

Engineer Intelligence

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The Engineer Intelligence products and the Intelligence Preparation of the Battlefield

In any Army unit, the focus of intelligence efforts always depends on METT-T, (mission, enemy, terrain, troops and time available). The situation driven by METT-T influences the commander and the G2 in determining the intelligence support required for mission success.

How does one determine the type of intelligence support required? Several factors are important, but perhaps the most important is the type of operation. In today's post cold war environment an operation may range from war to one of the many environments covered by operations other than war (OOTW). Whatever the type or scale of the operation it is almost certain to include some engineer requirements and thus a need for engineer intelligence.

Other significant contributing factors are the unit's mission, the assets available to the engineer commander and the threat. Units today must not only contend with possible military opponents, but they are also frequently faced with the threats associated with the OOTW environment. While these threats drive the need for intelligence requirements for all the analysts, they pose some additional requirements for the engineer intelligence analyst because engineers have a critical role in performing a wide variety of stability and support operations.

To be successful all G2 analysts must be well acquainted with the Intelligence Preparation of the Battlefield (IPB) process, which is the cornerstone of fulfilling intelligence requirements. The Engineer Intelligence Officers are familiar with the IPB process but they normally focus primarily on the terrain analysis portion (the first two steps). This is with good reason: Who knows the terrain better than those who move it, shape it and modify it? The Engineer Intelligence Officer is facing other important issues that can influence the mission accomplishment: the terrorist activities and capabilities to prepare and to improve the Improvised Explosive Devices attacks that are very frequent in the current operational environment.

However an analyst must apply all four steps of the IPB process:

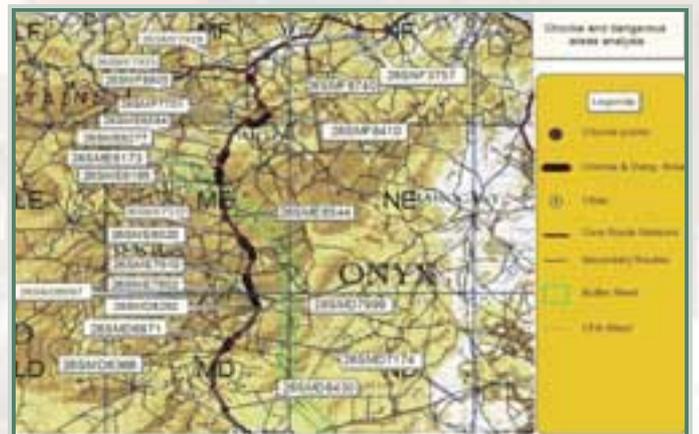
- Define the battlefield environment
- Describe the battlefield effects

- Evaluate the threat
- Determine threat course of action

This process can be applied both in a classic war and terrorism environment.

The G2 analysts must apply each of the IPB processes in as much or as little detail as required to support the commander and his mission. After these steps are integrated and applied to the situation, the G2 branch develops and produces some standard IPB products. These products include modified combined obstacle overlays, various enemy situation overlays and weather analysis matrices (Decision Support Overlay, Decision Points, Named Areas of Interest, Target Areas of Interest).

Providing appropriate intelligence support for diverse engineer missions and performing a specific engineer IPB is a challenge for the Engineer Intelligence Officer. Because the book solution often does not work, the G2 branch must tailor his intelligence support to align with the commander's needs, the units assets and capabilities, and the mission. In providing this support the Engineer Intelligence analyst will prepare some additional IPB products that are especially relevant to the entire mission.



Engineer Intelligence special product concerning a specific road analysis about possible choke areas during EX ALLIED ACTION 04

Engineer's specific IPB products are developed as the G2 anticipates the commander's needs. These products include bridging and fording site analyses and



