicopter in all normal, abnormal, and emergency conditions, including effects of icing and rotor blade damage, turbulence caused by adjacent aircraft, impact of ordnance and electronic warfare operations;
- Ability to network with other simulators within the MSHATF or outside the facility to enable multi-aircraft training sorties.







### Optimum cost efficiency

Aircrew training services are available based on hourly rates for short, medium and long-term training requirements in highly flexible packages tailored precisely to customers' needs. The MSHATF's groundschool and synthetic training delivers the following cost benefits:

- Eliminates the need for up-front capital cost of full-mission simulators; user pays for the service received, not an investment in capital assets;
- Enables substantial cost savings compared to actual aircraft training, allowing the user to increase training hours while still reducing costs;
- Achieves economies of scale through integrated logistics support for maintenance, spare parts and training centre management;
- Reduces the need for dedicated training aircraft; through the increased use of simulators, users can devote available flying hours to meeting operational demands, extending fleet life and reducing operations and maintenance costs;
- The unique ability to add computer-generated forces across the maritime, land and air environments as enemy and friendly forces overcomes the costly coordination and release of high-value (live) operational assets;
- Enables special training in the use of night vision goggles;
- Supports tactical troop transport and mission skills development;
- Provides the capability for individual, team and collective training as well as mission rehearsal and tactical training;
- Supports tactical formation and fighter evasion training;
- Supports tactical doctrine development, human factors research and accident investigation;
- Offers tailored courses to meet customer requirements.



# CAE's technology leadership

CAE has designed training systems for a greater variety of rotary wing platforms than any other company. We have also pioneered many of the innovations related to helicopter simulation over the past several decades. Our experience and technology excellence are showcased at the MSHATF.

## **Tactical Control Centre (TCC)**

CAE's networking technology enables the practice of distributed mission training at the MSHATF. Key to this is the Tactical Control Centre, which is capable of providing computer-generated entities over the network. These include friendly as well as hostile land, sea and air platforms. Instructors can exercise off-board control of the simulators. Virtually any type of mission can be staged, from single aircraft tactical training scenarios and specific mission rehearsals, to complex multi-aircraft exercises set in different parts of the world. Realistic ground, sea and air battlefield replication, complete with sounds and impact effects, tests the ability of aircrews while providing an opportunity for commanders to develop their decision-making skills.

CAE's MSHATF also supports a wide area network gateway that allows for the networking of other remote training devices. A connection to the UK Ministry of Defence's high-speed national secure data highway enables networked training to be carried out with other military training centres across the country.







### Groundschool and instructors

The state-of-the-art groundschool features four computer-based training (CBT) and computer aided instruction classrooms as well as two academic classrooms. In these classrooms, comprehensive interactive courseware is used to support either self-paced CBT for trainees or specific lessons delivered by qualified instructors. All major cockpit-displays and systems are emulated in the CBT, which provides the trainee with synthetic “hands-on” operation in the classroom. The instructors, all of whom are ex-military and top of their class helicopter instructors, can then introduce malfunctions to demonstrate their effects on system operation, all of which stimulates comprehension to achieve efficient learning.

The MSHATF has recently been enhanced by the introduction of CAE Simifinity desktop trainers and instructor tools to the Puma groundschool training programme. The Puma 2 groundschool is now at the cutting-edge of simulation-based training in the classroom and CAE is working with the UK MoD on plans to introduce this capability to the Chinook groundschool in the near future.

### Simulator training

Two impressive halls at the MSHATF house six full-mission simulators designed and manufactured by CAE. These comprise three Boeing CH-47 Chinook, two AgustaWestland AW101 (EH101) and one Airbus Helicopters Puma 2 simulator. All the simulators have been upgraded to glass cockpit technology. The simulators can be used as stand-alone trainers or networked for collective and mission training exercises.

Each of the simulators features a six degrees-of-freedom (DOF) motion system, a three DOF vibration platform and dynamic pilot seat cueing. The visual systems support a six-channel collimated display on each simulator, plus chin window, forward-looking infrared (FLIR), instructor operator station (IOS), and rear crew station (RCS) displays. This enables the full range of military training needs to be satisfied, particularly for low-level helicopter flight.

In early 2015, CAE began planning for a major visual system upgrade to the full-mission simulators at the MSHATF. CAE plans to upgrade the simulators with the next-generation CAE Medallion-6000 image generator in order to provide even greater levels of high-fidelity training and a more realistic and immersive synthetic environment.

In addition, each simulator has a dedicated briefing and debriefing facility to ensure that the aircrews get the maximum benefit from every sortie, each of which is fully recorded for subsequent playback and analysis. The debrief from the instructor enables pilots to appreciate Crew Resource Management standards as well as areas of their training that require further development.

### Replication of pre-flight activities

Using CAE’s internally-developed training management information system (TMIS) to generate and deliver comprehensive airframe, task and weather briefings, top priority is given to accurately replicating aircrew pre-flight activity. The TMIS, plus a dedicated, fully-equipped flight planning room (and mass briefing room if required), means every phase of mission preparation can be rehearsed at the MSHATF.







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