

BATTLE COMMAND AAR METHODOLOGY: A PARADIGM FOR EFFECTIVE TRAINING

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ABSTRACT

An old Army adage claims, "If no assessment has been made, then no training has been conducted." While unit exercises through the battalion level can be effectively observed and assessed, it is difficult to assess exercises conducted at the division and corps levels using traditional means. The number and physical separation of the participating elements, including players, opposing forces and exercise control, constitute significant obstacles to comprehensive observation, correlation and assessment of exercise events and actions.

The Battle Command Training Program's After Action Review (AAR) methodology, used in conjunction with simulations and supporting technology, provides an effective means for training assessment in large formations. This is accomplished through use of a simulation as an exercise driver, automation of AAR data collection, automation support for analysis and AAR product preparation, distributed AARs, and by linking widely separated players, supporting units and opposing forces over a wide area network (WAN).

1 BACKGROUND

The objectives of the Battle Command Training Program (BCTP) are to exercise the unit under conditions approximating the modern battlefield, assess unit effectiveness, and provide feedback to promote more effective future training. Additionally, BCTP provides information and data that are used in post-exercise analysis in the areas of training, doctrine and organizational development.

A key part of the exercise assessment is to determine how well the training unit synchronizes its available combat power. Synchronization brings together all elements of combat power to bear on the intended point at the desired time and place to achieve the desired result. Historically, synchronizing combat power has been the most difficult of any commander's tasks.

The BCTP, stationed at Fort Leavenworth, Kansas, provides exercise planning direction, control staff, opposing forces, and shared funding for each exercise. Each corps and division (active and reserve) is exercised once every two years, resulting in approximately twelve BCTP training cycles per year. The control staff, organized into rotating operations groups (Ops Grp), are a fifty-fifty mixture of military and contractor personnel. The contractor personnel are mostly retired military officers, each having over twenty years of service and higher military training and education. This Ops Grp personnel mixture ensures military control and expertise in all functional areas, as well as providing continuity in the program.

The transition from traditional to simulation-driven training exercises has reduced the number of military personnel required to exercise a large unit from thousands to a few hundred. For example, a typical division warfighter exercise (WFX) requires 665 military players and controllers, and 186 civilian contractors. Major commanders acknowledge that simulation-driven training has increased training effectiveness significantly. Training costs for large unit exercises have also been significantly reduced. For example, a simulation division exercise costs approximately \$2,000,000, as opposed to about \$11,000,000 for a traditional exercise. Simulation-driven exercises provide the opportunity for conducting these exercises on a regular basis. Traditional training exercises could not be conducted with such regularity, in standard unit training areas, because of time and environmental considerations, even if funds were available.

A BCTP unit training cycle encompasses one year and has four major parts: exercise planning, a seminar, WFX, and post-exercise feedback. The exercise cycle begins with an initial planning conference. This conference brings all the participants together, and accomplishes the following: a survey of the intended exercise site, agreement on the exercise scenario, resolution of the exercise troop list and database questions, scheduling of subsequent planning conferences and identification of any questions still to be resolved.

The first unit activity in the training cycle is a seminar conducted at the Command and General Staff College, Fort Leavenworth. This seminar, which includes participation by the unit commander, his staff, and major subordinate commanders, is intended as a team-building exercise. The commander and staff work their way through a series of situations and exercise the decision-making processes that are related to the actual exercise. This is a training opportunity that few unit commanders normally have because of geographic dispersion, time constraints and the press of current events at their home stations.

This seminar can be viewed as a warm-up for the subsequent WFX that follows in six months. This is a five- or seven-day exercise, depending on whether the unit is a division or a corps, and it runs twenty-four hours a day. The components of a WFX are shown in Figure 1.

A simulation center is established at the division or corps home station. This facility normally houses all Corps Battle Simulation (CBS) player workstations, exercise operations, analysis cell, exercise control, technical control, and the AAR facility. BCTP provides the deputy exercise director, exercise control staff, observer-controllers, senior observers, an analysis cell, simulation technical support staff, workstation controllers and expert training for unit augmentees on the operation of the simulation. The opposing forces, also provided by BCTP, are located at the National Simulation Center at Fort Leavenworth. The exercise unit provides augmentees to man the CBS workstations and any additional personnel required.