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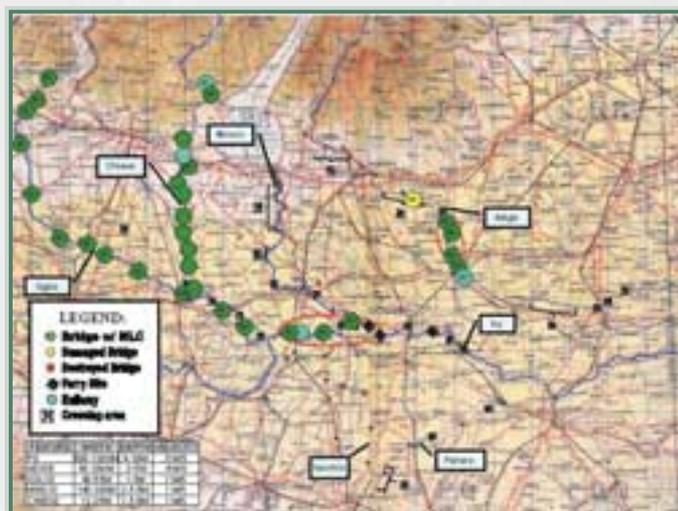
matrices, line of communication overlays, hydrologic overlays, various obstacle lists and overlays, and analysis/list of enemy/terrorist engineer assets and capabilities (improvised explosive devices, remote controlled explosive devices trends and analyses).

Bridge and fording site analysis. If the unit has the mission to perform bridging and fording operations, a thorough analysis of the rivers is required. Line of communication and hydrologic overlays are available in the commercial and military geo agencies. These overlays used with 1:100,000 scale maps and friendly force plan graphics assist the G2 conducting the analysis. "Tunnel vision" can cause the downfall of many good analysts. While the primary bridging and crossing sites must be identified, don't fixate on the obvious. Rivers are not the only areas that may require bridging. The Engineer Intelligence Officer must carefully analyse all the terrain for possible alternative routes as well as less obvious "wad-dies", ditches, or other gaps that may impede troop movement.

Bridging matrix. Since the quantity of information acquired in a reconnaissance can get overwhelming, it is helpful to develop a bridging matrix. By listing all of the bridges along the main supply routes and alternate supply routes and their critical characteristics the Engineer Intelligence Officer develops a quick reference for each potential route. This matrix also facilitates analysis of the detailed information concerning the characteristics of the bridges as spans, length, and overhead, possible bypass, MLC, construction material used.

Lines of Communication Overlay. The LOC overlay shows the locations of bridging and fording sites and the known length and bypass conditions of the bridges. By identifying the MSR that the units are most likely to use the Engineer analyst can determine which bridges and fording sites may require engineer assistance to facilitate troop movement. Through the LOC overlay the engineer analyst provides to the engineer commander and staff a graphic picture of:

- Bridges designated as impassable or difficult bypass
- Destroyed bridges along specific LOC
- Status of LOCs and the bridges indicating the MLC
- Specific road and bridge analysis (choke points, dangerous areas or elevation areas based on the threat, possible "wad-dies"....)



Lines of Communication Overlay during EX LIGHT SHIP 02



Ex ALLIED ACTION 04 line of communications overlay

Hydrologic Overlay. The LOC overlay showing the destroyed, impassable, and difficult bypass is used in conjunction with the hydrologic overlay to assist the G2 in analysing river characteristics. The hydrologic overlay provides information on a river width, depth, velocity, bottom composition and bank slopes. It allows the G2 to recommend to the engineer commander potential sites for concentrating the unit's bridging and/or fording efforts. The initial map reconnaissance allows the unit to focus on a general area of bridging operations. Once tasked the unit will conduct a ground reconnaissance to find suitable crossing sites.



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REF NUMBER	LOCATION	TYPE	DATA/TIPE/GROUP REPORTED BY	REMARKS
XMB01	32TQQ918625	AT minefield with breach	081830ZDEC02 3 ENGR REGT	ROUTE STRAIGHT RIGHT 03
XMB02	32TPQ 918 625	AT minefield with breach	081900ZDEC02 3 ENGR REGT	
XCB 03	32TPQ 913 732	ENEMY PLANNED DEMOLITION ON BONDENO ROUTE BRIDGE	081915ZDEC02 3 ENGR REGT	ROUTE STRAIGHT RIGHT 01 CLEARED BY EOD TEAMS

Obstacle list matrix. The SO Eng Intelligence closely tracks the location and status of the threat emplaced mines, obstacle belts, Improvised Explosive Devices (IEDs) types and analysis, bridges and other obstacles prepped with demolitions or destroyed. As information regarding obstacles flows in from the battlefield, the Engineer Intelligence Cell assigns a reference number to each of them. (See table above)

