

NAV  AIR



# AIR 5.3

## THREAT/TARGET SYSTEMS

### T&E

Gregg Van Splinter



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# Mission

**OUR MISSION IS TO EMULATE THREATS FOR WEAPONS AND EW SYSTEMS, TEST AND EVALUATION AND TO SUPPORT EXPERIMENTATION AND FLEET TRAINING**



**UNDERSTANDING THE CRITICAL MASS**  
Generic/Surrogate/Validated/Replica/Actual  
(Cost Effective Fidelity for T&E)

# capabilities

## Target Systems Engineering

Target systems technology development, acquisition support, systems integration, operations engineering, Els, LECs



## Atlantic/Pacific Target & Marine Operations

World wide surface and airborne target and marine operational services including unique mods and augmentation



## Threat/Target Systems Management

Provides entry point for Sponsors to form integrated project offices, and externally directed project offices



## Airborne Threat Simulation

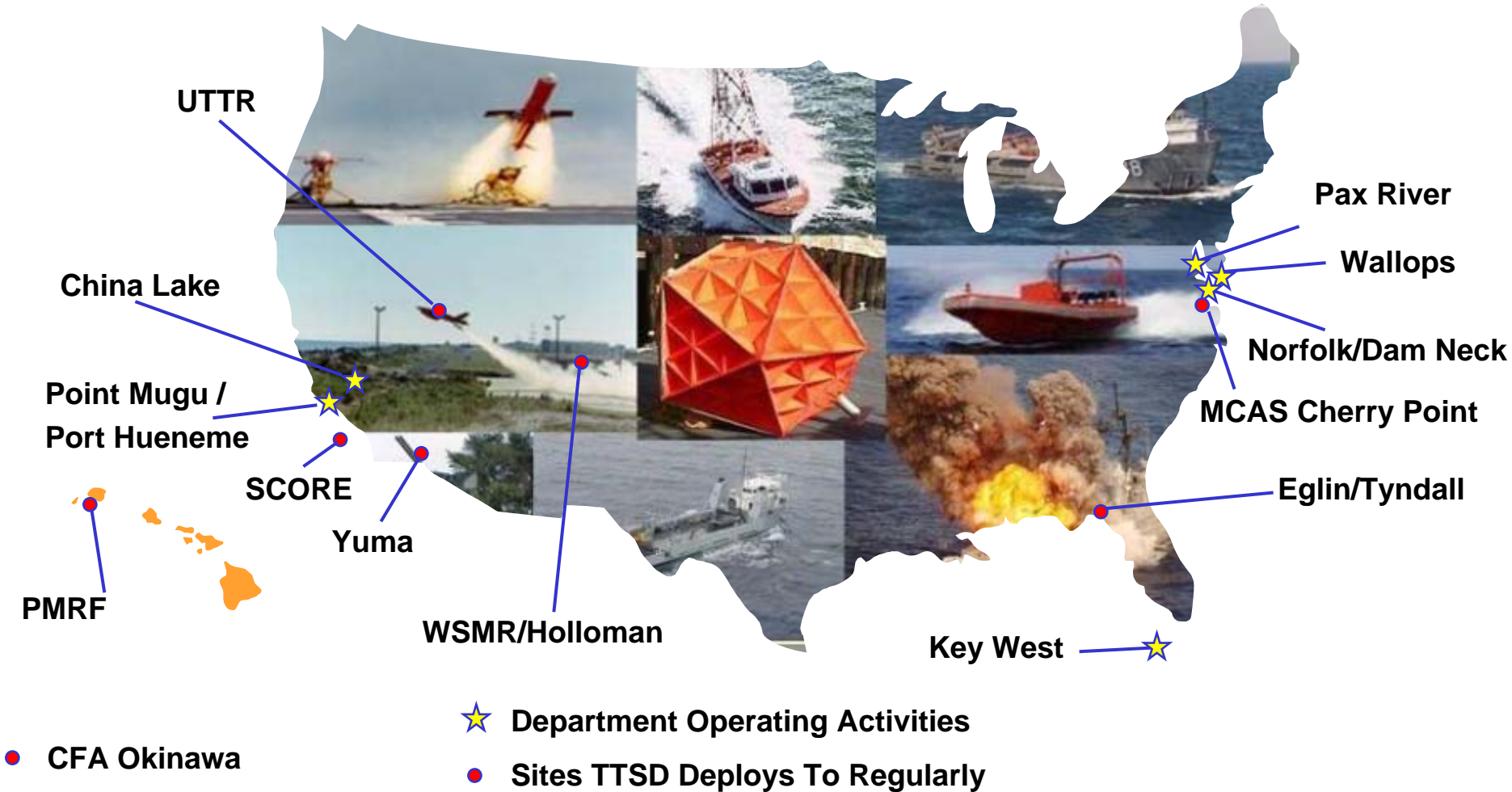
Design development and operational support of electronic attack and radar airborne threat emitter systems



