

# The UK's Combined Arms Tactical Trainer

## Its Facilities and Application

The Combined Arms Tactical Trainer (CATT) was deliberately established at the **Land Warfare Centre (LWC)** at Warminster on the edge of the UK's largest and principal training area. The LWC supports the training and operational preparation of all British Army units and formations. To do so, it provides the training areas themselves and all the support required to conduct live simulation of operations - that is to say **the deployment of real people with real equipment in a real environment, but with simulated weapons effects**. The support package available for this is extensive, ranging from exercise evaluation staff through a fully equipped armoured battle group to act as OPFOR to a Lessons Learned team available to ensure that the latest lessons from real operations are absorbed. This overall package amounts to a type of training that could be termed **"Live Simulation"**.

The above establishments are complemented by a state of the art **facility to train headquarters staff up to divisional level**, broadly equivalent to the facilities that exist at CEPC at Mailly-le-Camp in France. This support package provides what is termed **"Constructive Simulation"**.

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BY LIEUTENANT COLONEL JOHN WILLIAM ROLLINS, FORMER UK LIAISON OFFICER TO CDEF

Illustration 1:  
CHALLENGER 2 VSS



The gap between these two training support packages is filled by CATT which provides what can be termed **"Virtual Simulation"**, that is to say allowing real people to operate simulated systems with computer imagery providing a virtual environment. This, therefore, is the background to the CATT mission which is to:

*"Provide realistic training within a simulated environment to train crews, sub-units and battle groups in order to prepare them for operations."*



Illustration 2:  
After Action Review  
• 3D Stealth view  
• Proteus

as can a Brigade headquarters, whether all-arms or specialist. All of this can take place, of course, in a multidimensional, extended battle space.

When a unit arrives at CATT, it spends the first day being briefed on the technical and procedural aspects of the facility - for example the procedure to be followed if a track needs to be repaired. This will be followed by a tightly controlled familiarisation exercise, essentially an inter-active navigation around the system. On day 2, the battle group commander will conduct his own exercise, with the emphasis applied where he wishes, all supported by dedicated CATT staff. This is designed to develop unit co-ordination and cohesion on the system. When the unit is fully familiar with the system, a series of 3, eight hour long exercises will be conducted. At the end of each exercise, an after action review is conducted. To support this, a map display is available to record the progress of the battle as a whole (see illustration 2). The evaluation staff can also focus upon individual vignettes using computer displays to follow the action of individual vehicles (see illustration 3).

CATT is therefore a **Combined Arms facility that supports the planning and execution of operations in a fully synchronised manner**. However, crucially, it also provides for a full analysis of actions at all levels, thereby enhancing the value of the training.

The CATT facility provides the following specific vehicle simulation packages - that is to say the precise representations of the vehicle interiors and control panels - :

- 29 *Challenger* main battle tanks,
- 33 *Warrior* armoured infantry vehicles and 8 *Scimitar* armoured reconnaissance vehicles.

Each of these specific simulators can be used to accurately represent other equivalent vehicles such as T-80 and AMX 40 tanks or BMP infantry fighting vehicles. Illustration 1 shows a French soldier using a tank facility to simulate the controls of an AMX 40. In addition there are 16 other generic simulators that can represent bridge layers, minelayers and mine clearers, air defence missile systems, other types of reconnaissance vehicles and support as well as attack helicopters. Finally, play stations allow the participation of

dismounted individuals, such as observation posts and forward air controllers, as well as dismounted platoons and sections.

The system employs **three different data bases** that in turn allow for both digitised and non-digitised play. It can cope with up to 5 sub-units, that can be combined arms, combat support or combat service support, and from any nation. **A full battle group can be trained** at any one time,



Illustration 3: After Action Review

## Data Capture (2) Ammunition Expenditure (over time)

- \* Display ammunition totals against a time line
- \* Graphs available for both Direct and Indirect Fire