During the course of the exercise, the BCTP senior observers, observer-controllers, analysts and workstation controllers observe and collect both objective and subjective data bearing on the command and control process, i.e., the planning and execution of unit operations. At intervals during the exercise, AARs are presented to the commanders and staff officers. These two-hour sessions use a standard format and focus on one or two major issues that have been developed during the preceding exercise period.

This exercise and assessment format has enhanced unit training significantly. By using a simulation driver, the exercise can be stopped, the situation evaluated by the exercise unit commander and staff, restarted, and the operation conducted along a new approach. The BCTP format also includes daily "white cell" meetings. These meetings, supported by data collection and analysis, are conducted for the exercise director, who is the next senior commander. During the meeting, the exercise director evaluates developments and decides on adjustments to the scenario necessary to accomplish the unit training objectives.

Exercise unit personnel man the CBS workstations and "play" all the subordinate units (maneuver and separate battalions, attached units, etc.) of the exercise unit. They must do all the planning and reporting necessary to comply with directives received from the unit's tactical opera-

tions centers (TOCs) located in the field sites. Although the formal AAR is the centerpiece of the WFX, training feedback to unit commanders and personnel takes place throughout the course of the exercise.

2 AAR DATA COLLECTION

Comprehensive data collection is the key to assessment and preparation of training feedback. This includes both subjective and objective data. Data collection planning is accomplished prior to the exercise and is updated during the exercise. The plan covers data and information to be collected by the observers, workstation controllers and at the data collection interface. This plan is based on the exercise unit's training objectives, operations order, and standard operating procedures.

Exercise data is simultaneously collected in several places. Subjective information, mainly process observation data, is gathered by the senior observers and observer-controllers during their visits to the exercise unit's tactical operations centers, and by the workstation controllers located in the CBS workstations in the simulation center. Objective data, pertaining to exercise events, unit status, events and situation, is acquired from the simulation through a data collection interface. Table 1 shows a summary of the types of data collected for AARs and examples of the data products produced.

The focal point of data collection is the analyst cell, a part of the BCTP exercise operations center. The analysis is supported by an integrated computer network consisting of a MicroVAX (collection interface), several SUN SPARCstations, peripherals and large data storage capacity. Here the unit, event and situational data produced by the simulation is collected and stored. Additionally, workstation controller reports from the CBS workstations are collected via the Workstation Reporting System and stored in the database. Throughout the exercise, data required from the opposing forces (OPFOR) for AAR products (and in response to special requests) is collected and formatted at Fort Leavenworth and forwarded to the opposing forces' forward workstation over the WAN. Data and information from the observers in the field sites are collected and reported manually. Collection objectives, priorities and requirements change in response to exercise developments.

BCTP organizes its analysis staff on the basis of the Army's seven Battlefield Operating Systems:

- Command and Control
- Maneuver
- Intelligence
- Fire Support
- Mobility/Counter-mobility/Survivability
- Air Defense
- Combat Service Support

