Operations Other Than War in the Analysis of Defence Capability

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Abstract

Analysis of Defence Capability (ADC) provides an annual high level assessment of UK military capability. The assessment is conducted for Director, Force Development as part of the MoD Force Definition and Development process and thus informs the Defence Strategic Plan and the Equipment Programme. The assessment considers a set of scenarios representing a range of military tasks including both warfighting and non-warfighting. For each scenario a force package is identified and assessed. The assessment considers force generation, deployment, operational capability and sustainability.

An important element of ADC is the assessment of the capability of identified force packages to undertake operations. Conventional combat models are available to assess capability to undertake warfighting operations but increasingly it is necessary to assess the size of force required to undertake military operations other than war. A range of techniques are described which have been used to assess different types of operations including early deterrent deployments, non-combatant evacuation operations and peace support and humanitarian operations.

Analysis of Defence Capability

Analysis of Defence Capability provides an annual high level assessment of UK military capability. The assessment is part of the MoD Force Definition and Development (FDD) process and thus informs the Defence Strategic Plan and the Equipment Programme. The FDD process tests the ability of the planned force structure to meet policy aims in terms of missions, scales of effort and concurrency.

The work is conducted for Director, Force Development (DFD) by the High Level Studies department of the Centre for Defence Analysis, part of the Defence Evaluation and Research Agency. The study has gained very high visibility within the Ministry of Defence. It reports through a 1-star level Customer Group to the 3-star Policy and Programmes Steering Group and the

study conclusions are reported to the Finance, Planning and Management Group.

Scenarios

The ADC assessment considers a set of scenarios from the Studies Assumptions Group (SAG) list, representing a range of military tasks including both warfighting and non-warfighting. The portfolio of scenarios increases year on year. The most recent assessment, 1999, considered ten scenarios and a further six scenarios will be added over the next year. The broad range of scenarios is essential to providing a robust and balanced assessment.

Scenarios include:

- Regional conflict inside and outside the NATO area
- Non-combatant evacuation operations
- Peace keeping and peace enforcement operations
- Humanitarian operations

For each scenario a force package is identified using a structured judgmental approach by military staff of the Directorate of Force Development and the Permanent Joint Headquarters. Military staff of the Defence Logistics Organisation identify necessary supporting logistics assets.

The force packages are then tested in dynamic campaign analysis to determine any affluence or shortfall in capability. The assessment is conducted over four different time periods from the present day to fifteen years in the future to identify how capability will develop over time with the introduction of new equipment. The assessment is conducted independently for force generation, deployment, operational capability and sustainability.

Force Generation

The Force Generation assessment looks at the time taken to generate forces from peacetime state to being ready to deploy. This process involves regenerating personnel to their warfighting establishment from other units and from reserves, ensuring that units have undergone the required individual and collective training, and, in parallel, taking up equipment from depot stocks and ensuring it is serviceable. The assessment compares the reported capability of units against their target readiness and the capability to generate the numbers required for the scenario.

Deployment

This assesses the time required for the forces identified in each scenario, including the logistic assets, to deploy from UK to theatre. A major part of this assessment is identifying the numbers of equipments, personnel and freight that make up the units to be deployed. The times required to deploy the forces are compared to agreed target times for the scenarios. The assessment

assumes that all forces meet their required readiness times, and considers the use of all available lift assets including commercial charter aircraft and shipping.

For several years ADC reported a shortfall in strategic transport assets, with a consequence that this issue was afforded a high profile during the Strategic Defence Review, resulting in the decision to acquire four additional roll-on roll-off container ships and four large C-17 aircraft or their equivalent.

Operational Capability

The analysis of Operational Capability uses a wide range of models and techniques, tailored to the individual scenarios. Important elements are campaign level combat models such as the land campaign model CLARION and the Maritime Campaign Programme. New techniques are being developed for the assessment of non-warfighting operations (see below).

Sustainability

The sustainability analysis examines:

- Logistics support. The supply and distribution of provisions, water, fuel and ammunition;
- Equipment support. The ability to maintain the equipment in theatre;
- Medical support. The ability to evacuate and treat casualties.

Reporting

An executive report is produced each year to support the drafting of the Defence Strategic Plan. The assessment is reported using a 'traffic light' system showing capability against agreed targets.

