



Navy Expeditionary Combat Command



***CDR Dan Shultz, USN
N8D Warfare Requirements & Resources
20 June 2006***



NECC Value

- ***Properly align:***
 - *Title 10 functions*
 - *Warfighting C2*
 - *Resource management*
- ***Realigns current disparate force structure***
- ***Creates process for irregular warfare development***
- ***Capitalizes on synergies of current expeditionary force***
- ***Integrates man, train, and equip functions of distributed expeditionary warfare capabilities***
- ***Optimizes adaptive force packaging and force closure time***

Enterprise Approach to Expeditionary Warfighter Readiness



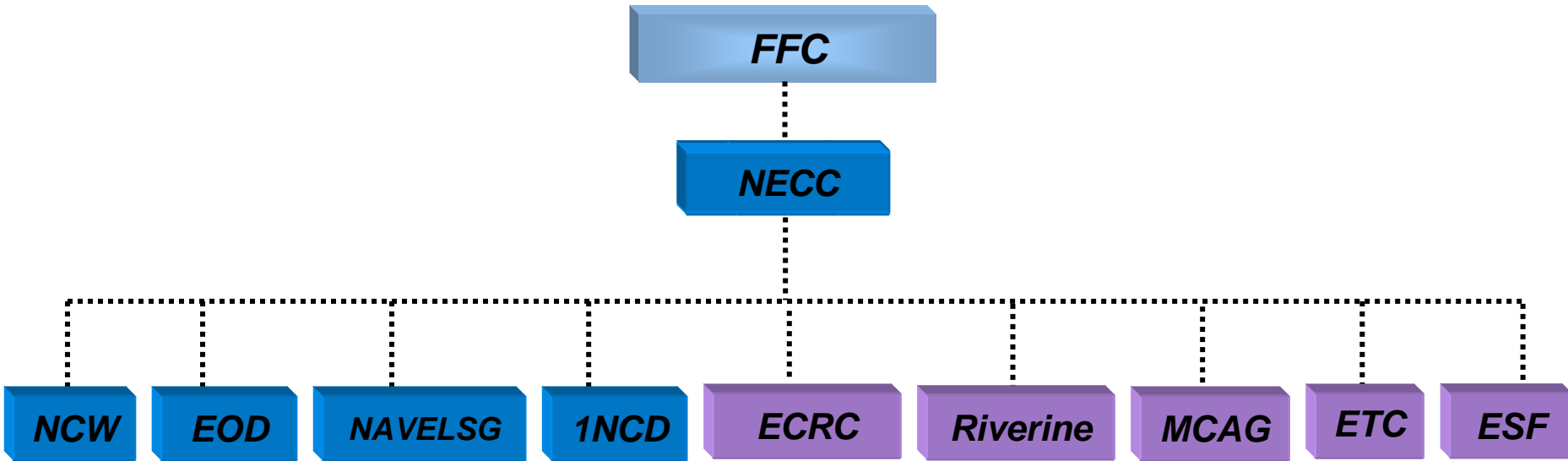
Navy Expeditionary Combat Command

Vision

- *Prepare ready task organized combat support and combat service support force packages;*
- *Aligned to be effective, flexible, and responsive to COCOM demands;*
- *Ensuring expeditionary forces have sufficient capability and capacity to meet requirements for Major Combat Operations, the Global War on Terrorism and Home Land Defense; while*
- *Maintaining a solid foundation of core capabilities that can respond rapidly to evolving irregular warfare missions*



NECC Forces



Naval Coastal Warfare (NCW)

Explosive Ordnance Disposal (EOD)

- **Weapon Exploitation (incl' WMD)**

Navy Expeditionary Logistics Support Group (NAVELSG)

FIRST Naval Construction Division(1NCD)

Expeditionary Combat Readiness Center (ECRC)

Maritime Civil Affairs Group (MCAG)

Expeditionary Training Command (ETC)

Expeditionary Security Force (ESF)

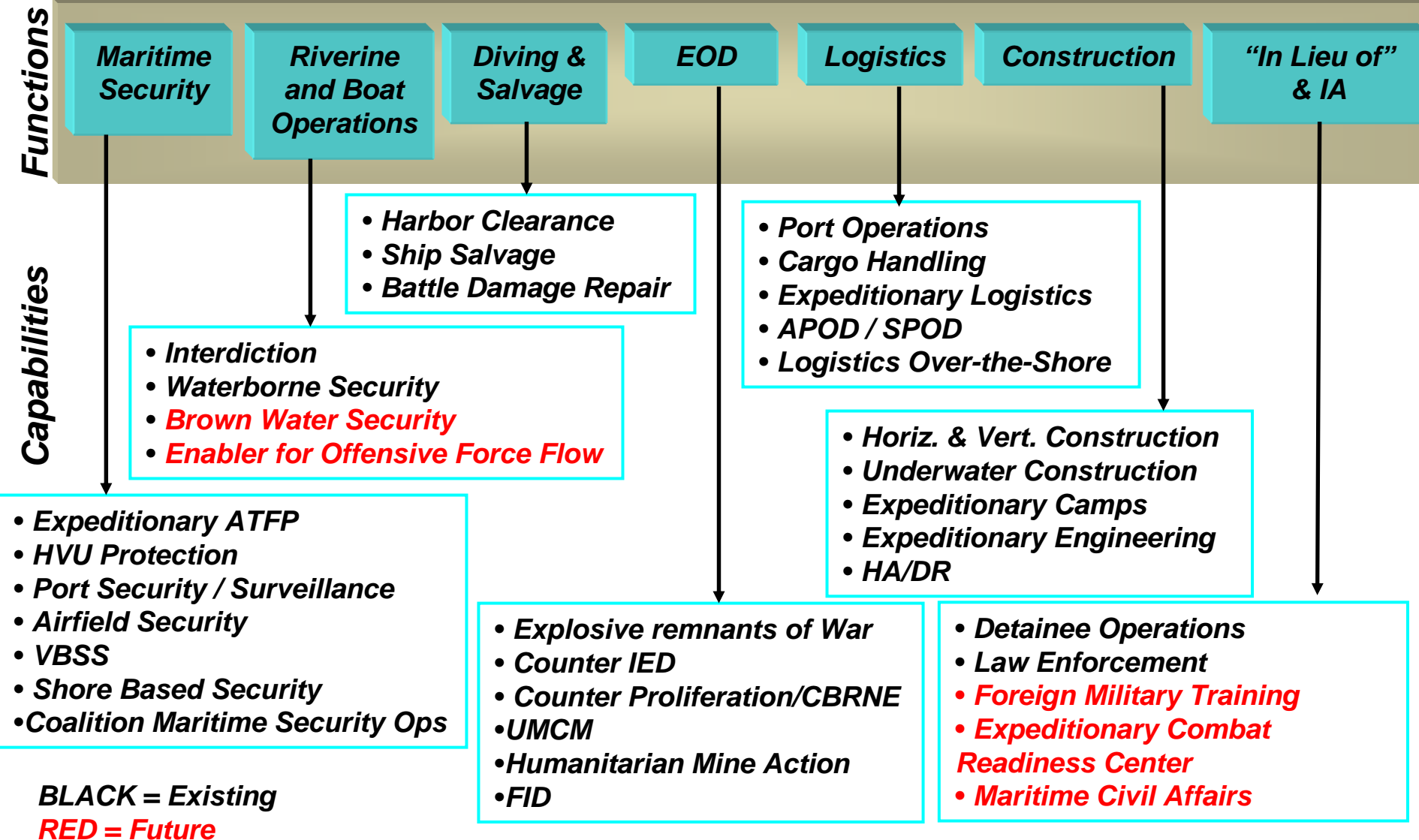
- **Intelligence**

 **Current capabilities**

 **Future capabilities**



Maritime Functions and Capabilities





NECE GOVERNANCE & LEADERSHIP

(Building the Enterprise)