## Combat Environment Threat Simulation

Development and technical support of EO/IR/MW/UV/Laser/C4I threat simulator systems

# TTSD Operating Sites

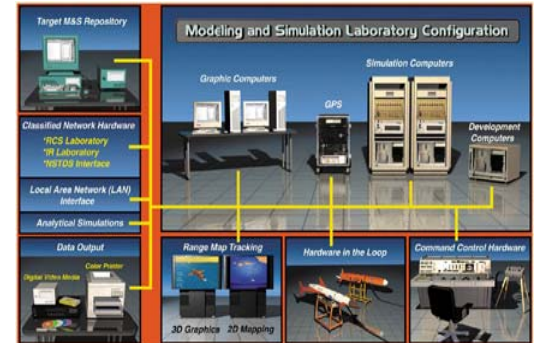




# Target Systems Division



- PROVIDES THE PEOPLE, PROCESSES, FACILITIES, AND EQUIPMENT NECESSARY TO:
  - EXECUTE TARGET SYSTEM TECHNOLOGY DEVELOPMENT
  - SYSTEMS ACQUISITION
  - SYSTEMS INTEGRATION
  - IN-SERVICE OPERATIONAL ENGINEERING
    - TARGET/DECOY SYSTEMS USE FOR TEST AND EVALUATION OF NAVY ACQUISITION PROGRAMS, FLEET OPERATIONS, AND TRAINING
    - TASKS ASSOCIATED WITH THE PREPARATION OF TEST INVENTORY TARGETS FOR SPECIFIC TEST PURPOSES



# Target Systems Products



## New Target System Acquisition Support



- Target Free Flight Clearance



- Modeling & Simulation Laboratory



- Scoring System Engineering



- Target Test Planning



- Target Engineering Investigation



# Aerial Targets

## Supersonic



AQM-37C



GQM-163A

## Subsonic



BQM-34S



BQM-74E

## Decoys



TALD

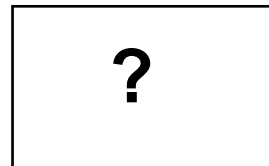


ITALD

Developmental



MSST  
(IOC FY13)



SSAT (IOC FY12-13)



ATALD  
(Currently unfunded)

# Surface Targets Team



- Provide seaborne target services to the Fleet ,DoD, and Foreign Military Customers in support of weapon system T&E and Fleet Training
- US Navy Cognizant Field Activity for Seaborne Targets and augmentation systems
  - DEVELOPMENT
  - T&E
  - IN SERVICE ENGINEERING/DEPOT
  - INTEGRATED LOGISTICS SUPPORT
  - SUPPORT TO OTHER OPERATING ACTIVITIES
- Tri-Service Lead for development and operation of Seaborne Targets



# Fast Attack Craft Target (FACT)

## ■ Requirement

- Threat-representative, open-ocean performance craft
  - 50+ feet
  - 50+ Knots - Sea State 2
- Capable of hi-speed towing



## ■ Development

- Two prototypes with different hull designs and propulsion systems were developed and evaluated under remote control
- One design was determined to be more threat-representative and to have superior handling qualities

