

DEVELOPING BASE CAMPS TO SUPPORT MILITARY OPERATIONS IN A DANGEROUS WORLD

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Abstract

The Departments of Systems Engineering and Civil and Mechanical Engineering at USMA are assisting the Engineering Research and Development Center in the development of a cradle to grave strategic plan to address base camp infrastructure assessment and issues that arise in planning, design, construction, operation, transfer and closure.

This paper will report on a two-day workshop held at USMA that involved key individuals experienced in base camp operations. The results of this workshop and the future plan for addressing base camp planning and management issues will also be addressed.

Introduction

As the United States developed its strategy for regime change in Iraq, it faced many of the same issues pertaining to the establishment of base camps as it had in Bosnia and Kosovo years earlier. In order to properly support military operations currently in Iraq and in future conflicts, the quick and effective establishment of base camps is a must. Military planners, who are required to establish these base camps, would benefit from a suite of software tools that would aid in the planning, managing and closing of base camps. The initial step in the development of these software tools was to define the issues and requirements in the following base camp areas: initial planning, site selection, environmental, structures, energy and force protection.

Background

In December 1995 the United States finally put 20,000 “boots on the ground” and intervened in Bosnia-Herzegovina to put a stop to the atrocities committed to different ethnic groups (Contingency Operations 2000). As soldiers entered Bosnia they confronted many issues with the establishment of their base camps. Two of the more obvious examples concern site selection and environmental concerns. Initially, many soldiers set up their “tent cities” in a local farmer’s field (Harris 2004). At first glance, this area looked perfect to house as many as 20,000 soldiers and consolidate force protection concerns. However, when the weather turned rainy many of these soldiers found that their tents had been flooded. They also found that the farmer’s field was not well suited for the large amount

of troop traffic that “tent cities” usually have. Site selection was not the only concern. In some cases, existing facilities were not even environmentally safe. For example, one unit actually used an existing factory for both vehicle storage and housing accommodations. It was discovered later that health inspectors deemed the factory unsafe for troop use (Harris 2004). These were just a few problems that inconvenienced many soldiers and their units and could have probably been avoided.

In recent operations in Iraq not only did the United States face many of the same problems with base camp operations experienced in Bosnia and Kosovo, new ones also surfaced. LTC Michele Putko, a former base camp commander in Iraq, felt her three largest challenges as a base camp commander were: communications within the base camp, power availability for soldiers, and base camp management. (Putko 2004). Once LTC Putko assumed command of her unit’s base camp she realized that many of the base camp planning tools currently available such as AT Planner, the Redbook and the Sandbook were ignored due to the pace of the operations and because they were not common knowledge. Therefore, military planners need to have an adequate suite of tools that are commonly known and readily available and that establish base camp standards to aid in the development of their plans.

Fundamental Problem and Approach

The fundamental problem facing military planners in establishing base camps is that they lack adequate planning tools that are standard across units and common to all forces to assist them in quickly developing plans. Each base camp will have its own unique set of issues but there are a set of fundamental planning concerns regarding initial planning, site selection, environmental, structures, energy, and force protection that apply to virtually all base camps. It is our goal to study each one of these fundamental areas and assist in developing tools designed to help planners quickly and efficiently establish, operate, and close base camps.

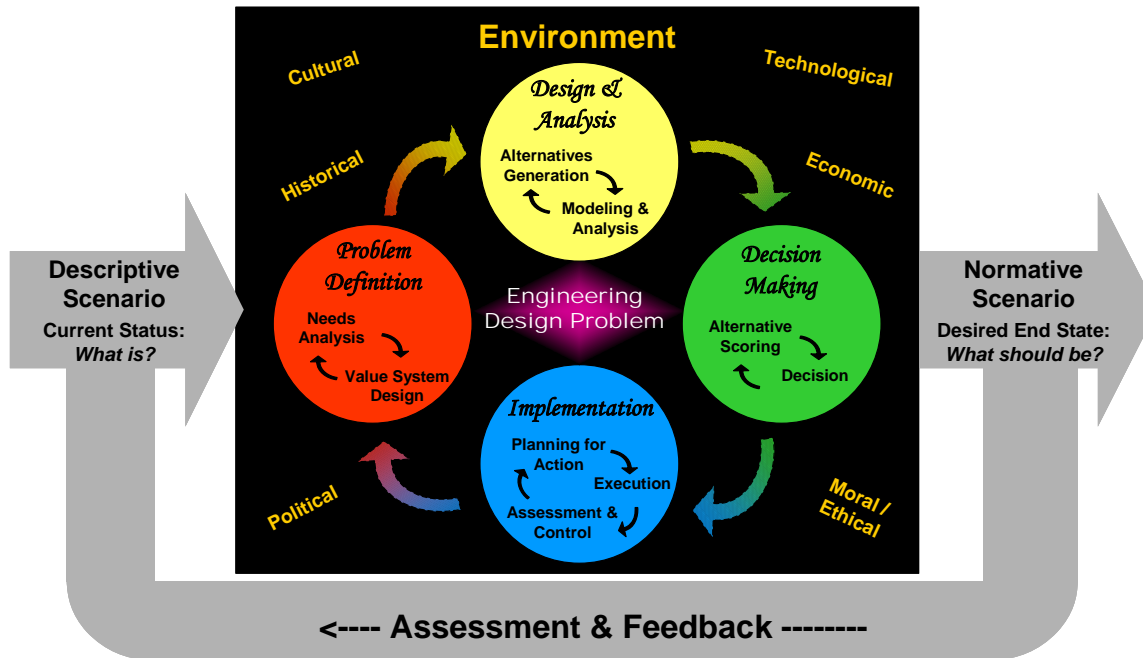
The approach we plan on using is the Systems Engineering and Management Process (SEMP). The SEMP is a design methodology that the Systems Department at USMA uses to solve many large-scale,