In addition to the basecase assessment, each year a number of scenario variations are conducted on the advice of the ADC Customer Group. These allow the impact of changes to current programmes and plans to be assessed.

The assessment also includes force package variations - with the aim of offsetting affluence in one area against a shortfall in another. This provides a degree of integration between the assessment areas and informs the development of force packages for the following year's analysis.

Wider value of ADC

ADC is an essential component of the high-level operational analysis supporting the development of the Defence Strategic Plan. The tested force packages are the building blocks for other studies that assess the implications of concurrency, permanent commitments, roulement and the training cycle on the UK force structure.

In addition the broad based scenario development conducted to support the ADC assessment underpins the whole high level operational analysis programme and provides framework scenarios for many equipment studies.

Analysis of Operations Other Than War

An important element of ADC is the assessment of the capability of identified force packages to undertake operations. Conventional combat models are available to assess capability to undertake warfighting operations but increasingly it is necessary to assess the size of force required to undertake military operations other than war (OOTW). A significant proportion of ADC scenarios now consider non-warfighting operations.

A range of techniques are used to assess different types of OOTW including:

- Early Deterrent Deployments
- Non-combatant Evacuation Operations
- Peace Support and Humanitarian Operations

Early Deterrent Deployments

"As the 1990/91 Gulf War and subsequent events have shown, this mission may involve ... early deterrent deployments.

Such operations also impose demanding requirements, for example, in relation to strategic transport for deployment and supply"

Strategic Defence Review

The requirement to deploy early deterrent forces is seen as a key driver of the UK strategic lift fleet. The assessment must identify the size of force that will deter a potential aggressor.

On the basis of intelligence information the balance of forces in the region is assessed, taking into account the capability of potential opponents and friendly nations to generate forces. The time at which unambiguous warning of an attack would be available is also estimated and informs the development of targets for the time to deploy UK forces.

The probability that local friendly forces alone or local forces reinforced by UK and other allied forces could defeat an attack is then calculated using a force balance algorithm developed from historical analysis of operations.

The assessment assumes that credible deterrence is achieved if the probability of the enemy succeeding in military operations is low.

Non-combatant Evacuation Operations

"As in the last few years, our forces may be called on to assist, often in co-operation with other nations, with the evacuation of British (and other) civilians caught up in overseas crises."

Strategic Defence Review

The assessment of Non-combatant Evacuation Operations (NEO) focuses on the time taken to complete the operation since it is considered essential that they are carried out quickly to reduce the risk of co-ordinated action against our forces.

The evacuation is considered in three phases:

- UK forces move into the area of operations and establish evacuation points
- Entitled persons are evacuated
- UK forces are withdrawn

The operation is conducted using transport aircraft, support helicopters and road movement. The movement of all forces is modelled in a standard tactical deployment model and the time to complete the operation identified.

The size of force deployed to protect the evacuation points and all road movements is based on the intelligence assessment of the threat. It has not been possible to systematically evaluate the threat to UK forces.

Peace Support & Humanitarian Operations

"In a less stable world, we have seen more international operations of this type. Britain will play its full part in such international efforts.

At one end of the spectrum, this might involve logistic or medical support to a disaster relief operation. At the other, it might involve major combat operations as we were prepared to undertake when NATO's Intervention Force (IFOR) first deployed to Bosnia."

Strategic Defence Review

It is not possible with the current suite of models to conduct a dynamic assessment of peace support and humanitarian operations. Instead a static force allocation approach is used. The operation is decomposed into a set of tasks, such as patrolling an area, protecting a base or convoy etc. The available forces are then assigned to their tasks. Finally an assessment is made of the capability of the assigned forces to undertake their task. A number of methods of assessment can be used:

- **Historical analysis.** The forces available can be compared to the forces assigned in actual historical operations.

- **Structured military judgement.** If the task is sufficiently low level or can be further decomposed into low-level sub-tasks, military judgement can be an acceptable method of assessment.
- **Simple calculations.** The assessment of the forces required for a task can be assisted by simple calculations. For example, given the number of refugees in an area is possible to calculate the frequency and size of convoys that would be required to deliver emergency food aid, on the basis of which the forces required to protect the aid convoys can be assessed.
- **Low level combat modelling.** The capability of forces in low level combat operations, for example protecting a base, can be assessed using conventional close-combat models, particularly those that focus on infantry actions. These assessments require intelligence estimates of the likely threat in an area.