# *Fast Attack Craft Target (FACT)*

**FACT is now in production  
and is operational  
at NAWCWD**





# Seaborne Powered Targets



# Powered Surface Targets

**QST-35**



**High Speed Maneuvering  
Surface Target (HSMST)**



**Ship Deployable Surface Target  
(SDST)**



**Aerial Target Launch Ship  
(ATLS)**

- POWERED SURFACE TARGETS
- POWERED SURFACE TARGETS – UNIQUE HULLS
- UNMANNED SURFACE VESSELS



**Coastal Patrol Interdiction Craft (CPIC)**



**Unmanned Surface Sea  
Vessel (USSV)**



**Mobile Ship Target (MST)**



# Non-Powered Surface Targets



**Improved Surface Tow Target (ISTT)**



**High Speed Anti-Radiation Missile (HARM) Barge**



**Low Cost Tow Target (LCTT)**



**Low Cost Modular Target (LCMT)**



**Trimaran**



# Target Operations Division



- PROVIDES THE RESOURCES TO PROVIDE TARGET OPERATIONAL SERVICES FOR WEAPON SYSTEM AND TARGET DEVELOPMENT, TEST AND EVALUATION, FLEET OPERATIONS, AND FLEET TRAINING



# Target Ops FY07/FY08



- EAST COAST:
  - 562 SURFACE EVENTS (2,700+ MISSION HOURS)(FY07)
  - 875 SURFACE EVENTS (FY08 NORFOLK)
  - 264 SURFACE EVENTS (FY08 PAX RIVER)
  - 46 AERIAL TARGET LAUNCHES (FEB 08)
  
- WEST COAST
  - 945 SURFACE EVENTS (FY07)
  - 151 AERIAL TARGET LAUNCHES (FY07)
  - ~892 SURFACE EVENTS TO DATE (FY08)
  - ~168 AERIAL TARGET LAUNCHES (FY08)



# Atlantic Targets and Marine Operations Division

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- ON-SCENE RANGE SAFETY SURVEILLANCE AND CLEARANCE OF THE CHESAPEAKE BAY TEST RANGE, THE ATLANTIC WARNING AREAS AND OTHER OPEN WATER AREAS
- SURFACE (STANDARD NAVY TARGETS AND FULL SCALE TARGET HULKS), LAND, AND AERIAL TARGETS FOR TEST AND TRAINING OPERATIONS
- DESIGNS AND FABRICATES PROTOTYPE TARGETS TO MEET UNIQUE CUSTOMER SPECIFICATIONS
- OPERATES AND MAINTAINS MARINE SURFACE VESSELS TO SUPPORT TESTING AND TRAINING
- PROVIDES UNDERWATER AND LAND TEST ARTICLE RECOVERY OPERATIONS





# Support Vessels

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- Navy MkIII 65ft Patrol Boat 777
- Navy Transporter and Retriever (100 ft)
- Hurricane 23ft Rib Boat
- Fountain
- Navy Prince
- NAVAIR-38 (Key West)