NECC Board of Directors (BOD)

RADM Bullard

- NECC Deputy
- 1NCD
- NAVFAC
- SEA-06
- NAVRESFORCOM
- PMS - 480

- OPNAV N85
- OPNAV N43
- PMS 325
- PMS LMW
- NPDC
- NAVSUP

ADHOC Members/Consultants

NPC NNWC C2/3F NETC SYSCOMs CNIC ONI ONR
 NWDC CNMOC SPAWAR NAVSEA 00C

EXCOM

Metrics

People

- Community Development
- Personnel Development
- Assessment
- Retention/Accession
- AC/RC Mix

Training & Current Readiness

- Requirements Planning
- Individual Training
- Unit Training
- Intermediate / Sustainment Training
- TOA Modernization/Recap

Equipment & Logistics Readiness

Supply
 Food, fuel, ordnance & parts

Maintenance
 Boats, Heavy Equip, etc.

Money & Future Readiness

- Planning & Budgeting
- Reporting
- Acquisition / RDT&E



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NECC Battlespace

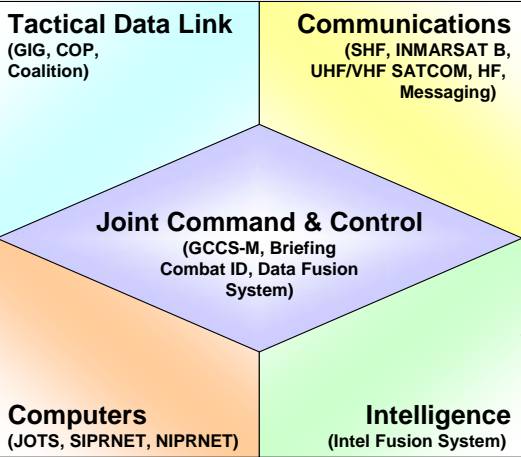
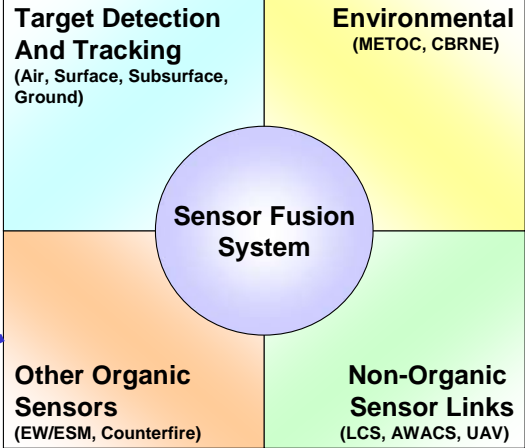
Adaptive, Expeditionary, Rheostat Capacity



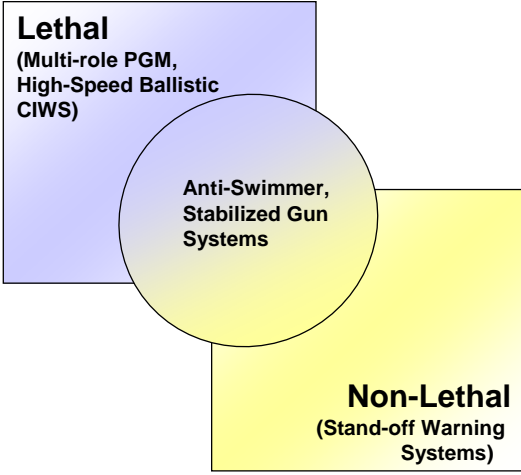
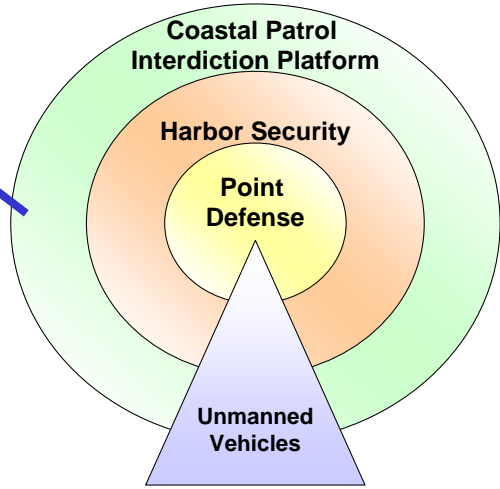


Navy Expeditionary Security Systems

Influencing Coherent Doctrine and TTP and Exploiting Interdependence



Systems Approach to the Detect to Engage Sequence





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DELMAR

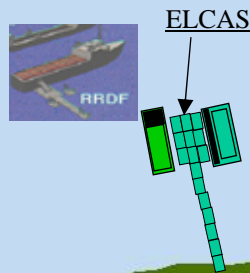
- *Annual Maritime Pre-Positioning Force Exercise*
 - *30 May - 30 Jun, Naval Station Norfolk/Fort Story*
 - *Directed by USTRANSCOM*
 - *Executed by Surface Deployment and Distribution Command (SDDC)*
 - *Transitions into a Joint Logistics-Over-The-Shore (JLOTS) Exercise*
 - *Includes employment of Offshore Petroleum Distribution System (OPDS)*



Exercise Scenario

- *Tidewater area suffers major hurricane damage to port facilities restricting access to shipping*
- *DoD assets into Area of Operations to provide Humanitarian Assistance and Disaster Relief*
- *USTRANSCOM, SDDC and MSC look to Army and Navy JLOTS systems and NSF to execute port opening*
- *NCW tasked with C4I and Force Protection*

