

OPERATIONAL ANALYSIS SUPPORT TO A COMBINED JOINT HEADQUARTERS ON A CRISIS RESPONSE OPERATION

Ms Michele Fisher, LTC Luc Debuyst and Col Mogens Andersen
Operational Analysis Special Staff
Regional Headquarters Allied Forces North Europe (RHQ AFNORTH)
and

Dr Wolfgang Nonnenmacher
Operations Research and Functional Services
NATO Consultation, Command and Control Agency (NC3A)

In 2001, the Operational Analysis (OA) Special Staff at NATO's RHQ AFNORTH drafted a Standing Operating Procedure (SOP) for OA on deployed operations. The staff then tested the SOP by performing OA support to the operational planning, pre-deployment training and exercising of a Combined Joint Task Force Headquarters (CJTF HQ) on a Crisis Response Operation (CRO).

This work was supported by expertise and augmentation from the NC3A. Analysis addressed issues of risk assessment, measures of compliance/non-compliance, HQ location and impact of refugee movements on operations. This paper will briefly describe the analysis performed. It will also discuss the OA experience, identify lessons and draw conclusions.

1. INTRODUCTION

Exercise Allied Effort 2001 (AE 01) was conducted in Wroclaw, Poland in November 2001. The purpose of the exercise was to mount a CJTF HQ formed upon RHQ AFNORTH Nucleus Staff and Combined Joint Force Component Command (CJFCC) HQ formed upon Northern Region Joint Sub-Regional Commands (JSRC) and Component Commands (CC). It trained these HQ in a Command Post Exercise (CPX), with a CRO scenario beyond NATO's Area of Responsibility. This exercise was a key milestone on the route to the Initial Operational Capability (IOC) in the implementation of the CJTF concept. Another important aim was to improve interoperability with Partner for Peace (PfP) nations.

This work included operational planning, pre-deployment training and conduct of operations. OA was used in support of all phases. This analysis support was provided by analysts on the permanent staff of RHQ AFNORTH and HQ AIRNORTH and by augmentees from the NC3A, USAREUR and PfP nations.

2. BACKGROUND

The scenario was set in fictitious countries on the peninsula of GEM. One of the countries, Coral, invaded its neighbour, Opal. After months of negotiations supported by trade and arms embargos, a UN-sponsored cease-fire agreement was signed. A UN Observer Mission was established and negotiations started on a General Framework Agreement for Peace (GFAP). NATO was approached for a possible implementation and the North Atlantic Council (NAC) issued initial planning guidance. This initiated operational planning in RHQ AFNORTH and selected subordinate commands. This planning was supported with analysis.

The GEM Implementation Force (GFOR) began to deploy to ensure forces would be in place to enforce the military implementation of the GFAP between the countries of Coral and Opal when the agreement was signed. This deployment was simulated over the months leading up to the exercise.

Training of the different HQ was also performed during this phase. The OA Staff at RHQ AFNORTH participated in the training. This allowed the analysts to become familiar with the different elements of the HQ. It also provided opportunities to brief staff and explain the OA role and capabilities. The cornerstone of these preparations for the CJTF HQ was a weeklong Nucleus Staff training in Finland that included a scaled down CPX.

Augmentees for the CJTF and CJFCC HQ were identified at manning conferences held during this preparation phase. Potential augmentees also participated in a series of trainings from general language skills to specific functional area training. Briefings on OA were introduced into the training package to familiarize the augmentees with the subject.

By the start of the CPX, the deployment simulation had the bulk of the forces “in-place” and preparing to begin operations. The CJTF and CJFCC HQ were deployed and functional. The start of the operation awaited the signing of the GFAP. Fortunately the climate for this was right and agreement was indeed signed after a couple of days of exercise play and the focus became the military implementation of the agreement.

3. ANALYSIS

3.1 OPERATIONAL PLANNING

Operational planning was performed through a number of workshops tied to the NATO Operational Planning Process. OA supported throughout. In particular it helped in the definition of Criteria for Success in the Mission Analysis and supported of Course of Action (COA) development. The latter included visualisation of the military situation in the two countries including force lay-down and force potential. The primary tool for this analysis was the Global Aggregated Model for Military Assessments (GAMMA) model from NC3A. It is a simulation model that also is a powerful aggregation and visualisation tool. GAMMA was used to perform an area analysis of proposed Zones of Separation (ZOS) that quickly identified and characterised significant features such as road networks, rivers, and population density. Operational risk was also assessed for a range of potential former warring nation COA: general compliance, non-compliance where the former warring nations target each other and non-compliance where GFOR is the target. One example was an assessment of the operational risk if one of the former warring nations decided to attack GFOR with Air Forces. The Land-Air-Maritime Battle Determination Algorithms (LAMBDA) spreadsheet model was used to do this analysis and results showed that these forces, although superior in number, were no match for the mix and capabilities of the proposed GFOR Air Forces.