# Support Vessels

Narragansett



Hugo



Hunter





# *Weapons Effect Testing*

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# LPD-19 Shock Test

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# *Ex-USS Oriskany Reefing*



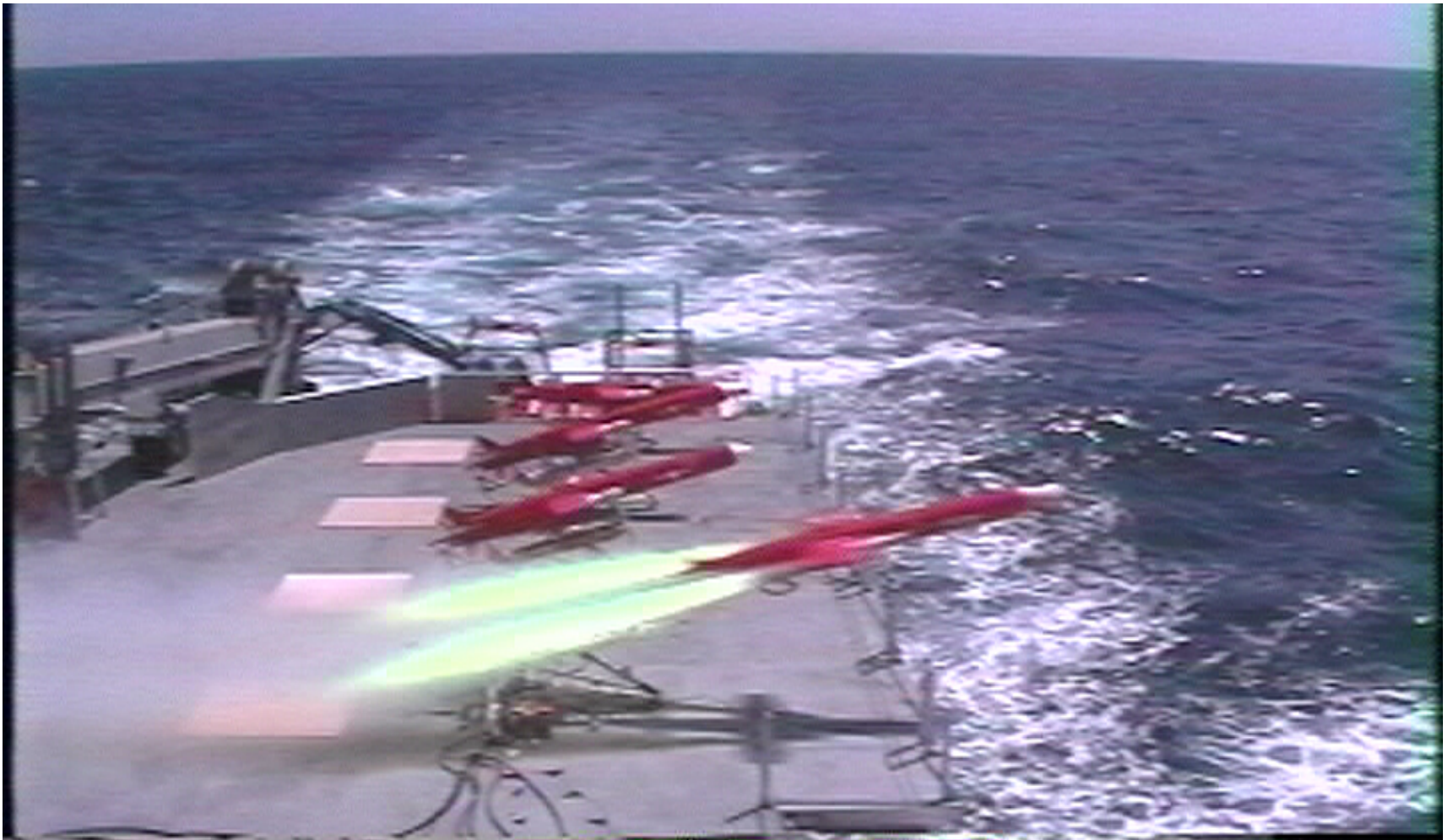


# Mobile Launch Platform

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# *BQM-74 Sea Launch Capability*







# Airborne Threat Simulation Division

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*"ATSO: Providing the warfighter with highly representative, validated, timely, and affordable threat electronic-combat environments in which to test and train."*





# Electronic Attack and Active Emitter

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- Electronic Attack (EA) Simulators
  - Simulation of jammer systems associated with both manned aircraft and cruise missiles
- Threat Radar Simulators
  - Transmitted Signal Simulators (Stimulators)
    - Manned Aircraft
    - Anti-Ship Cruise Missiles
    - Ground Based SAM, AAA
  - Full-up Seeker Simulators
    - Anti-Ship Cruise Missiles







# ATSO Airborne Electronic Attack

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- Weapons System Development
- DT&E
- OT&E