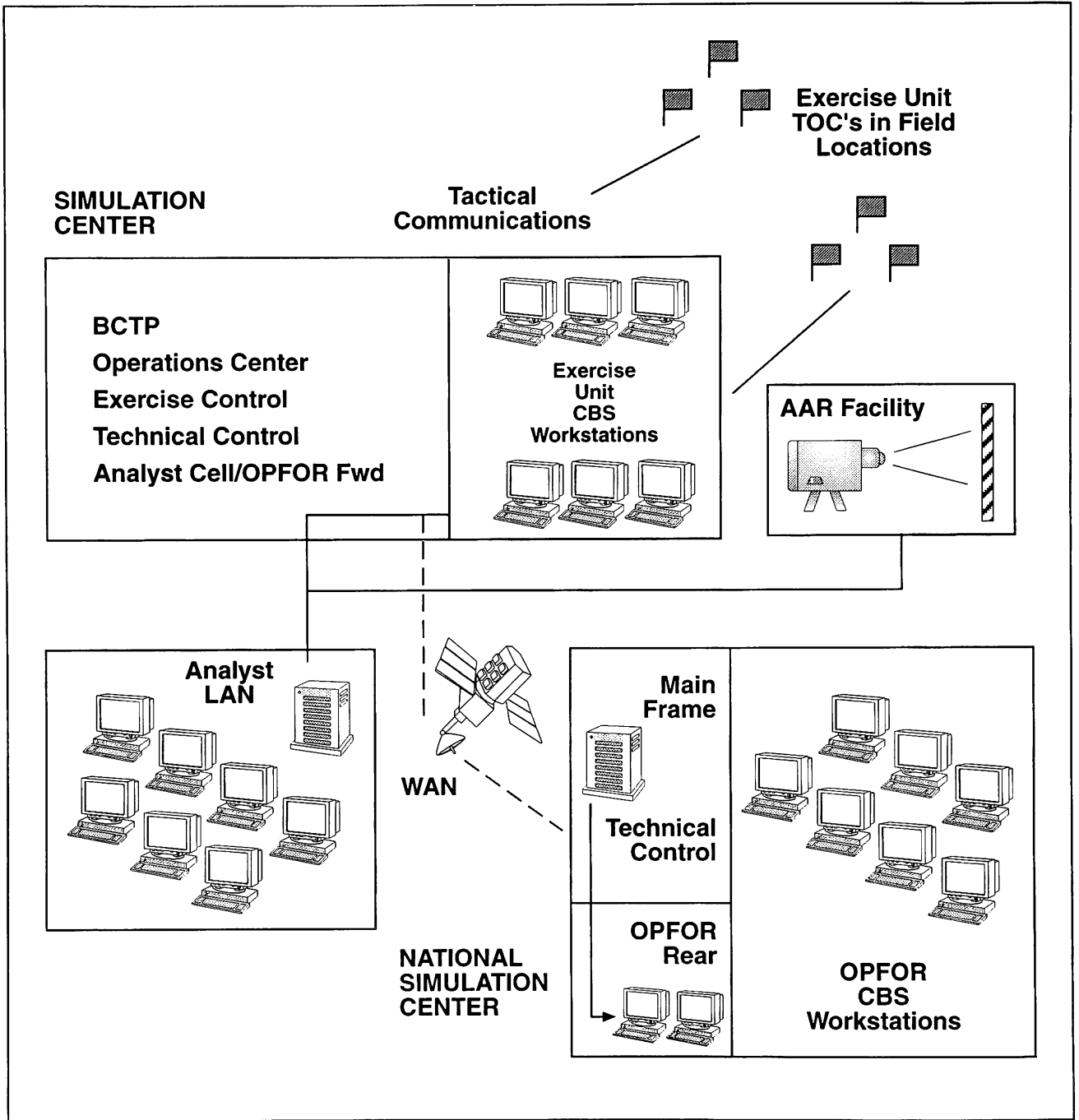


Figure 1: The Components of a BCTP WFX

Table 1: AAR Data Collected and Produced

Data Content	Data Products
Unit Attributes: • Size • Position • Activity • Type • Name • Status	• Combat Status Report • Logistics Reports • Maneuver Activities • Battle Summaries
System Capabilities: • Range • Engagement Criteria • Ammunition • Fuel & Cargo • EW	• Range/Radar Coverages • Engagement Sequences • Positioning • Resupply/Movement • Execution
Battlefield Geometry: • OPFOR Activities • BLUFOR Activities • Scalable Terrain Graphics • Scalable/Selectable Force View • Mobility/Counter Mobility	• Battlefield Sequences • Focused Battle Snapshot • Key Events • METT - T • COF/COFM
Statistical: • Expenditures • Losses • Available Resources • Resupply • Missions	• Log Expenditures • Consumption Rates • Tonnage Available • Supporting Forces Data • Volume of Fire • BDA
Intelligence: • Reports • Info/Intel Processing • Intel Distribution • Target Acquisition	• Intel Available • Impact on Plan/Orders (C ²) Timeline • Targeting Process
Synchronization: • Correlating Data • Cross Comparisons • Confirmation with External Sources	• Plan vs. Execution • Execution vs. Doctrine • C ³ I Effectiveness

All tasks required to plan and conduct military operations are included within these seven functional areas.