FT STORY

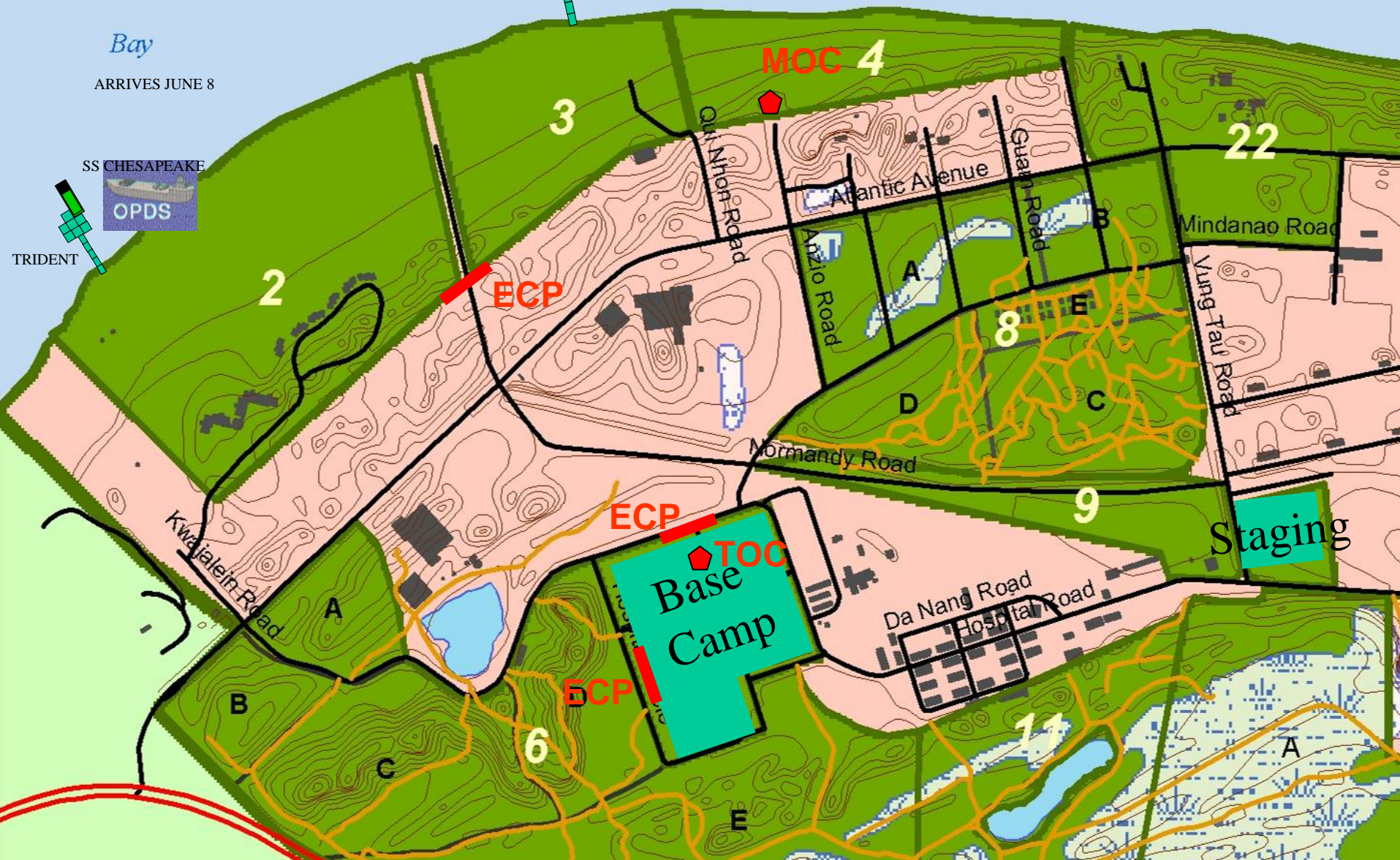


Chesapeake

Bay

ARRIVES JUNE 8

SS CHESAPEAKE





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Mission/Objectives

- *Affords opportunity to:*
 - *Participate in large scale exercise*
 - *Integration w/multiple commands/organizations*
 - *Demonstrate Maritime Expeditionary Security Squadron Concept*
 - *Adaptive Force Packaging*
 - *Validate key points of NECC's TTX for Naval Station Security*
 - *Demonstrate linkages with other forces*



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COMNECC Linkages

- CNBG 2
 - JLOTS CDR
- SDDC
 - JTF-PO
- 7TH TRANSGRU
 - Harbor Masters
- NCWS 4
 - FSO/HDC
 - C4I
- IBU 41/42
 - Seaward Security
- NCWS 25
 - Watch Bill Support
- Norfolk Base Security
- SPAWAR Charleston
 - MAST Tech support /training
- PMS 480
 - ACTDs
- MDSU 2
- ACB 2
 - NSE CDR
 - Elevated Causeway
- ACU 2
- NCHB1
- Coast Guard (JHOC)
- MIUW 401
 - Seaward Security
 - C3
- MSS 6
 - Landward Security
 - Seaward Security
- EOD
 - Pier sweep
 - IED support
- 202ND MP Company
- 2174TH MP Company
- 11TH Trans BN
- 6632ND MP Company



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Questions?





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Back-ups



Sea Power 21

- *Pillars*
 - *Sea Shield*
 - *Sea Strike*
 - *Sea Basing*
 - *FORCEnet*
- *Mission Capability Areas*
 - *Sea Shield*
 - *Expeditionary AT/FP*
 - *High Value Unit Protection*
 - *Port & Waterborne Security*
 - *Airfield & Shore Based Security*
 - *Vessel Board Search & Seizure*
 - *Coastal Patrol & Interdiction Operations*
 - *EOD Operations*
 - *Facility Operations & Detention*



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Sea Power 21

- *Sea Strike*
 - *Enabler for Offensive Force Flow*
- *Sea Basing*
 - *Harbor Clearance*
 - *Ship Salvage*
 - *Battle Damage Repair*
 - *Port Operations & Cargo Handling*
 - *Logistics*
 - *Underwater & Shore Construction*
 - *Expeditionary Engineering*
 - *Humanitarian Assistance & Disaster Relief*
 - *Foreign Military Training*
 - *Civil Operations Support*
- *FORCEnet*
 - *C4I*
 - *Waterborne, Terrestrial and Aerial Surveillance*



Movement to Detect to Kill Sequence

Movement

Detect contact

Track contact

Identify contact type

Classify as hostile or non-hostile

Decide response

Engage threat

BDA

Reorganize force

Reengage threat as necessary

Redeploy



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Naval Coastal Warfare

- **Mission:**
 - Seaward surveillance and security forces in amphibious objective areas, harbors, anchorages and other militarily significant inshore areas throughout the world.
 - C4I support to deployed operational commanders.
- **Description: 6 RC + 2 AC Squadrons Fielding:**
 - Naval Coastal Warfare Squadrons w/ embedded C4I Dets and Mobile Ashore Support Terminal C4I suite
 - Mobile Inshore Undersea Warfare Units with mobile surveillance and communications equipment
 - Inshore Boat Units with high speed craft, armed
 - World-wide deployable in response to emergent AT/FP requirements or OPLAN support
 - Force packages tailored to minimize footprint and provide specific operational capabilities