# Airborne Electronic Attack AN/ALQ-167(V)

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- AN/ALQ-167(V) is an advanced airborne electronic attack simulator pod developed for weapon system T&E and Fleet training
  - The “Have All” system can replicate several families of current and projected threat jammer systems
  - The system is based on the AN/ULQ-21(V) countermeasures set



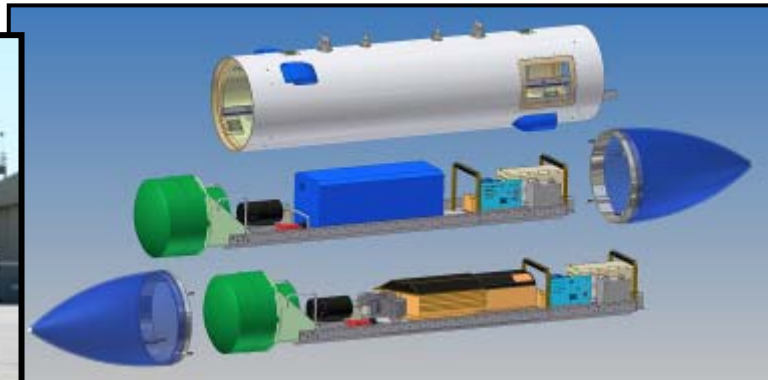
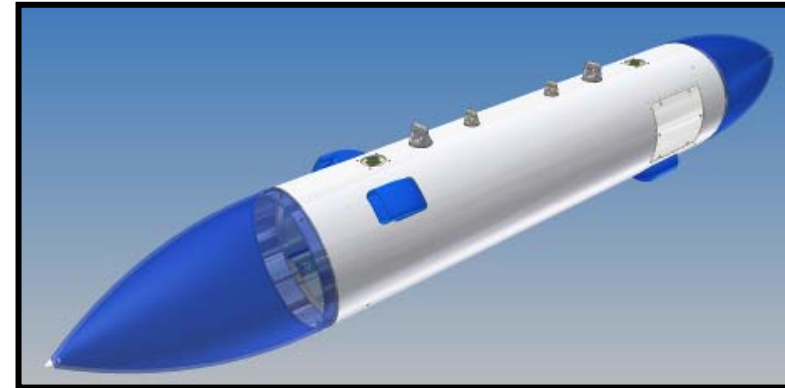


# Airborne Radar Simulation AN/AST-9(V)

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- AN/AST-9(V) is an advanced supersonic airborne radar simulator pod developed for weapon system T&E and Fleet training.
- The configurable AST-9 simulates airborne radar and anti-ship cruise missile systems using high power traveling wave tube and magnetron transmitters.