The method used is similar to that of P Chouinard at the NATO Consultation, Command, and Control Agency[1], however no attempt to develop a systematic assessment of tasks has been attempted.

Future Capabilities

Two new models are being developed which will significantly improve our ability to model OOTW:

- DIAMOND
- The Land Formation Model (LFM)

DIAMOND

DIAMOND (DIplomatic And Military Operations in a Non-warfighting Domain) is a high level model development currently in progress in the HLS department at CDA [2]. DIAMOND will focus on the campaign level aspects of OOTW. It is scheduled for delivery in April 2000 and concentrates on peacekeeping, peace enforcement and humanitarian aid operations. The model will be a stochastic simulation and will represent command and control (C^2) within a mission based architecture.

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[1] P Chouinard. NATO Consultation, Command, and Control Agency, Technical Note 707. *A methodology for the derivation of force requirements for peace support operations.* January 1999.

[2] Andrew Caldwell. *A Flexible Methodology for Simulating Wider Peacekeeping Campaigns (DIAMOND).* In *The Cornwallis Group IV: Civil-Military Interactions.* A Woodcock and D Davis (eds). The Canadian Peacekeeping Press. To be published.

The model will be able to examine the utility of military elements, the effectiveness of future force structures and equipment, including C^2 and information communication systems, calculation of logistic requirements and the possible outcomes of operations with different levels of deployment, commitment and operational strategies in OOTW.

The entities in DIAMOND will represent a generic set of units that can be tailored to represent military, para-military, and non-military organisations (including the civilian population and non-governmental and commercial organisations). Logistics will be modelled at an appropriate level of resolution to represent the effects of reduced supply but will not model the logistics network directly. To achieve an appropriate coverage of the issues associated with an OOTW environment DIAMOND will be a multi-sided model representing a variety of organisations and parties and the relationships between them. The relationships that will be modelled are hostile, uncooperative, neutral, sympathetic and co-operative.

Alongside relationships, DIAMOND will also represent the basic perceptions that will affect the behaviour of entities within the simulation. An entity's perception will be based on the key parameters that an entity uses to make sense of its circumstances and interpretation of these key parameters will vary according to type of entity, changes in the environment in which it exists and its interaction with other entities. The perception system will also allow individual commanders or entities to exhibit different (maverick) behaviour from their party allowing them to follow regional or local agendas during the simulation.

It is also intended to model communications between parties so that aspects of co-operative and non-cooperative interactions can be resolved without recourse to violence or other means. This process is referred to as negotiation and will focus on specific types of communication. For example, negotiations to pass roadblocks, negotiation to share missions or objectives between allies and requests for assistance from non-combatants for protection.

It is proposed that due to the impact political issues can have in a complex OOTW environment, politico-military gaming, consultation with regional experts or the use of an agent based wargame (for example the LFM) will be used to scope the bounds of each scenario modelled in DIAMOND. Following this, the scenario will be developed in DIAMOND so that the impact of changing scales of effort or force structures can be examined rapidly and economically by project teams.

Land Formation Model

The LFM is intended to replace, in part; the divisional wargame model but will also examine other types of operation, such as OOTW. It is designed to operate as either a simulation or a wargame (in which the players replace a node in the command chain). In both modes, players, computer or human, will not have access to ground truth but will be required to act based upon the

information they have available through the various sensors and information gathering capabilities to which they have access.

The model is intended to create a structure within which individual studies may add sufficient detail to answer the particular question they are looking at while leaving the remainder of the model at a higher level of aggregation. This is intended to result in a flexible but not overly complicated model usable for a wide range of studies. The current features of the LFM, as it applies to OOTW, will be flexible command structures, logistics and logistics support. These could be expanded to include equipment support, medical support, communications and other factors in the future. The model will be able to highlight the effectiveness of different equipment mixes and the effectiveness of different concepts of operation.

LFM can be run on a stand-alone Sun/Solaris workstation or over a distributed network of Sun workstations. The phase 1 model was delivered in December 1998 and is currently being used to support a pilot study, which is concentrating on logistics and C^2 in an OOTW environment. The logistics study is focused on the distribution of fuel, food, water, petrol to UN forces in theatre according to a rule based system. These interim results will be presented in September 1999 and the final report at the end of November 1999. The model would appear to be suitable for modelling some OOTW scenarios at the high level.