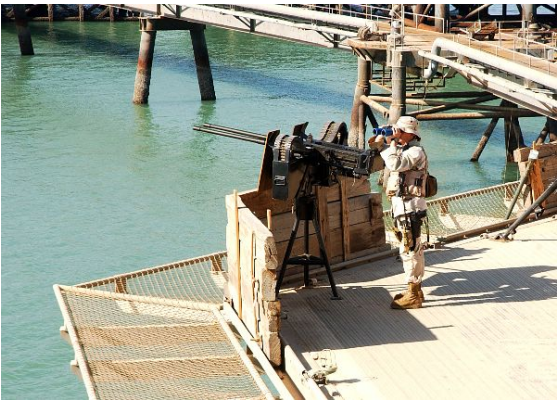




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Mobile Security Squadrons

- **Mission:**
 - **Provide light, MOBILE, INPORT SHORT-TERM POINT DEFENSE** for US ships, aircraft, and other DoD high value assets (HVA) against terrorist attacks in locations where U.S. shore infrastructure does not exist or requires augmentation.
 - **CONUS USN installation security augmentation or support for maritime homeland security (HLS) in non-Navy ports.**
 - **World-wide deployable in response to emergent AT/FP requirements or as pre-planned AT/FP measures**





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Navy Expeditionary Logistics Support Group

Navy Cargo Handling Battalion

NCHB (1 AC / 10 RC)

- Offload MPS, MSC or commercial ships
- Discharge / load cargo, ammunition, HAZMAT pierside / instream
- Conduct port terminal operations, perform heavy lift crane operations
- Operate limited expeditionary ocean terminal
- Provide short-haul trucking

Navy Air Cargo Handling Battalion

NACHB (1 RC)

- Operate an Air Terminal Operations Center (ATOC)
- Load / offload air cargo, sort, prioritize and prepare documentation, certify HAZMAT for air shipment
- Monitor, report, and manifest passengers

Navy Ordnance Reporting and Handling Battalion

NORHB (1 RC)

- Receive, stage, issue and prepare ordnance for shipment
- Provide inventory management of ordnance via ROLMS





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Navy Expeditionary Logistics Support Group

Navy Supply Support Battalion

NSSB (2 RC)

- Receive, process, store and transship freight
- Process and distribute mail both bulk and retail
- Operate aircraft and ground support refueling and bulk fuels storage
- Provide non-tactical logistics information connectivity
- Provide messing / berthing assistance
- Provide maintenance of CESE, MHE and GSE
- Provide contingency acquisition contracting
- Receive, ship and track depot level repairables



Navy Expeditionary Logistics Response Center

Center

NELRC (1 RC)

- Provide deployable logistics management cell to support Navy Component Commander
- Monitor theater logistics
- Coordinate support forces ashore and inter-theater logistics
- Support logistics planning and exercises





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FIRST Naval Construction Division



Naval Construction Division / Regiment

NCD (1 integrated AC-RC)

NCR (2 AC / 4 RC)

- Command and control element

Naval Mobile Construction Battalion

NMCB (8 AC / 12 RC)

- Forward Operating Base / camp construction
- Defensive positions, tower, bunker, and entry control point construction
- Main Supply Route construction and maintenance
- Bridge construction
- Airfield construction
- Ammo supply point construction
- Enemy Prisoner of War camp construction
- Utilities construction/maintenance (electrical, plumbing, heating, air conditioning)
- Water well drilling
- Rapid runway/airfield damage repair
- Disaster recovery operations
- Building construction





FIRST Naval Construction Division

Construction Battalion Maintenance Unit

- CBMU (2 integrated AC-RC)
- Fleet hospital set-up / operation / maintenance
- Forward Operating Base & camp operation/maintenance/limited construction

Underwater Construction Team

- UCT (2 AC)
- Construction and installation of fleet moorings
- Pier/wharf damage assessment / repair
- Underwater pipeline inspection / repair
- Underwater blasting/obstacle clearing
- Underwater cable laying
- Bathymetric surveying

Naval Construction Force Support Unit

- NCFSU (1 RC)
- Transport of construction materials
- Quarrying, rock crushing, asphalt / concrete production
- Electrical transmission line construction support

Seabee Readiness Group

- SRG (2 integrated AC-RC)
- Provide military and technical training for NCF units

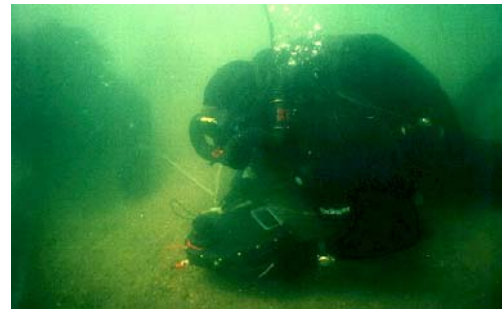




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Explosive Ordnance Disposal

- **Fleet Support**
 - CSG, ESG, Shore Stations
- **Force Protection**
 - WMD, IED, UXO, Mines
 - U.S. Secret Service and DOS VIP protection
 - Contingency Swimmer Defense Marine Mammal Systems
- **Mine Countermeasures**
 - VSW, Organic, Dedicated UMCM
 - Contingency Marine Mammal Systems
- **Special Operations**
 - WMD (CBRNE), Booby Trap, IED, Mines
 - SOF integration/support





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Mobile Diving and Salvage



Fleet Support

- Limited U/W Ships Husbandry
- Force Protection dive support of ships in port and piers.
- Area search unmanned underwater vehicle (UUV) program lead



Expeditionary Salvage

- Ashore/Afloat capability for search and recovery
- Surface supplied/SCUBA
- Fly-away mixed gas dive system for deep/long duration dive capability.



Harbor Clearance

- Full spectrum salvage/debeaching
- Underwater cutting/welding
- Limited demolition





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Riverine Force

Riverine operations require forces organized to exploit the unique characteristics of river environments. They are conducted to:

- Establish and maintain control of rivers and other waterways for military and civil purposes***
- Deny use of rivers/waterways to waterborne and immediate shore sited hostile forces by:***
 - Surveillance operations***
 - Barrier operations***
 - Interdiction operations***
- Locate / destroy waterborne hostile forces***





Maritime Civil Affairs Group

- ***USA/SOCOM mission has full CA***
 - ***Acknowledges USA/SOCOM expanding CA force***
- ***Focus on Civil Military Operations (CMO)***
 - ***Augments USA/USMC/SOCOM capability***
- ***Create small “bolt-on” tactical teams***
 - ***Aligns well with COCOM demand signal***
- ***Allows for near-immediate response capability***
- ***Focus on JFMCC battle-space***
 - ***Theater Security Cooperation Plan***
 - ***Influence / Shaping Operations (Phase 0 Operations)***
 - ***HA / DR Operations***
 - ***GWOT Enablement***



Expeditionary Training Command

- ***“Sea Shaping” concept for JFMCC portion of COCOM Theater Security Cooperation Plan(s)***
- ***Provide capabilities-based/task-organized Adaptive Force Training packages***
- ***NECC leads***
 - ***Liaison with NCCs to identify/clarify COCOM requirement***
 - ***Coordinate with Navy Education and Training Security Assistance Field Activity (NETSAFA)***
 - ***Identify and build adaptive force packages***
 - ***Assumes access Navy forces beyond Fleet (e.g. medical, legal, etc)***
 - ***Operationalizes partner opportunities***
 - ***USCG - International Training Division***
 - ***USMC – Foreign Mission Training Unit***
 - ***Others?***