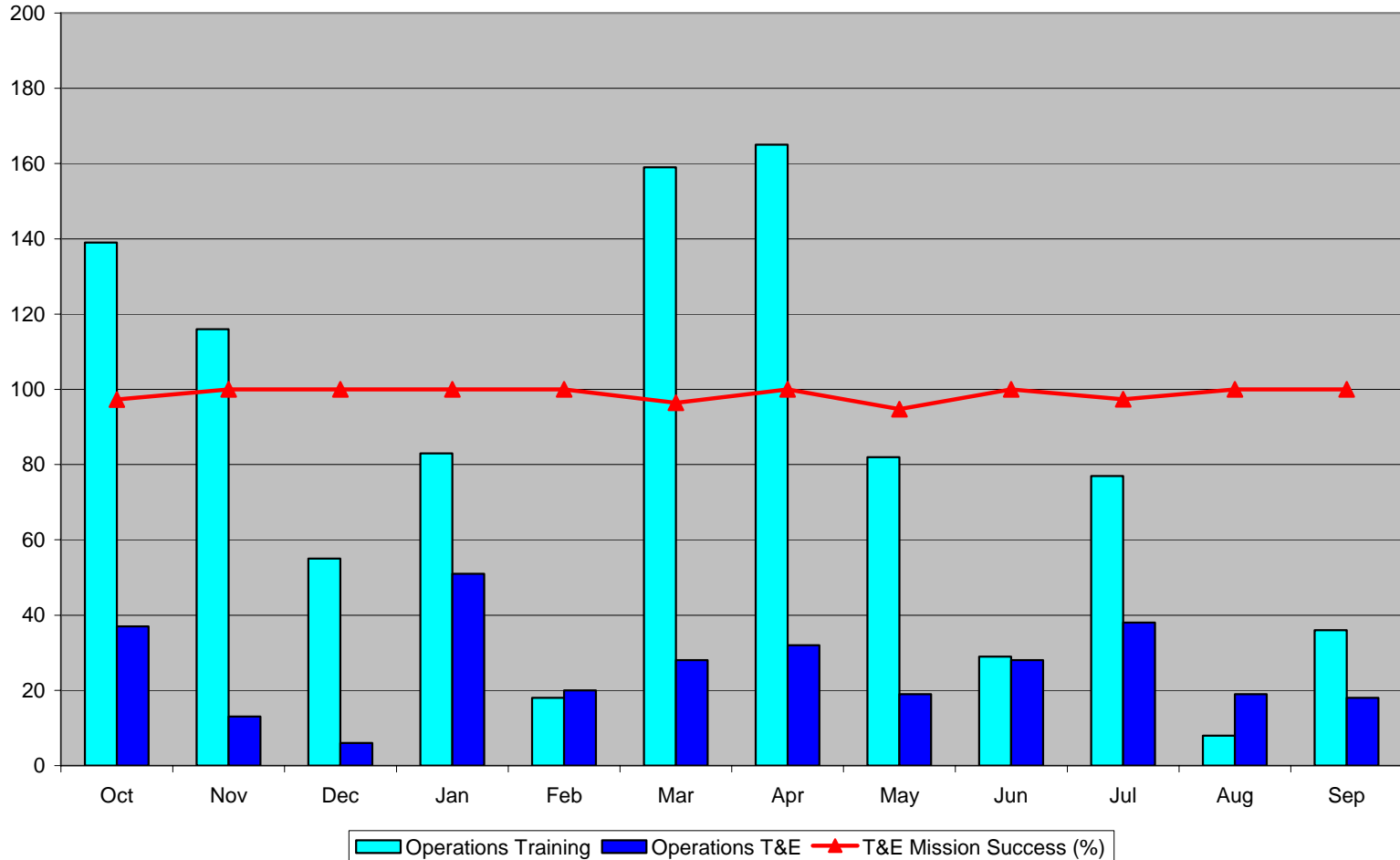




# ATSO FY08 Operations Supported



ATSO FY-08 Monthly Operational Support Snapshot





# Ground/Emitter Lite

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- **Low/High Power Transmitter Options:**
  - Emitter Lite (DPT-2B)**
  - Emitter Lite (UPT-2A)**

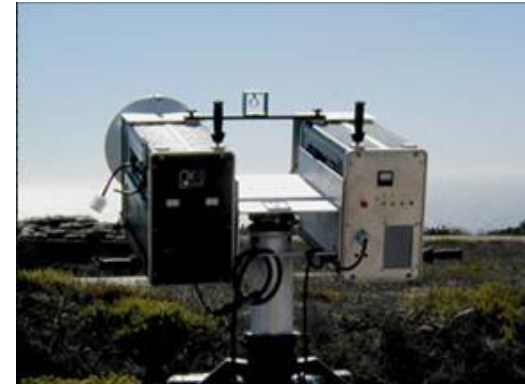




# Advanced Ground Target Threat Systems (AGTTS)



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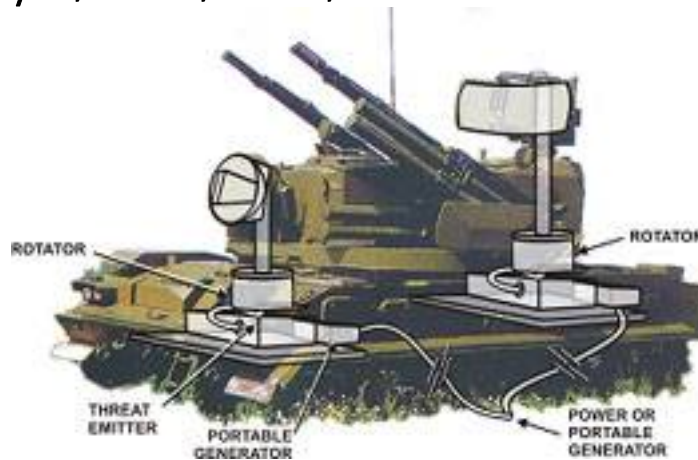