The exercise analysis effort is supervised by a senior analyst working in close conjunction with the BCTP operations group commander and his chief assistants, the senior observer-controller and operations officer. Working

from the original data collection plan, as amended by the Ops Grp commander, the senior analyst directs and coordinates the following: data collection, operations analysis, AAR product preparation, and organization of the AAR presentation. Fourteen BOS analysts work in 2 shifts on a 24-hour basis to support AAR preparation and provide doctrinal expertise. BOS analysts serve as the point-of-contact to receive data collected by the observer-controllers (OCs) at the field sites. They also prepare AAR products based on the OCs' observations and collected data.

3 AAR OPERATIONS

Exercise analysis and AAR preparation begin prior to the start of the exercise, with the review of the exercise unit operations order to determine its completeness, compliance with directives from higher headquarters, disconnects and ambiguities. Additionally, all BCTP personnel familiarize themselves with what the unit intends to do and how it intends to do it. Discrepancies and mistakes noted in the pre-exercise review can be used in the formal or mini-AARs or retained for use in the Final Exercise Report (FER), depending on their importance and the decision of the Ops Grp commander, who is also the AAR facilitator.

As the exercise progresses, each analyst closely observes the progress of operations as it bears on his particular area of interest. He routinely reviews the automatically collected statistical, unit and event data for completeness, accuracy and items of interest. He prepares a set of standard AAR products, which are normally used to expand upon or provide background for discussion of significant AAR issues. These products are prepared using the Corps Battle Simulation After Action Review System (CBS AARS), an automated AAR support system with the capability to present hard or soft copy formats, along with any multimedia, such as video tapes of TOC briefings.

Although the analysis effort is proactive in its planning and execution, exercise analysis by the very nature of military operations is a reactive process. Significant issues are frequently tied to events that took place earlier in the exercise, whose significance was not recognized until sometime later. In these instances, the analyst must go back in time, using the automatically gathered and archived data, and select the data necessary to reconstruct the entire picture of what happened, how it happened and why it happened.

Exercise AAR presentations are published in the exercise schedule, but are presented whenever the exercise director determines. Two AARs are usually given, the first after about forty-eight hours of exercise run, and the second immediately following the end of the exercise. The expertise of the BCTP staff, however, permits AARs to be prepared and presented as required. For example, AARs have been prepared in only four hours and as many as three

AARs have been prepared and presented within a twenty-one hour period. AARs are in preparation during the entire exercise, so that the period immediately preceding the AAR is used to complete products already in preparation and handle last-minute developments. There is a data cutoff time, usually six hours prior to the AAR presentation. This means that no events after this time will be considered for inclusion in the current AAR. This six-hour period is used for final AAR product adjustments, the development of last-minute type products, and the final organization and rehearsal of the AAR presentation by the Ops Grp commander.

The AAR format was developed at the National Training Center at Fort Irwin, California. The training center, opened in 1979, features live training exercises between opposing forces. The AAR usually takes about two hours and includes a review of the mission and intent statements of the exercise unit and higher commanders. This is followed by the OPFOR commander's briefing, covering his estimate of the situation, his plan and conduct of operations to date, and the battle summary, which presents the major events.

Both the OPFOR brief and battle summary use many situational graphics, on a variety of terrain backgrounds, to clarify the briefings for the training audience. Immediately after these initial briefings, the Ops Grp commander presents the key issues, normally two. The resulting discussions constitute the major time block in an AAR. A review of noteworthy aspects of each BOS area completes the formal presentation and discussion.