Adaptive Capability to Deploy Expeditionary Training Teams



Expeditionary Security Force

- ***Vision to align NECC security forces with NCW to create multi-mission, expeditionary-capable force***
- ***Employ tailored/scalable force packages in JFMCC battle space***
 - ***Point and area security across range of operational environments including: near coast, riparian, and fixed sites***
 - ***Responsive and flexible to JFMCC and base commander needs***
 - ***Embedded Intelligence Exploitation Teams and VBSS Level III Teams***
- ***Foundational structure to attract, train/develop, retain Sailors within a recognizable warfare area***



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Expeditionary Combat Readiness Center

- ***Train, equip, certify, deploy, provide oversight, reach-back and redeploy Navy Individual Augmentees, in-Lieu-of individuals and provisional units deploying for non-traditional expeditionary missions in support of the Global War on Terrorism***

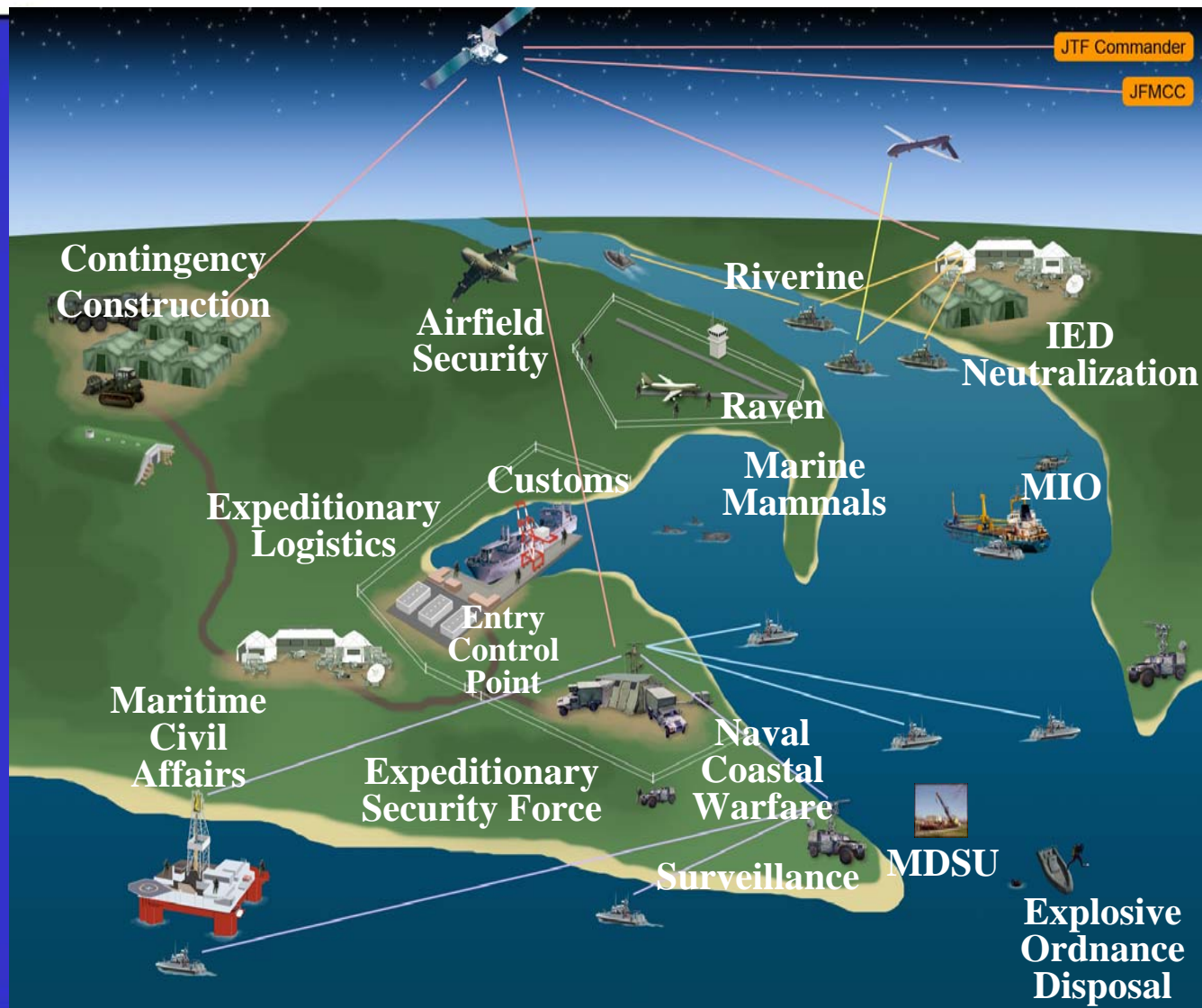
- ***Align In-Lieu-of personnel into task organized combat support and combat service support force packages***

- ***Increase individual and provisional unit combat readiness by ensuring Navy personnel receive ground combat skills training, and coordinating mission specific training where required***



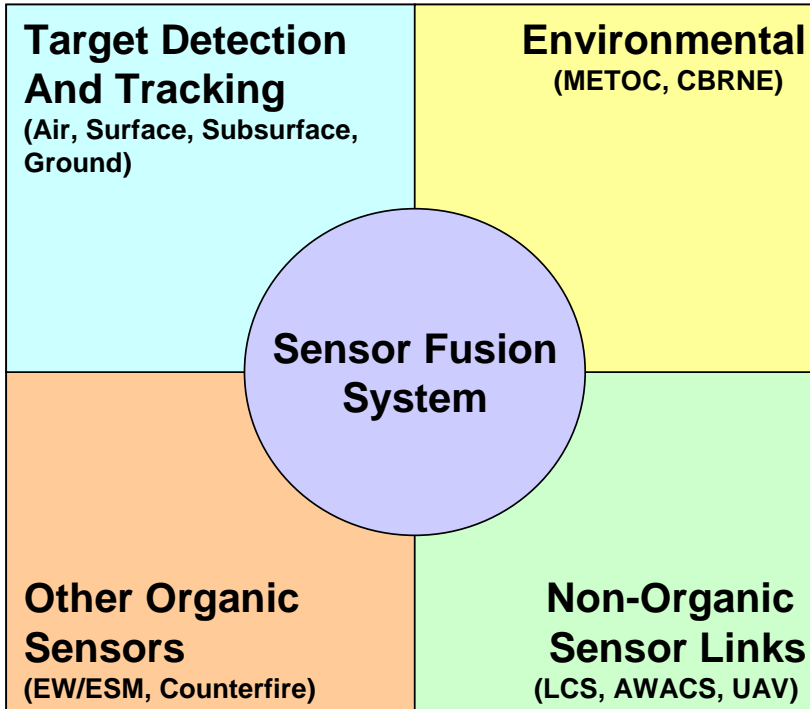
Transformation in Support of GWOT

- Integrated, highly mobile, and tactical with an established force structure
- Integrated command & control
- Active, layered security posture
- Leveraged technology
 - Interoperable, common data links
 - Manned platforms and unmanned remotely controlled sensors
 - Fused all source real time dynamic Intel Collector and user
- Increased firepower, precision targeting, precision weapons, NLW suite
- Integrated end-to-end logistics w/Navy and Joint Force Commander
- Scalable, tailorable and sustainable AC/RC force structure easily task organized and deployable to support low density to high density ops with rapid surge capability





