Gathering current, accurate field reconnaissance and engineering information is vital to the speed and success of any operation. Today, much of this information is manually drawn, collected, and physically brought back to the Tactical Operations Center (TOC) on multiple sheets of paper or conveyed by radio reports. These procedures fail to provide a geospatial visualization of the area of interest. The current process is slow, inaccurate, and offers no real-time interaction between the reconnaissance party and the unit headquarters.

The Instrument Set, Reconnaissance and Surveying (ENFIRE) is a digital tool set that places the right tools in the hands of engineer soldiers conducting tactical reconnaissance and construction projects and replaces the old analog Surveying Set, Military Field Sketching kit. ENFIRE is designed to modernize the collection and dissemination of engineer related information while minimizing exposure to enemy observation. ENFIRE incorporates the ability to automatically populate field data on digital forms used for route, road, bridge, hasty minefield, and Improvised Explosive Device (IED) reconnaissance/reporting with relevant information from peripheral devices included in the ENFIRE set. ENFIRE sets are used at the company, platoon, and squad levels as a means to facilitate rapid collection and dissemination of information to commanders in the field. Information may be disseminated via the Battle Command Common Services (BCCS) to other ENFIRE sets and to other Battle Command (BC) systems.

ENFIRE Components
ENFIRE is composed of a Tablet PC with a robust software suite and a set of integrated peripheral devices that include long, short, and precision range finders, military GPS unit, digital camcorder/camera, bar code scanner, digital pen, external data storage drive, printer, and scanner. ENFIRE employs ESRI’s ArcMAP software and custom ENFIRE software to populate standard military forms with information fed into the Tablet PC by the linked peripheral components. The information is used to report engineer and reconnaissance related tasks listed in the “FM 3-34.170 ENGINEER RECONNAISSANCE” Field Manual (FM) into a geodatabase.

Enhancing Reconnaissance and Construction Capabilities
Current capabilities require soldiers to be physically at a target to take measurements. The short distance laser range finder enables soldiers to take measurements from an offset location of the target being measured. The long distance laser range finder allows soldiers to quickly and accurately determine a target’s bearing and distance from the users location at a range of up to 6 kilometers. Used in conjunction with the Defense Advanced GPS Receiver (DAGR) and ArcMap software, ENFIRE users are able to create overlays of bridges, roads, hasty minefields, and IEDs on digital maps as they collect information related to these targets. Road and bridge recon information can be associated to create routes. Using the video camcorder and digital scanner, ENFIRE users can collect picture and scanned image files that can be associated with route, bridge, road, hasty minefield and IED.
Information for reporting purposes. Reports can be generated in hard or soft copy for quick dissemination enabling the ‘Every Soldier as a Sensor’ concept. ENFIRE also offers soldiers the ability to update paper maps with a digital pen that captures the updates and allows the user to transfer the information back to the Tablet PC. ENFIRE provides construction and facilities engineers with tools that help them to effectively plan and efficiently undertake projects. ENFIRE’s construction site-planning software supports structure design, cut and fill requirements, material needs, and personnel and time requirement calculations. ENFIRE’s project management tools can create Gantt charts to track project progress and milestones. ENFIRE also provides a bar code scanning capability which makes inventory management faster and more accurate.

**ENFIRE Benefits**

ENFIRE allows reconnaissance teams and decision makers to interact in real-time. This enables:

- **Interoperability with existing C2 systems** —Current information can be quickly disseminated at the TOC giving commanders and staffs increased knowledge of the common operating picture through the Battle Command family of systems.
- **Safer and more accurate data collection** —Engineers are able to conduct reconnaissance operations using GPS, laser range finders and digital photography limiting exposure during mission execution.
- **Rapid transmission of information and enhanced situational awareness** —Rapid transmission of reconnaissance and engineering information provides the opportunity for better decision making. Decisions on gathering more information or modifying the reconnaissance can be made while the operation is taking place.
- **Modern tools made available at the squad level** —ENFIRE places modern technology in the small unit leader’s hands.

**ENFIRE Enables Every Soldier as a Sensor**

For more information, please contact:

**Northrop Grumman**
Information Systems
15036 Conference Center Drive
Chantilly, VA 20151
Thomas Boggess
703-961-3313
thomas.boggess@ngc.com

**Government Program Office – Product Director**
Combat Terrain Information Systems (PD CTIS)
U.S. Army Geospatial Center,
Building 2592,
ATTENTION: CEAGC-GS-T
7701 Telegraph Road, Alexandria, VA 22315-3864
Robert Knowles 703-428-6874
robert.b.knowles.jr@usace.army.mil

**ENFIRE Components**

- Tablet PC
- Long Distance Range Finder
- Short Distance Range Finder
- Precision Range Finder
- DAGR GPS
- Camcorder
- Digital Pen
- Bar Code Scanner
- Printer
- Page Scanner
- MOLLE pack
- External Data Storage Drive
- Transit Case