



Space and Naval Warfare Systems Center, San Diego (SSC San Diego)

ROBOTICS UPDATE

"Providing network-integrated robotic solutions for C4ISR applications."

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FIRRE Excels During CFPI at Yuma Proving Grounds



FIRRE components clockwise from top left: Command and Control Station, RSS E-box under camo-netting, RSS tower, and Unmanned Ground Vehicle without mission payloads.

The Family of Integrated Rapid Response Equipment (FIRRE) system provides persistent surveillance with reduced manpower requirements to help keep our for-

ward-deployed forces out of harm's way. Sponsored by the U.S. Army Product Manager, Force Protection Systems (PM-FPS), FIRRE is a layered "system of systems" providing fixed 360-degree hemispherical protection at Forward Operations Bases in Iraq and Afghanistan. The various FIRRE components fall into three basic categories: a mobile Command and Control (C2) station installed in a standard HMMWV shelter, powered by a 10-kilowatt tactical generator; an Unmanned Ground Vehicle (UGV) equipped with a SeaFLIR camera and an AN/PPS-5D radar; and one or more Remote Sensor Stations (RSS) featuring AN/PPS-5D radars for intruder detection and DI-5000 TIS/VIS camera modules for

intruder identification. The RSS is further augmented by the Battlefield Anti-Intrusion System (BAIS) of unattended ground sensors.

Developed for coordinated deployment and oversight of multiple unmanned sensors and vehicles in a site-security mission, FIRRE was recently extended to interoperate with the U.S. Air Force's Enhanced Tactical Automated Security System (eTASS), which is a part of the Counter-Rocket Artillery and Mortar (C-RAM) program.

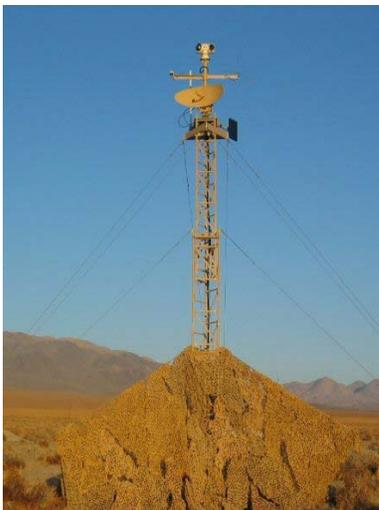
Throughout September 2006, the SSC San Diego FIRRE team supported the U.S. Army's Comprehensive Force Protection Initiative (CFPI) field evaluation at Yuma Proving Ground, AZ. Mandated by the Assistant Secretary of the Army, CFPI



Extended lightweight tactical trailer designed to transport two RSS Towers and supporting equipment.

is an assessment of near-term technologies (next 6-18 months) that could potentially support the war effort.

A few weeks prior to the CFPI start date, FIRRE's engineering team incorporated the Foster-Miller SWORDS/TALON UGV into



RSS tower supporting the DI-5000 TIS/VIS, PPS-5D GSR, and BAIS repeater.



The SSC San Diego FIRRE Team (from left to right): James Cruickshanks, Chris Barngrover, Ted Kramer, Kari Thomas, Kate Curd, Erin Wickstrand, Robin Laird, and Minh Dinh.

FIRRE Excels During CFPI at Yuma Proving Grounds (cont.)



FIRRE Command and Control Station housed in a standard HMMWV shelter.

the field evaluation at Yuma Proving Ground. After an accelerated integration effort with assistance from Foster-Miller, two operators could simultaneously control both the FIRRE and SWORDS UGVs from inside the FIRRE Command and Control Station.

During CFPI trials at Yuma Proving Ground, FIRRE was able to reliably detect targets and obtain useable tracking data from the AN/PPS-5D radars out to about 5 kilometers, and perform identification at about 1

kilometer, which is the effective range limit of the DI-5000 visual sensor.

Throughout the evaluation, FIRRE successfully performed in two dozen Opposing Force field exercises in 115°F temperatures, testing the ability of both equipment and operators to detect and identify military threats. Night operations were also conducted to assess thermal detection and identification. Of all the systems under evaluation at CFPI, FIRRE generated the most useable data, primarily due to its ex-

tended availability and interoperability with eTASS.

Robin Laird, Ted Kramer, Chris Barngrover, James Cruickshanks, Erin Wickstrand, and ET2 Philip Edwards subsequently received the Commander's Coin of Excellence from LTC Brian Shoop (PM-FPS) for outstanding service in support of the U.S. Army.

In November 2006, FIRRE collaborated with the Mobile Detection Assessment Response System (MDARS) program to



MDARS-Exterior UGV included in FIRRE demonstration at DOE Nevada Test Site.



FIRRE UGV with SeaFLIR camera and PPS-5D radar.



Screenshot of the FIRRE JBC2S software, showing video feed from UGV drive camera and intended route on area map.

integrate its autonomous UGV, and successfully demonstrated enhanced capabilities to the Security Systems Engineering Team at the Department of Energy (DOE) Nevada Test Site.

In addition to integrating even more UGV's into the FIRRE system, future development will incorporate auto tracking and slewing for both RSS and vehicle cameras. The next FIRRE demonstration will be held in February 2007 at Eglin Air Force Base in Florida.

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