

# Directed Energy Warfare Office

## *Maginot' Open Air Test Site*



NAVAL SURFACE WARFARE CENTER • DAHLGREN DIVISION

### Overview

The Maginot' Open Air Test Site (MOATS) is located at the Naval Surface Warfare Center in Dahlgren, Virginia. MOATS has been specifically designed for testing the Radio Frequency (RF) susceptibility of electronic equipment to potential High Power Microwave (HPM) weapon systems. The site consists of two test buildings on a large paved area and a set of shielded trailers for instrumentation and monitoring electronics. The Directed Energy Warfare Office (DEWO) has extensive experience and capabilities in testing, measurement, and design of directed energy systems.

### Bastille Test Building

The Bastille test building is a single story 30' by 40' building with an attic. It is constructed of 12" thick concrete blocks with a wooden framed attic and roof area. The rebar in the building is fiberglass to allow different construction methods to be simulated. The picture at right shows the Bastille building with external rebar installed for testing. The current systems installed in the Bastille are:

- Local area network consisting of a reconfigurable computers.
- Security and access control system with motion detectors, window and door sensors, video surveillance (inside and outside), fingerprint and hand geometry readers, and magnetic locks.



### Instrumentation Equipment

Instrumentation is available to support a wide variety of tests. The equipment covers broad frequency ranges and a wide range of power levels.

- 24 channels (expandable) of automated, real-time frequency correction of time domain of frequency domain measurements
- Full array of transient digitizers, network analyzers, fiber-optic telemetry systems, spectrum analyzers, antennas, field probes (E and H), and current probes

- Measurements in both time and frequency domains
- Electric field measurements from 10 kHz to 3.5 GHz
- Magnetic field measurements from 10 kHz to 120 MHz
- Current measurements from DC to 1.3 GHz
- In-house telemetry and probe calibration capabilities

### Citadelle Test Building

The Citadelle test building is a three story 40' by 60' structure constructed in the same manner as the Bastille, (fiberglass rebar, dielectric bolts, fiberglass cable troughs, and central air conditioning with inflatable fiberglass ducts). The first 2 floors are concrete block and the third is wooden frame construction. It has a deck on the back, large garage door (12' clearance) on the ground floor able to accept large industrial equipment and 2 power feeds – underground and overhead. The current systems installed in the Citadelle consist of:

- Two supervisory control and data acquisition systems (SCADA) – one controlling an industrial flow process and the other an industrial level control process.
- A distributed control system (DCS) controlling an industrial simulator emulating a steam power generation process.
- Multiple PC and UNIX computer networks with ~ 80 computers emulating specific commercial and military configurations. The network controllers are COTS based C4I and C3I systems deployed world wide.
- 12 Programmable Logic Controllers (PLC) from 4 different manufacturers.
- A portable UHF TV transmitter and a power relay.



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