complex problems faced in the military. Exhibit 1 below is a pictorial representation of the SEMP.

instrumental in the stakeholder analysis process, a key component of an effective

Exhibit 1. Systems Engineering and Management Process

Systems Engineering and Management Process



The SEMP consists of four phases. These phases are Problem Definition, Design & Analysis, Decision Making, and Implementation. Throughout the Systems Engineering Management Process cultural, historical, political, technological, economic, and moral/ethical issues affecting the problem are considered.

After defining the problem and ensuring that the team understood the problem we began one of the key tasks within the problem definition phase: the needs analysis. Robert Clemen in his textbook *Introduction to Engineering Design and Systems Management* states that the purpose of the needs analysis is to “gain a clear understanding of the problem, to conduct research into the problem area and interact with all of the relevant stakeholders to determine their needs and objectives.” The best way to gain a clear understanding of the issues facing base camp planners was to provide a forum for personnel with base camp experience to discuss pertinent issues challenging those involved in establishing base camps of today and tomorrow. Subject matter experts across the United States military were invited to come to a base camp workshop conducted at the USMA. This workshop was

needs analysis. Clemen points out that the primary purpose of stakeholder analysis is “to identify the people who are relevant to our problem and, more importantly, to determine their needs, wants and desires with respect to it.” The base camp subject matter experts “have a vested interest, or stake, in our problem and/or its eventual solution.” (Clemen 2004).

The intent of the workshop was to identify the key base camp issues to incorporate into a strategic plan of study and to garner support for continued work in this area. The end result of this workshop was to form “Tiger Teams” that could take the lead in finding solutions to systemic issues in the fundamental areas defined earlier: initial planning, site selection, environmental, structures, energy and force protection.

Base Camp Workshop

The theme of the two-day workshop, held on 31 March & 1 April 2004, was “*Base Camps of Today and Tomorrow*.” The first day was dedicated to base camp issues of today and the second day to base camps of tomorrow.

The first day began with a key note address by Brigadier General Merdith W.B. 'Bo' Temple, who is currently the commander of the North Atlantic Division Corps of Engineers. He had just returned from Iraq where he was the C7 (Engineer) of the Combined Joint Task Force Seven, Baghdad, Iraq. In his opening remarks BG Temple was able to set the stage for the first day's worth of discussions. He commented that even after being in Iraq for nearly a year the units were "still wrestling with the thorny issues of base camp development for such a large force." (Temple 2004)

Immediately following BG Temple's remarks, the participants were given a tactical scenario to help guide the discussion and were broken down into several breakout sessions. Participants were asked to focus their discussion in the fundamental areas: initial planning, site selection, environmental, structures, energy and force protection.

Each breakout session was asked to produce the following set of deliverables for each area:

- Identify 4 concerns within each topic area.
- Identify 4 recommendations for technology improvements
- Identify policy fixes needed for their issues
- Recommend potential lead agencies for researching solutions to the issues.

Each breakout session began their discussion focusing in a different fundamental area. The intent was for each participant to contribute to the area they came to the workshop to discuss and to ensure all areas were discussed by all groups in order to capture the broadest spectrum of issues and ideas. At the end of the day all the groups were brought together in a large group forum and asked to brief the deliverables from their breakout sessions. The intent of this briefing was to identify any consistent trends within the fundamental areas across groups. These trends would become the key issues to be addressed in the strategic plan and studied further by the future "Tiger Teams."

Day 2 also began with a key note speaker. Colonel Tom O'Donovan is currently the Director of Training for the United States Army Engineer School. He gave a future Engineer Corps concept brief which outlined the transformation process the Engineer force is currently planning. This process will support overall Army transformation, and provided the context for each breakout session to discuss base camp operations of tomorrow in light of future transformation. The individuals were assigned to different breakout sessions for day 2 so we could ensure that each member would get to interact with different people and get a chance to express their ideas. Each breakout session was required to produce the same deliverables

but this time in the context of base camps of tomorrow. At the end of day 2 all the breakout session groups reconvened and discussed their deliverables, with the intent to identify trends within each fundamental area.

"Base Camps of Today" Breakout Session Trends

This section provides a consolidated list of the broad issues discussed during Day One by the breakout session groups in each fundamental area and serves as the trends for future study.