## Plastic Target

- Realistic Shape, Size, RCS, Visual

## Dual Emitters Track and Search Realistic Emitter Waveforms

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## Design Concept

- One Integrated Multi-Spectral System



# Combat Environment Simulation Division



- THREAT SIMULATORS-RF, IR, UV FOR T&E RANGES SUCH AS ECR AT CHINA LAKE.
  - DEVELOPMENT
  - ACQUISITION
  - T&E
  - VALIDATION DOCUMENTATION
- ELECTRONIC WARFARE SYSTEMS FOR THE MAJOR DON AIRCREW TACTICAL TRAINING RANGES.
  - DEVELOPMENT
  - ACQUISITION
  - INTEGRATION
  - UPGRADES
- NAVY THREAT / SIMULATOR VALIDATION PROGRAM COORDINATION
  - INDEPENDENT OF DEVEL OFFICES/JOINT VAL MEMBER
  - DEVELOP AND MAINTAIN VALIDATION PROCEDURES
  - REVIEW VALIDATION REPORTS
  - MAINTAIN DATABASE AND SCHEDULES



# *CESD Test And Evaluation*



- Open Air Range Threat Simulation
  - RF, MMW, IR, EO, UV
- Joint Asymmetric Warfare Systems (JAWS)
  - DT / OT / TAC D&E Testing, Training, and Tactics
- IR Simulator and Target Array (ISTAR)
- Advanced Threat Simulator System (ATSS)
- Sustainment Management Office for GPS

# JAWS' Unique Support Cycle



*Provides ASE and Training Requirements for...*



## • Warfighter Fleet Support

- ASE Readiness Flightline Checks
- MANPAD Tactics and Training
- Warfighter Response Center
- UUNS, JCAT, SAFIRE SMEs

*Provides vetted Data, Tactics, SOPs, and Crisis Response for...*



*Develops Threats and Scientific Expertise for...*

## • DT / OT / TAC D&E Test & Evaluation

- DT / OT Testing at NAWC-WD (VX-9)
- TAC D&E at NSAWC and MAWTS-1
- OPFOR Training at MAWTS-1, NSAWC
- M & S for TSPIL and H-1 WSSA

- Tactics Development & Training
  - Tactics Optimization & Training
  - Mission Planning and Analysis
  - NATOPS / NATEC Documentation
  - Support ADT&L at MAWTS-1