OA also provided decision support to identify the best location for the joint HQ. The analysts reviewed existing policy, doctrine and past analysis and compiled a list of assessment criteria. The assessment criteria included political factors, infrastructure requirements, liaison considerations and security concerns. Over 20 factors were identified and ranked by the planners in terms of importance. The analysts then reviewed scenario information and characterised each factor for each location. The planners worked together with the analysts to assign scores. The resulting weighted scores, was the rationale for the recommendation made to the decision-maker.

Operational planning did not stop with the production of the OPLAN. During the exercise, the planning group continued to meet to assess changes encountered during implementation and plans for the longer term and follow-on phases. OA was well positioned to support with what-if analysis. Tools and databases were adapted tools to provide advice on some of the new issues encountered.

The bulk of the analysis focussed on an assessment of the impact of a growing crisis between one of the former warring nations, Coral, and a neighbouring nation, Topaz, seeking to take advantage of the situation. In particular to assess whether equipment in the ZOS that would be under GFOR control would be needed to deal with the crisis. OA did a quick analysis of the relative force strength in the crisis region. Force potential was calculated based on the holdings and associated firepower. Attrition

was also assessed for a number of scenarios to include the impact of air on the ground campaign. These assessments were made with the LAMBDA model. Another issue OA contributed to the assessment of was the impact of a slow-down or removal of Topaz Host Nation Support should GFOR get involved in the crisis.

3.2 MONITORING COMPLIANCE/NON-COMPLIANCE

It became clear quite early on in the preparations for the operation that measurement and tracking of compliance and non-compliance of military issues of GFAP would be key. It was briefed in situation updates and was the most important agenda item for Joint Military Commission (JMC) meetings. OA had identified this issue as one that could be supported by analysis and had proposed an unbiased and reproducible method for tracking non-compliance. A data collection plan was prepared so that incidents could be characterised consistently using a standard report. Violations were also categorized based on the GFAP and the associated risk was assessed as a measure of the severity of an act of non-compliance. Analysis included timely summaries of the raw data for situational awareness. OA main effort was trend analysis. Trends were tracked and reported and data was cross-referenced with other information in an attempt to identify cause-effect relationships.

3.3 GENERAL

The OA team was also asked to perform ad hoc analysis or investigate the potential for analysis on a number of occasions. For example, during the Nucleus Staff training, the team was asked to propose a methodology to model the movement of the parties out of the ZOS and identify feasible timelines and the balance of power in the region over the redeployment. Advice was also provided in the development of a method that tracked the utilisation of forces on tasks and allowed the assessment of the implications of taking on new tasks. One of the new tasks being considered was addressing increased incidents of insurgency in one of the regions. OA was asked to assess different approaches for this task – quarantine, barrier or reaction force.

The impact of refugee movements on GFOR operations was also analysed. Required data inputs were: number and location of refugee camps, number of people in the camps, return routes, GFOR Lines of Communication, average size of a group of refugees moving together, time window within which refugees will return, distribution of return events within this time window. Return events were then assigned to different routes. The peak and spread of distribution of returns was then defined. Finally the returns were simulated with a stochastic simulation model. Critical points on GFOR routes were identified.

OA also developed an observation collection tool for the exercise that allowed players and DISTAFF to record observations as the exercise unfolds. OA also administered and analysed a questionnaire sent to all exercise participants. An analysis tool was developed to quickly summarize key issues for the hot wash up. More detailed analysis was done after the exercise for inclusion in the final exercise report.

4. PROCEDURES AND PRACTICES

4.1 STANDARD OPERATING PROCEDURES

The OA Special Staff in RHQ AFNORTH as a parent CJTF HQ developed an SOP for OA in deployed operations. It was based on the experiences of a previous exercise was tested during the pre-deployment training and validated during the exercise itself. This document defined the mission of OA in the CJTF HQ and described the analysis process. It explained the organisation, composition and responsibilities of the special staff. Liaison and coordination with other areas of the HQ were

described, as was the role of OA in the HQ decision cycle. In drafting the document the OA coordinated with HQ staff to scope its role in key processes.

4.2 OA TEAM COMPOSITION

The OA Special Staff at RHQ AFNORTH had the lead for the analysis support to operational planning. Analysts from the HQ, NC3A and sub-ordinate commands were brought together. Experience in supporting planning and current operations was sought as well as analysis expertise in modelling CRO. A mix of backgrounds across the three services (land, air and maritime) and in joint HQ was provided.