BOS analysts monitor the flow of exercise events, compare operational plans with their execution, and ask questions concerning these operations. The analyst may ask, for example, if the fire support plan and execution support the commander's intent for the executed attack. To answer this question, the analyst examines several related BOS areas. In the area of fire support tasks, the analyst determines which artillery units were available, tasked, and actually participated in the attack. If there is a major discrepancy between units tasked and units participating, the analyst must determine why this took place. How many units and systems were available? Were the units notified in a timely manner? Were they unable to fire because they were already engaged in combat? Were they moving at the time of attack? Did they have adequate stocks of the correct ammunition? These questions fall into several BOS areas: combat service support, command and control, and fire support. The analyst may investigate intelligence BOS tasks also.

To conduct such extensive inquiry requires the review and reduction of a great mass of data, most of which is produced by the CBS simulation. Automation is of major assistance here. Determining unit status, units firing, units moving, systems available, and ammunition stocks is a

matter of sorting the desired data items from the collected unit status or events reports and displaying the data in standard formats.

Each BOS analyst has his own SPARCstation, networked through a LAN with the other components of the data collection and storage system. Through experience the analyst knows what information is needed and which formats are best for quick and periodic review and for determining trends. While parametric products tell a portion of the story, ad hoc products, both textual and graphic, are also required. An example of an ad hoc product is a graphic showing the synchronization of command and control activities. Since this graphic is constructed largely from subjective data, it does not fit into the automated analysis products and must be constructed each time. The CBS AARS provides a full range of text, graphic, and spreadsheet software capabilities that support both the automated and ad hoc product requirements.

In addition to the formal AARs, the analysts prepare standard products that can be used for immediate training feedback to the exercise unit. These product sets normally relate to specific operations and can be prepared rather quickly. For example, immediate feedback packages on aviation deep attack missions are routinely prepared. These packages are provided to the training unit as soon as possible, so that they can review their performance in the planning and execution of a deep attack and correct shortcomings as the exercise continues. These same products may appear in the next AAR, but experience indicates that this immediate feedback enhances subsequent exercise unit performance and stimulates further discussion during the AAR.

The training feedback circle is extended by conducting several mini-AARs during the exercise. The OCs present them to the exercise unit personnel in the TOCs they have been observing. The analysts also support these presentations by preparing products tailored to the particular requirements of each OC.

4 POST-EXERCISE ACTIVITIES

The Final Exercise Report, due shortly after the exercise, is prepared by the analysts and OCs during the exercise. This standard format report incorporates all the material presented during the formal AARs, plus detailed discussion of each BOS area, supported by extensive charts and graphics prepared by the analysts. This report provides the exercise unit with sufficient information to conduct their own post-exercise analysis and adjust their training programs as needed.

Supplementing the FER is the Professional Sustainment Package (PSP). This package, prepared by the analysts, reinforces the WFX training experience. It provides the information and graphics necessary to conduct two deci-

sion-making exercises for the commander and his staff. It is a user-friendly training aid, requiring a minimum of preparation.

The Army Center for Lessons Learned (CALL) also receives the results of the WFX. All data files, operations plans and orders, AAR products and the FER are provided to CALL for support of training, doctrine, organizational and trend analysis.

5 SUMMARY

Experience with the WFX training cycle over an eight-year period demonstrates that the BCTP AAR methodology provides a paradigm for economical and effective training of large units. This fact is acknowledged by commanders Army-wide, and is accomplished through the following:

- Detailed exercise planning and preparation
- Use of a simulation as the exercise driver
- Scenarios tailored to accomplish unit training objectives
- Close observation and analysis of unit planning and execution of operations
- Training feedback at all levels of activity (fully supported with automation)

We believe that this trend in training will continue and expand. To date, each service component has focused primarily on the simulation training of their own units, just as BCTP has concentrated on the training of Army units. The format and effectiveness of the training thus far conducted is being used to extend simulation driven training into the joint arena. Joint task force training is being planned, using a pattern of exercise planning, conduct and assessment similar to the BCTP.

These joint exercises will feature the use of a confederation of simulation models and increased complexity in the exercise force task organization. The collection and reduction of data will be much more complex and will require increased use of automated AAR support systems, and improved data standardization and archiving.

AUTHOR BIOGRAPHY

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