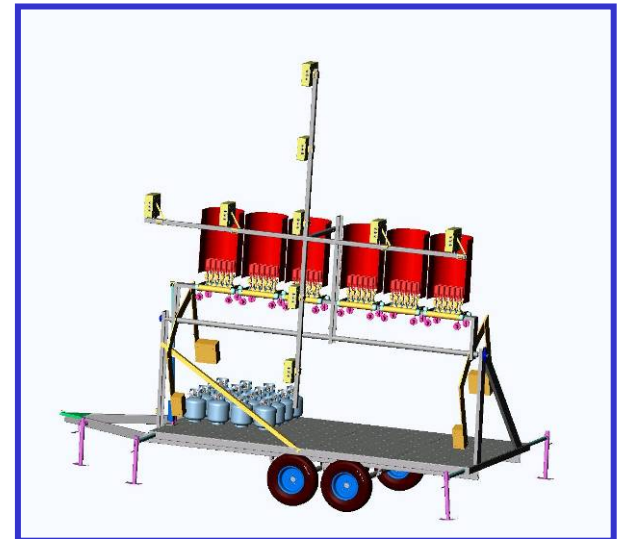


*Provides IRCM & ASE Effectiveness Data for...*



# IR Stimulator and Target Array

- Tactical Aircraft Programs Are Developing Advanced Systems That Detect, Target, and/or Counter Threats in the Infrared and Electro-Optical Spectra
- Open-Air, End to End, Closed Loop Test Capabilities Required
- CES Developed End to End IRCM Test and Evaluation Capabilities
  - IR, UV, and Laser Simulation (MWS & DIRCM Tracker)
  - Jam-Beam Radiometry
  - Actual Passive Threat Missile Seekers (Guidance Electronics)
  - Missile Fly-out Models (Miss Distance)
  - Real-Time Atmospheric (Environmental Effects)
  - Real-Time IR Scenes (Target, CM, Environment)
  - Missile Closure / End-Game Evaluation
  - TSPI and Multi-Spectral Ground Truth



# Open Air Range Threat Simulation

## IR/UV Test Capability



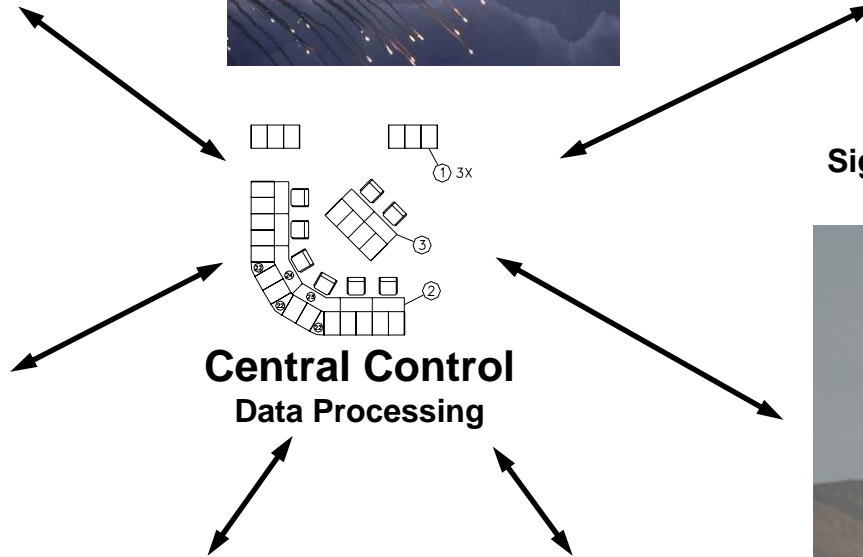
**Mallinas  
(UV Plume Simulator)**



**OAR SPIL  
Open Air Range  
Signal Processor in the Loop**



**ISTAR  
(IR Plume Simulator)**



**Atmospherics**



**Ground Truth**



**FFM  
(Seeker Test Van)**

# *EW Live Threat Training*

- CESD is the major field activity for acquisition and development of the RED Force Surface to Air / IADS threats for DON major TTR's.



**AN/GPQ-11  
Fallon, NV**





# Land-Based Targets

- Target Mold Prototype & Manufacture
  - 3D, 2D, cold air inflatable
  - Copper cladded
  - Trailer mounted
  - Active Emitters Integrated



# Examples of Current/Future Focus Areas

- Seaborne target swarm capability for Fleet training
- VBSS support to Navy, Coast Guard, Home Land Security
- Advanced Ground Target Threat System/Land Target Development
- Acquisition support and T&E of SSAT (BQM-74E replacement)
- Acquisition support and T&E of MSST
- Future testing of Hi Diver variant of SSST



# *Threat/Target Systems Department Summary*



- T/TSD has tremendous operations and engineering capability
- We operate wherever the customer needs us
- We are committed to constant improvement
- The Military Value of our products and services is recognized by our Navy, DoD and FMS Customers
- We see many opportunities
  - Target Operations World Wide
  - New Target Developments
  - Homeland Security exercise scenario support



# QUESTIONS?