Surveillance and Detection Subsystem



CAPABILITIES
<ul style="list-style-type: none">•Unmanned vehicles•Surface target sensor•Subsurface swimmer sensor•Subsurface delivery vehicle sensor•Meteorological and Oceanographic (METOC) Sensors•Ground target sensor•Electronic Warfare (EW) system•EO/IR sensor•Combat ID•Chemical/biological warning system•Chemical/biological sensor•Battle damage assessment/ processing•Automatic target recognition•Automatic language translation system•Automatic document translation system•Air target sensor•Access control system•FrAME Interface•AIS•EHSS

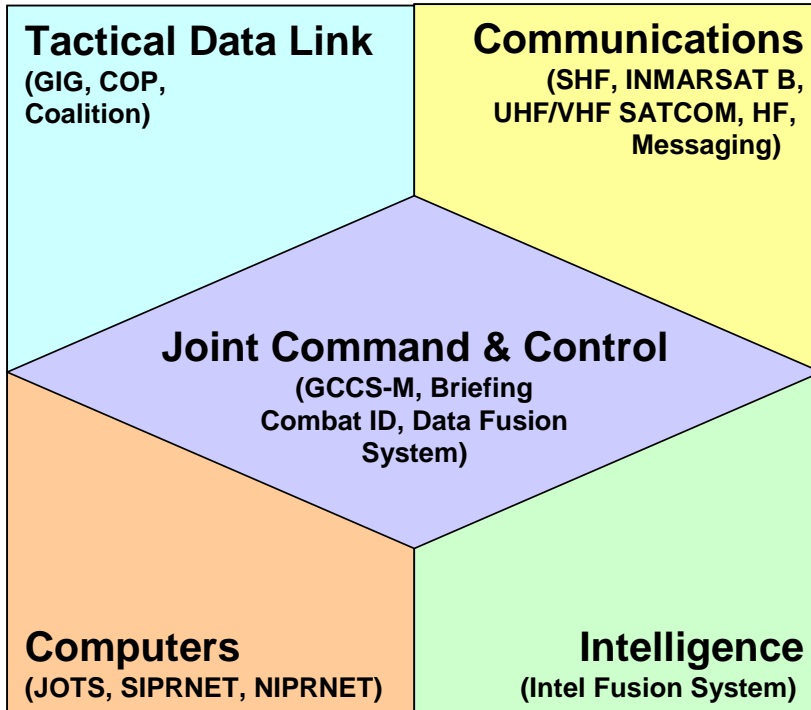
SUPPORT
<ul style="list-style-type: none">•Distance support for maintenance•Computer based simulation training•NET-centric•Web-based decision aids/planning tools•Decontamination shelter in place

SPECIFICATIONS/CHARACTERISTICS
<ul style="list-style-type: none">•Unattended sensors•Wireless sensor links•Data Fusion•Automatic target recognition•IP Technologies•“PALM” Technologies





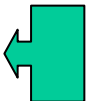
C4I Subsystem



CAPABILITIES
<ul style="list-style-type: none">•Tactical Digital Information Link (TADIL)•SCI network•NET-centric (COP/GIG/Coalition)•Littoral Anti-Submarine Warfare (ASW) target sensor/link•Link to non-organic coastal patrol interdiction•Littoral Combat Ship Force Protection (LCS FP) Interface•Joint planning system•Joint command and control system•Intel fusion system•SIGINT•Input/Output (I/O) protection/information assurance•Biometrics•Weapon Intelligence•Technical Intelligence•Combat ID•FrAME Interface•IAFIS Interface•Trusted Agent

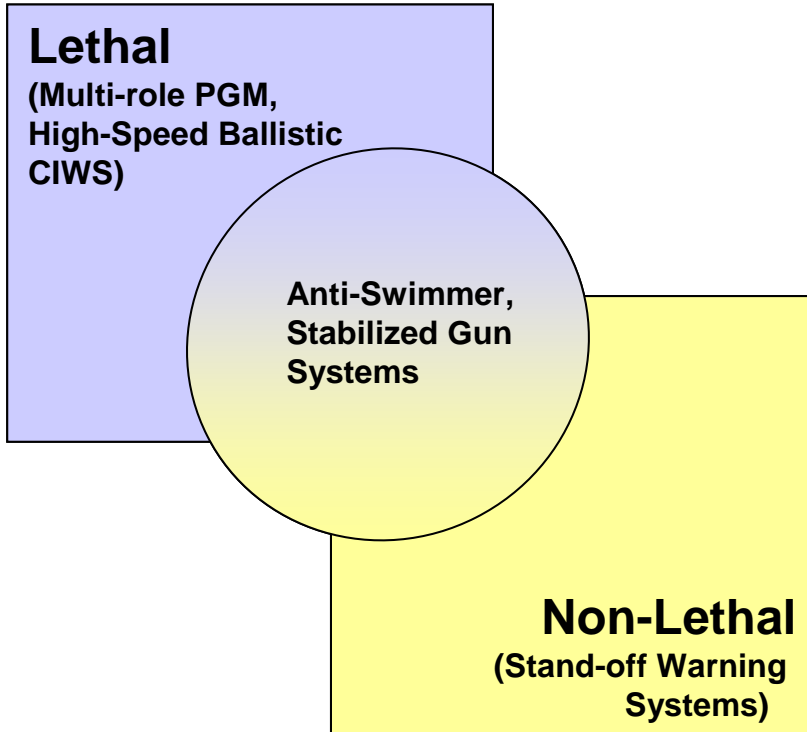
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SPECIFICATIONS/CHARACTERISTICS
<ul style="list-style-type: none">•Unattended sensors•Wireless sensor links•Data Fusion•Automatic target recognition•IP Technologies•“PALM” Technologies





Weapons Subsystem



CAPABILITIES
<ul style="list-style-type: none">•Subsurface anti-swimmer weapons•Subsurface anti-swimmer delivery weapons•Stand-off warning systems (Determine hostile intent)•Stand-off Improvised Explosive Devices (IED)/ Vehicle Borne Improvised Explosive Devices (VBIED) sensor•Non-lethal weapons<ul style="list-style-type: none">•Robotics•Canister Systems•Light / Acoustic•Kinetic, non-lethal•Multi-Role Precision Guided Missile (PGM)•High-speed ballistic close-in weapon system•Counter-fire systems•Hybrid – U/W negation•Ammunition<ul style="list-style-type: none">•Frangible