The CJTF HQ OA Special Staff has a complement of three. All OA positions are augmentees. Because there were no bids for these positions, members of the RHQ AFNORTH OA Special Staff filled them. An analyst with extensive experience supporting operations from NC3A was added to the section. This provided an opportunity for training and access to additional models and capabilities. Admin support was also added to the section based on a lesson identified in the pre-deployment training.

In addition to the OA section in the CJTF HQ, there was a team in the CJFLCC and an analyst in the CJFACC. The CJFLCC Assessment Cell had four augmentee positions that were filled by two ORSA from USAREUR and two PfP officers. An analyst from HQ AIRNORTH manned the CJFACC position.

4.3 OA COOPERATION

The exercise provided an opportunity to play two levels of OA support. We had successful cooperation between OA teams in the different HQ. This was initiated by a face-to-face meeting in the work-up phase. During the exercise the three teams shared information on their analysis work and passed daily assessments of non-compliance and mission accomplishment. Communication was primarily by e-mail. Contact was constrained by different HQ decision cycles that governed working hours and periods of intense activity for the different teams.

Another option for analysis support, reach-back, was explored during the operation. Support requests were sent to the parent HQ and other analysis organizations during the exercise. The organisations contacted were very receptive and responsive, but support within the timeframe was limited to providing references. Collaborative work could be difficult and communications were complicated by different computer systems and limited access.

4.4 MODELS AND TOOLS

A number of analysis tools were collected for use in the exercise. The focus was on PC-based tools that could support quick analysis and assessments. There was also an effort to collect together models and tools developed and used in support of CRO. We also tried to make maximum use HQ maintained reference databases and software.

Spreadsheet models and database analysis tools were the first line of attack for static force comparisons, combat assessments and quick logistics calculations. A dynamic simulation model based on the standard GIS that is flexible and easily adapted was a powerful addition for aggregation of information, visualisation and quick assessments. We also relied heavily on MS Office for analysis and presentation, but the standard HQ installation did not include a number of the features that the analysts relied on such as macros, add-in, actions and charting.

5. LESSONS IDENTIFIED

5.1 OA TEAM COMPOSITION

Manning the OA team with augmentees is challenging. There is a limited pool of manpower with the skills outlines in the OA job descriptions and the openings do not often get to this audience. Augmentees are not available during the initial stages to support the operational planning and make preparations. It was recommended that one member of the CJTF HQ OA team be on the Nucleus Staff. This requirement plus the need for dedicated admin support for the team is being considered in a review of the CJTF HQ establishment. Functional area training on OA has also been added to the RHQ AFNORTH PpP training package to increase OA awareness.

5.2 OA TOOLKIT AND MODEL DEVELOPMENT

The models used only addressed some of the important aspects the CRO scenario played. Analysis required a creative use of these models. Challenges remain to provide analysis support to operational planning for CRO. Analysis was provided on specific issues in particular if they involved a deterioration of the situation into conflict, but it was difficult to assess which COA would be more successful in meeting the overarching criteria for success like compliance to the GFAP. Models must continue to be developed. Flexibility and responsiveness will continue to be important.

A need to expand the OA toolkit to include a compiler, a Systems Dynamics tool, a Decision Support tool and a Statistical Analysis package was identified. The challenge remains to develop a robust but manageable set of tools.

5.3 COMPLIANCE/NON-COMPLIANCE MEASUREMENT

Compliance/non-compliance measurement and analysis should be tailored to meet HQ requirements. Daily situation awareness requirements in the Joint HQ can be addressed by an assessment presented in traffic light format as long as the meaning of the colours is well defined. Trend or correlation analysis can supplement these daily assessments, but the relationship between the two views must be clear to the audience. It is also better to present trend or correlation analysis on a less frequent basis, that is when relevant or when there is a significant change.

During the exercise, trend analysis was problematic because it was more strongly influenced by the artificiality of the exercise scenario than the compliance/non-compliance events themselves. There were also problems observed in data collection and validation. These were also investigated to find ways to improve the process to exclude duplicates or fusion of non-compliance incidents in one single incident.

6. CONCLUSIONS

The exercise laid the groundwork for OA in a CJTF HQ. Working mechanisms of the OA Team were set-up. An SOP for OA in deployed operations for a CJTF HQ in a CRO was validated. Links between the CJTF HQ and the parent HQ were scoped. The exercise also provided the opportunity to assess the adequacy of the manning and equipping of the OA Special Staff.

OA team building was achieved and progress was made in integrating OA into the HQ. Contact was also made to analysts in the CJFLCC and CJFACC HQ allowing coordination of analysis work. Links to outside analysis agencies and HQ was maintained.

Valuable experience in providing analysis support to an operational level joint headquarters was gained. This tested analysis skills and model capabilities against real world problems and operational timelines.