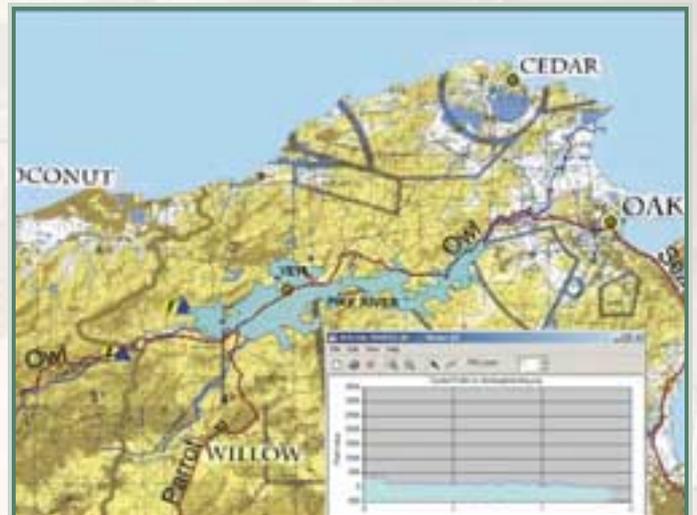
Units must inform the SO Engineer Intelligence when the status of an obstacle changes. The Engineer Intelligence cell disseminates obstacle information to the units. At the minimum the SO Engineer Intelligence disseminates the obstacle list matrix and overlays every 12 hours and when significant changes area reported. Obstacles also are posted on the engineer intelligence situation overlay, using the assigned reference number to assist with tracking them.

Engineer Intelligence Situation Files and Overlays. The Engineer Intelligence cell collects and analyses the activities of the threat engineer units, IEDs terrorist capabilities and terrorist hazardous material used. In addition the Engineer Intelligence also records pertinent data in the theatre of operations such as:

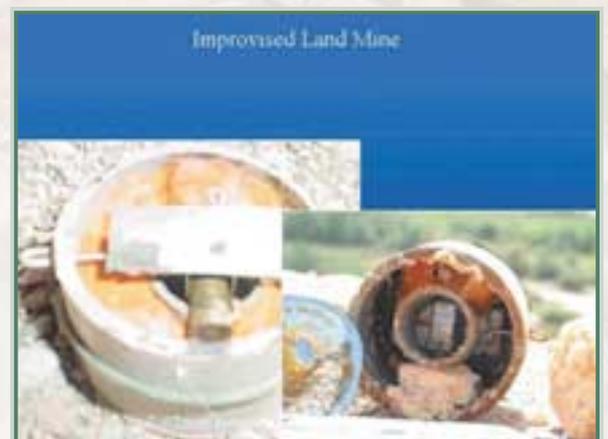
- Construction materials;
- Water supply points location and analysis;
- Threat depots/dumps analysis;
- APODs and SPODs capabilities and vulnerabilities;
- Threat minefields;
- Pits and quarries;
- Host Nation Engineer assets.

Threat Engineer Assets and Capabilities (including terrorist capabilities). A list of specific capabilities of threat engineer assets and terrorist groups may be required to support the G2 effort. The list of capabilities includes equipments, explosive capabilities, techniques, tactics and procedures used by terrorist groups, enemy minelayers, bridging assets, rafts and trenching assets. These are essential for the G2 situation analysis.

In the current operational environment Engineer Intelligence provides specific products to G2 branch in order to analyse the possible effects on the infrastructures caused by a terrorist attack.



The Engineer Intelligence special assessments can provide specific analysis (trends and patterns) on the terrorist capabilities to use mines, arty shells and explosives in general to prepare IEDs against coalition troops like in Afghanistan.



Improvised land mine used in Afghanistan



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The last step of the IPB against terrorism gives specific indications on possible terrorist courses of action. By analysing the terrorist capabilities and the threat the Engineer Intelligence Officer provides useful

material to close the terrorist target development cycle in order to improve the force protection measures in the theatre of operations.



The Engineer Intelligence Officer must ensure that Intelligence needs are identified and integrated into collection plans, information requirements and priority information requirements. Analysing the enemy/terrorist data collected, defines specific types of trends and patterns of the enemy/terrorist attacks and it is possible to finalize the IPB and the possible future targets.

The Engineer Intelligence contribution is essential for the mission success as well as the planning process. The Engineer Intelligence products are a primary tool for the entire G2 assessment and recommendations and last but not least, the information gathered and the numerous analyses and assessments can influence the commander's decision making.



Intelligence staff analyze a report