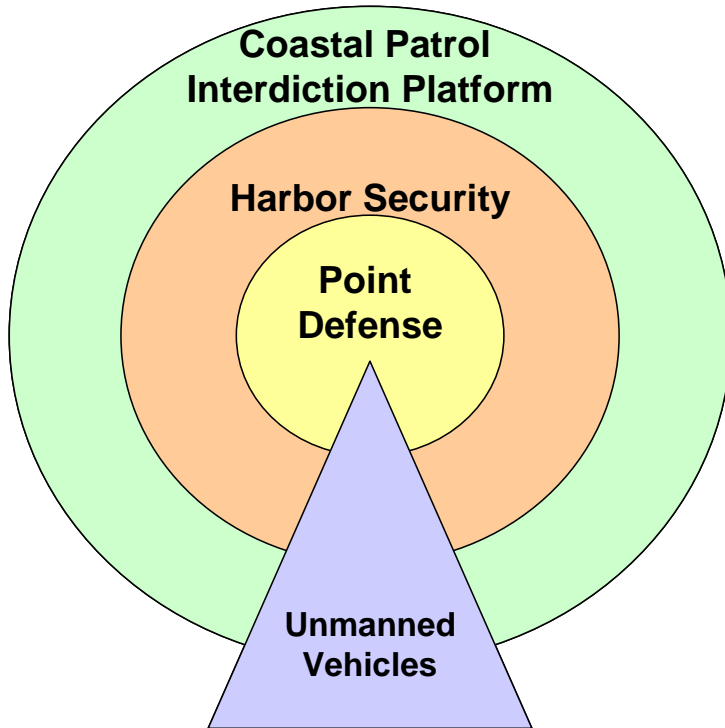
SUPPORT
<ul style="list-style-type: none">•Distance support for maintenance•Computer based simulation training•NET-centric•Web-based decision aids/planning tools•Use of deadly force continuum support•Decontamination shelter in place

SPECIFICATIONS/CHARACTERISTICS
<ul style="list-style-type: none">•Unattended sensors•Wireless sensor links•Data Fusion•Automatic target recognition•IP Technologies•“PALM” Technologies





Patrol and Interdiction Subsystem



CAPABILITIES
<ul style="list-style-type: none"> •Unmanned vehicles •Coastal Patrol interdiction platform •Inland Waterways platform •CESE <ul style="list-style-type: none"> •Tactical •Armored •Non-Tactical •Counter-fire systems

SUPPORT
<ul style="list-style-type: none"> •Distance support for maintenance •Computer based simulation training •NET-centric •Web-based decision aids/planning tools •Use of deadly force continuum support

SPECIFICATIONS/CHARACTERISTICS
<ul style="list-style-type: none"> •Unattended sensors •Wireless sensor links •Data Fusion •Automatic target recognition •Strategic and theater lift





CNO GWOT Legacy

- **CNO Memo of 6 Jul 05**
 - *Implementation of CNO GWOT Capabilities*
 - *Establish AC/RC Riverine Force*
 - *Establish Civil Affairs Battalion*
 - *Navy Expeditionary Sailor Concept*
 - *Navy Expeditionary Training Team*
- **CNO Memo 3000 of 25 Jul 05**
 - *Current and Future Operational Readiness*
 - *Prepare Navy for irregular warfare missions in GWOT, Stability and Shaping Operations . . .*
 - *Missions may include riverine warfare, civil military operations . . .*
- **CFFC 141939Z Oct 05**
 - *Establishment of Navy Expeditionary Combat Command (NECC)*
 - *Develop CONOPS for riverine force, expeditionary security force and CONUS replacement center (ILOCC)*
 - *Provide guidance and timeline to assume MARFPCOM, NAVELSG and NCF*



CNO GWOT Legacy

- *CNO Guidance for 2006: Meeting the Challenge of a New Era*
 - *Tasking*
 - *Develop adaptive force packages . . . in support of operations in blue, green, and brown water environments*
 - *Identify requirements to organize, train, maintain, and equip NECC.*
 - *Develop concepts for green and brown water operations to include . . . NETT concepts, enhanced combat and force protection capabilities, Civil Affairs . . .*
- *CRS Report for Congress Order Code RS22373 of 6 Feb 06*
 - *Navy Role in GWOT - Background and Issues for Congress*



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Anti-swimmer Acoustic Sensor Requirements

- *Detection threshold:*
 - *Surface craft*
 - *Submarine craft,*
 - *Swimmers / divers*
 - *UUVs*
- *Detection range:*
 - *1000 meter range radius*
 - *360 degrees radial arc*
 - *1 degree angular acoustic resolution*
 - *Shallow / crowded waterway noise-compatible*
- *Processing capability:*
 - *Localize & classify targets*
 - *Distinguish torpedos from swimmer delivery vehicles*
 - *Distinguish human from other mammals / mammal from UUV's*
 - *Determine if diver has tanks, and if so, how many?*
 - *Determine if diver is carrying equipment*
 - *Passive discreet frequency analysis*
 - *Detect phase shifts (doppler)*
 - *Process multiple targets simultaneously (metric TBD)*



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Anti-swimmer Acoustic Sensor Requirements

- **Compatibility:**
 - Integrate with other detection systems, command & decision systems in use.
 - Integrate information with multiple same systems to achieve larger area coverage.
 - Compatible with Navy's tactical acoustic database.
 - Compatible with Navy's Graphic Data Fusion System (GDFS) [or its successor] for tactical display of track data.
 - Global Positioning System (GPS) compatible
- **Display / Operator Interface:**
 - Microsoft Windows compatible operating environment
 - NTDS – current command & decision display symbology, can integrate with Graphic Data Fusion System (GDFS) display
 - Electronic integration of high resolution marine charts and land maps
 - Operator defined audible and visual alarms correlated to track parameters
 - Classification, speed, frequency, phase shift
 - Audio output and recording of (passive) acoustic signals for operator recognition
- **Operator Training**
 - Built-in simulator with acoustic library



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Anti-swimmer Acoustic Sensor Requirements

- *Employability*
 - *Sensor placement by single diver or 2 person boat crew*
 - *Sensor (array) moored or bottom placed*
 - *Deploy each sensor from shore or boat in under 15 minutes*
 - *Sensor position is GPS located*
- *Power*
 - *Self-contained power generation.*
 - *(e.g. re-seed battery pack)*
- *Data transmission*
 - *Secure to processor:*
 - *Wireless capability (802.11 IP addressable desired)*



Swimmer Negation System Requirements

- *Threats:*
 - *Surface craft*
 - *Submarine craft*
 - *Swimmers / divers*
 - *UUVs*
- *System employability:*
 - *Sensor placement by single diver or 2 person boat crew*
 - *Sensor (array) moored or placed on bottom using GPS*
 - *Deployable from shore or boat in under 15 minutes*
- *Detection range and features:*
 - *1000meter range radius*
 - *360 degree visibility w/ 1 degree angular acoustic resolution*
 - *Automated wide field to narrow focus capability*
 - *Extreme temperature and weather tolerance*



Swimmer Negation System Requirements

- *Processing capabilities:*
 - *Localize & classify targets*
 - *Distinguish torpedos from swimmer delivery vehicles*
 - *Distinguish human from other mammals / mammal from UUVs*
 - *Determine presence and number of diver tanks*
 - *Determine if diver is carrying equipment*
 - *Filter shallow / crowded waterway noise*
 - *Passive discreet frequency analysis*
 - *Detect phase shifts (doppler)*
 - *Track and process multiple targets simultaneously (metric TBD)*
 - *Individual target density and size measurement*
 - *Ability to integrate with multiple same systems to achieve larger area coverage*