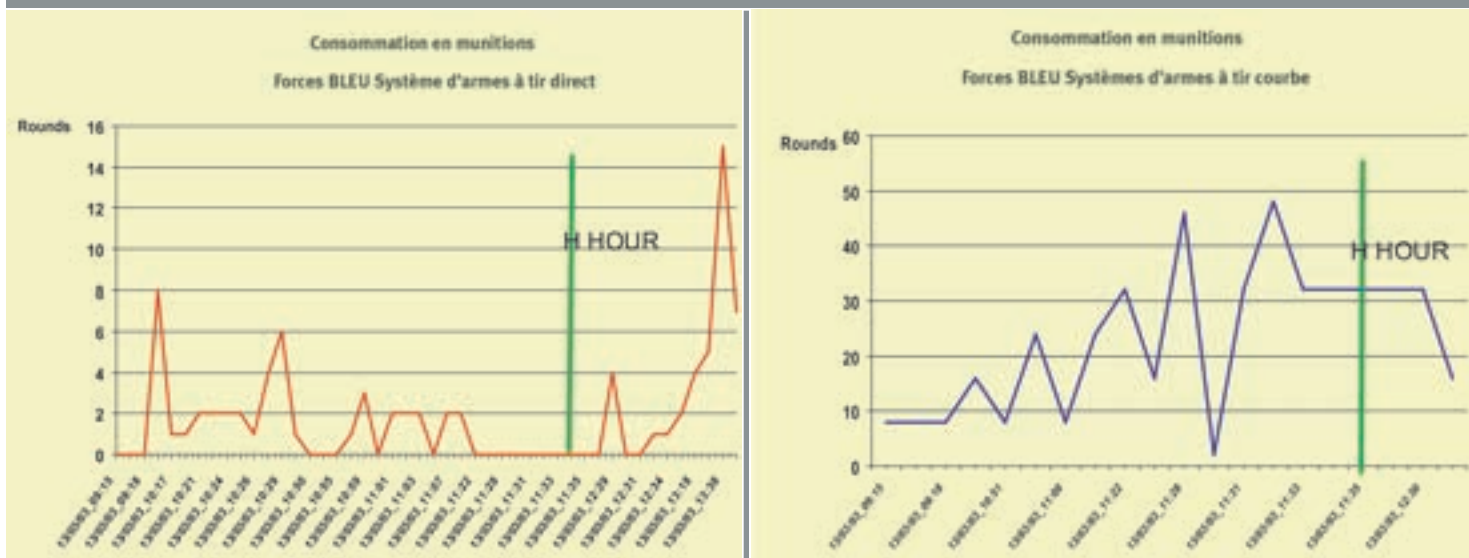


Illustration 4:

When the battle group has reached the requisite level of competence, it will be asked to plan and execute operations simultaneously. To do this, the battle group headquarters is deployed to a set of simulated box body vehicles.

Clearly, to enable a comprehensive analysis of the action to take place, a great deal of data needs to be captured. The level of detail available to staff is enormous. For illustrative purposes, it includes:

- Fratricide reports.
- Casualties.
- Engagement ranges
- Radio uses (including clips of recorded transmissions).

- Movement.
- Accuracy of weapon usage.
- Ammunition expenditure.

Illustration 4 shows how ammunition expenditure can be displayed.

The system does, of course, have **wider applications than just the training of battle groups and brigades**. It has played a key role, for example, in studies to develop the usage of reconnaissance, amphibious, light infantry and artillery assets. Equally, it has supported conversion training and specific courses such as those for company and battle group commanders. A number of other nations, including France, have used the facility.

CATT is **constantly evolving**. In order to remain relevant to current and future operational needs, it is regularly enhanced with new equipments and software support. However, it is important to stress that improvements are driven by operational requirement rather than improvements in available technologies. This approach has led to the following specific new capabilities:

- Thermal imaging.
- More sophisticated simulated urban environment.
- Wheeled vehicle installations.
- New engineer vehicle installations.
- Simulation of *Javelin* air defence systems.

- Simulation of ISTAR assets given visual range out to 12 kilometres.

In order to meet future needs, it is assessed that among the enhancements that will be required are the following:

- The ability to fully represent the third dimension.
- More medium and light force representation.
- The ability to represent amphibious operations.
- A battle laboratory that will better support the development of concepts, doctrine and structures.
- The ability to support air and maritime operations.

**Looking out well beyond the year 2010**, it is anticipated that AFVs become more diverse, that demand for simulation will increase, and will expand into the dimension of space. Moreover, there will be a greater requirement to “marry” the facilities to other systems and to exploit it in other training domains. This will create considerable challenges in assessing and realising the right level of investment. The solutions to such challenges will certainly require much more joint “buy in”, but may also require co-operation with the experimentation world. There may also be opportunities and value in linking the system to multinational simulators.

While most of the above may appear positive, **CATT** is by no means perfect. It has certainly proved **both flexible and reliable**. It is at its best in supporting the training of battle groups where its value is exceptional. It is also, incidentally, environmentally friendly. However, it has a limited number of vehicle stations, it represents neither enemy forces nor air and maritime assets (as it might in the future) and its current visual range is limited to 4 kilometres. However, its full exploitation has yet to be realised and there are clear opportunities in both the training and experimentations domains. However, as ever, further investment is required to realise these opportunities. Certainly, without investment, it will quickly become overloaded - such is its proven utility.