Initial Planning

- Need to determine the level that the initial plan pertains to and determine who approves and makes changes.
- Initial planning process needs to be standardized in the joint arena (i.e. span across all military services).
- Initial plan needs to determine civilian contractor requirements.
- Need to develop and follow a standardized flexible master plan for base camp layout.
- Need to fully develop / understand the operational mission in developing base camp plans.

Site Selection

- Ensure the site has the flexibility to allow for future expansion.
- Obtain site history in the following areas as part of the planning/selection process:
 - Local populace
 - Political situation
 - Threats
 - Terrain and infrastructure analysis
- Must evaluate existing infrastructures for integration with the base camp plan.
- Need to determine who has the authority for base camp design changes.

Environmental

- Determine a common set of laws and standards to apply in base camp planning and management.
- Develop a plan for hazardous materials: collection, movement and disposal.
- Use onsite, deployable environmental assessment tools already available.

Structures

- Consider the following when designing structures for the base camp:
 - Life expectancy of base camp
 - Ease of future upgrade
 - Survivability

- Integrate structures planning with deployment/redeployment considerations
- Conduct a thorough infrastructure assessment of existing structures.
- Determine the assets available for construction.
 - Engineers
 - Transportation
 - Materials
 - Terrain
- Develop a joint, integrated toolbox
 - Integrated planning software
 - Base camp templates
 - Library of existing base camp plans

Energy

- Develop energy requirements keeping in mind that these requirements creep up as base camps mature.
- Develop an energy transformation plan
 - tactical
 - medium voltage
 - high voltage
 - commercial
- Ensure the efficiency of existing power and use.
- Restore and protect the host nation power assets.
- Improve the United States' deployable power generation capability.

Force Protection

- Develop joint standards/requirements for force protection considering the following:
 - Distance from roads
 - External barriers
 - Entry and exit points
 - Lighting
- Integrate existing technologies into force protection plans:
 - Use of sensors
 - Voice, retinal, facial recognition

“Base Camps of Tomorrow” Breakout Session Trends

This section provides a consolidated list of the broad issues discussed by the breakout session groups during Day Two in each fundamental area and serves as the trends for future study.

Initial Planning

- Research and have available knowledge of the operational environment such as:

- Resources available
- Personnel available
- Permissibility of the environment
- Ensure joint integration to develop master plan.
- Integrate efficient use of Joint Engineer Planning and Execution System (JEPES).
- Identify the Base Camp commander as early as possible.
- Task the Engineer Research and Development Center to develop planning tools for vulnerability and survivability assessment.

Site Location

- Determine land requirements for particular sizes of forces.
- Use existing GIS technology to aid in the site selection process.

Structures

- Determine requirement list for structures needed keeping in mind the following:
 - Light, rapid deployment
 - Modular, low-cost, multi-purpose
 - Survivability, capabilities
 - Durability/easily reusable
 - Upgradeable
 - Compatible
 - Availability
- Make innovative use of existing materials.

Environmental

- Identify base camp proponent
 - US Army Training and Doctrine Command (TRADOC) or the US Army Engineer Community should take the lead on developing policy

Energy

- Develop an updated power system
 - Modular, deployable sets
 - Update power management capabilities
- Develop common standards across all branches of service pertaining to energy requirements.

Force Protection

- Establish standards for blast and ballistic protection for force protection items.
- Develop and enforce a standard base camp security operating procedure.
- Ensure or develop sensor integration between the tactical unit and sensor.

- Task the Engineer Research & Development Center to research the following force protection measures:
 - Sensor fusion
 - Blast and Ballistic Protection
 - Advanced materials

Plan for the Future

Now that the trends across the different breakout sessions have been identified, the participants have the opportunity to form “Tiger Teams.” These “Tiger Teams” will be working throughout the country in their focused areas. The “Base Camp Plan of Attack Website” (Plan 2004) is used for teams to post their findings and present new information that might be of interest to all. This website also serves as a one source location for any individuals who are interested in the deliverables of the conference or simply want to track the progress of the “Tiger Teams”.

Many of these “Tiger Teams” continue to form gathering key personnel to continue research. The environmental team has been extremely active. This team has already met, established goals and developed individual work programs designed to help the Corps of Engineers. They are also preparing a products and capabilities brief in an attempt to fund their research for the next four years.

As these teams gather personnel and focus their research, they can begin the next phase of the Systems Engineering Management Process; the Design of Alternatives. It is the goal of both West Point and the Engineer Research and Development Center to have another workshop in latter part of this year or early next year to report on the progress of these “Tiger Teams.” The intent is also to continue to move this important research forward to support the military and its fine soldiers, sailors, airmen, marines and civilians.

Conclusion

The base camp workshop conducted at the United States Military Academy is the first step in defining the requirements for a suite of tools that military planners can use to plan for, and execute, fast deployments of forces in support of the full continuum of military operations. This workshop simply helped identify key base camp issues to incorporate into a strategic plan of study and to garner support for continued work in this area. The end result of this workshop was the development of “Tiger Teams” many of which have already taken the lead to continue research in the development of the suite of tools.

References

AT Planner, Redbook and Sandbook are planning tools used by various organizations in the military for

planning base camps. However, none are used as a standard by all military organizations.

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About the Authors

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