Swimmer Negation System Requirements

- *System compatibilities:*
 - *Other detection, command & decision systems in use*
 - *Navy's tactical acoustic database*
 - *Navy's Graphic Data Fusion System (GDFS) [or its successor] for tactical display of track data*
 - *Global Positioning System (GPS)*
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- *Data transmission:*
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 - *Operator defined audible and visual alarms correlated to track parameters*
 - *Classification, speed, frequency, phase shift*
 - *Audio output and recording of (passive) acoustic signals for operator recognition*
- *Operator Training:*
 - *Built-in simulator with acoustic library*
- *Power:*
 - *Self-contained power generation*
 - *(e.g. re-seed battery pack)*



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Limpet & Underwater IED Search and Detection Requirements

- **Threats:**
 - *Limpet mines attached to hull/structure*
 - *Bottom placed or suspended underwater IEDs*
- **System employability:**
 - *Portable, remote controlled, subsurface search platform*
 - *Deployment in under 5 minutes using \leq two personnel*
 - *Portable, weatherproof control and tracking station*
- **Detection range and features:**
 - *10 meter scanning range*
 - *No light /poor visibility image reproduction*
 - *Ability to detect subsurface metal and explosive objects*
 - *Extreme temperature and weather tolerant*
 - *Active sonar, laser and/or acoustic sensors*
 - *Three axis control / maneuverability*
 - *Offset position geo-reference and tracking*



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Limpet & Underwater IED Search and Detection Requirements

- *Processing capabilities:*
 - *Localize & classify targets*
 - *Distinguish between inanimate objects and potential devices*
 - *Acoustic / light spectrum to visual image conversion*
 - *Ability to integrate with augmentation systems to coordinate large area search operations*
 - *Real time recording / tracking of search platform and target positions*
- *System compatibilities:*
 - *Other detection, command & decision systems in use*
 - *Navy's Graphic Data Fusion System (GDFS) [or its successor] for tactical display of track data*
 - *Microsoft Windows operating environment*



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Limpet & Underwater IED Search and Detection Requirements

- *Data transmission:*
 - *Wire feed*
 - *Secure to processor*
 - *Wireless capability (802.11 IP addressable desired)*
- *Display/Operator Interface:*
 - *Computerized grid display of platform / target location and track*
 - *Monitor for real time viewing*
- *Operator Training:*
 - *Field use of training platform*
- *Power:*
 - *Self-contained power generation*
 - *Re-seed battery pack*
 - *Portable generator*



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Low/Slow Flyer Negation System Requirements

- *Threats:*
 - *Small aircraft*
 - *UAVs*
 - *Gliders*
 - *Kites*
 - *Balloons*
- *System employability:*
 - *Stationary sensors/radar/weapons (SRW) ready in under 5 minutes*
 - *Portable SRW placement by 2 person max*
 - *Portable deployment in under 15 minutes*
- *Detection range and features:*
 - *5 NM detection*
 - *Response w/in .5 NM*
 - *Active short range radar*
 - *360 degree visibility and coverage*



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Low/Slow Flyer Negation System Requirements

- *Processing capabilities:*
 - *Localize & classify targets*
 - *Distinguish birds from UAVs and small aircraft*
 - *Distinguish between powered and unpowered craft*
 - *Determine number of targets*
 - *Rapid radar signal analyses*
 - *Detect phase shifts (doppler)*
 - *Track and process multiple targets simultaneously (metric TBD)*
 - *Rapid BDA*
 - *Ability to integrate with multiple same systems to achieve larger area coverage*
 - *Operation in extreme temperature and weather conditions*



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Low/Slow Flyer Negation System Requirements

- *System compatibilities:*
 - *Other detection, command & decision systems in use*
 - *Navy's Graphic Data Fusion System (GDFS) [or its successor] for tactical display of track data*
 - *Microsoft Windows operating environment*
 - *Shipboard and/or mobile weapons systems*
- *Data transmission:*
 - *Secure to processor*
 - *Wireless capability (802.11 IP addressable desired)*



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Low/Slow Flyer Negation System Requirements

- *Display/Operator Interface:*
 - *NTDS – current command & decision display symbology, can integrate with Graphic Data Fusion System (GDFS) display*
 - *Operator defined audible and visual alarms correlated to track parameters*
 - *Classification, speed, frequency, phase shift*
- *Operator Training:*
 - *Built-in simulator*
 - *Field exercises*
- *Power:*
 - *Ship/station power generator*
 - *Self-contained power generation*
 - *Re-seed battery pack*
 - *Portable generator*



Additional NECC S & T Requirements

- C4 capability improvements
- WMD detection, protection, equipment and response
- Personnel mobility
 - Lightweight equipment
 - Vehicle / robot assistance
- Personnel survivability
 - Lightweight armor
 - Countermeasures
 - Vehicle armor
- Infrared imaging improvements
- UAVs (research underway)
- IEDs (research underway)



NECC Technology: Near-Term

- *Requirement:*
 - *First tier surveillance, identifying geographic changes, activity external to structures*
- *Objective:*
 - *Increase UAV range & endurance*
 - *Improve Imaging and compression*
- *Method:*
 - *Sensor fusion*
 - *Secure, wireless, low probability of intercept (LPI)*
 - *UAV*
 - *High resolution optical imaging & compression onboard UAV*
 - *UAV autonomy, propulsion efficiency*
 - *Counter-insurgency instructor advanced training*
 - *Deployable virtual training environment*



NECC Technology: Mid-Term

Requirement:

- *Tracking and identification in all environmental conditions*
- *Infiltration of building structures*
- *Widespread coverage*
 - *aerial*
 - *ground level*
 - *maritime*
 - *surface*
 - *subsurface*

Objective:

- *Utilize micro sensors*
- *Track of individual movements, identification of points of origin and path history*

Method:

- *Thermal and electromagnetic detection imaging*
- *Hand-held quick chemical analysis*
- *Micro tags*
- *Portable, remote and covert biometrics*
- *Autonomous data fusion and analysis ?????*
- *Capability in extreme environments*
- *Small unit reach back capability*
- *Real-time adversarial intelligence & decision making*



NECC Technology: Long-Term

Requirement:

- Assess psychological drivers and motivators

Objective:

- Causal Based Prediction
- Statistical and pattern based prediction
- Influence tactical decision processes by adjusting the local infra-structure
- Influence individual decision processes by evolving motivation and pre-dispositioning

Method:

- Microtechnology image sensors (hyper spectral & high resolution)
- Micro sensors for an individual or vehicle
- Micro robots penetrating the outer boundaries
- Microtechnology processor for low power, weight, size and data compression & information extraction
- Microtechnology armor
- Real-time relationship understanding and mapping
- Biological processes for molecular recognition ??????
- Plain language tasking for autonomous systems
- Psychological models for predicting response