AEGIS – Ballistic Missile Defense

- 2 Cruisers and 1 Destroyer are Capable of Firing SM-3 Interceptors and Conducting Long Range Surveillance and Tracking Operations (LRS&T)
- 10 Destroyers are Capable of Conducting LRS&T
- Gap-Filler Sea Based Terminal is in Progress
  - Aegis BMD modifying baseline computer program
  - PEO IWS modifying SM-2 Blk IV missiles
  - Demonstrated success with Linebacker

A Success Story
Engagement (BMD 3.6, BMD 3.0, SM-3 Blk I) and LRS&T

USS CURTIS WILBUR (DDG 54)
USS STETHEM (DDG 63)
USS SHILOH (CG 67)
USS LAKE ERIE (CG 70)
(USS PORT ROYAL (CG 73)
BMD 3.6
BMD 3.6
BMD 3.6
BMD 3.0
BMD 3.0
BMD 3.0

First SM-3 Blk I’s – Nov 2004 –
11 Rounds Delivered as of Aug 06

First SM-3 Blk IA Encanned
2 Rounds Delivered as of 31 Aug 06

LRS&T (BMD 3.0E)

USS JOHN S. McCAIN (DDG 56)
USS FITZGERALD (DDG 62)
USS RUSSELL (DDG 59)
USS MILIUS (DDG 69)
USS PAUL HAMILTON (DDG 60)
USS JOHN PAUL JONES (DDG 53)
USS BENFOLD (DDG 65)
USS HOPPER (DDG 70)
USS O'KANE (DDG 77)
USS HIGGINS (DDG 77)

Upgrade Installation in Progress
Littoral Combat Ship

Lockheed Martin Team
Lockheed Martin
Gibbs & Cox
Marinette Marine
Bollinger Shipyards

General Dynamics
Bath Iron Works
General Dynamics AIS
Austal USA
BAE Systems
MAPC
L3

Surface Warfare
N86
**DDG 1000**

**Integrated Power System**
- (2) 36 MW large gas turbine gensets
- (2) 4 MW small gas turbine gensets
- (2) 34 MW propulsion motors

**Characteristics**
- Length: 610 ft
- Beam: 81 ft
- Draft: 28 ft
- Speed: 30 kts
- Displacement: 14,564 LT
- Installed Power: 78 MW
- Crew Size: 150

**Sensors**
- Dual Band Radar
- Acoustic Sensor Suite
- EO / IR System

**Weapons**
- (80) cells
- (2) VL AGS 155mm guns
- (600) 155mm rounds
- (2) 57mm guns

**Superstructure**
- Composite structure

**Hull**
- Wave-piercing tumblehome

**Aviation**
- (1) MH60R and
- (3) VTUAVs

**Boats**
- (2) 7m RHIBs
Cruiser Modernization

CG Baselines 2,3,4

**BMC4I**
- CEC
- SGS A/C (B/L 2)
- CDLMS (B/L 2)

**AIR DOMINANCE**
- AWS CR2 Computer Program
- COTS computing plant
- Radar and Display upgrades
- VLS Modifications

**FORCE PROTECTION**
- ESSM
- CIWS BLK 1B
- SPQ-9B (ASMD)
- SARTIS
- SQQ-89A(V)15 (B/L 3 & 4)

**GUN WEAPON SYSTEM**
- (2) 5 inch/62 Guns
- MK-160 Gun Computing System
- OSS

**HM&E**
- All Electric Mods
- Smart Ship Upgrades
- Structural Modifications
- Quality of Service Upgrades

**FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16**

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B/L 2=CG52-58
B/L 3=CG59-64
B/L 4=CG65-73
# Destroyer Modernization

## Candidates

### Warfighting Upgrades

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<thead>
<tr>
<th>C4I</th>
<th>NAVSSI BLK 4</th>
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<td>CIC Display Upgrades</td>
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<td>VLS Mods (TACTOM/SM-2Blk4/ESSM/Initial SM-6 Capability)</td>
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<td>AWS CR-3 Computer Program</td>
<td>SSTD (ATT)</td>
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<td>SPY-1D(V) COTS SIGPRO</td>
<td>MK 54 Torpedo/DFCI</td>
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<td>Multi-Mission BMD Capability</td>
<td>SQQ-89A(V)15 w/MFTA</td>
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<td>SM6/NIFC-CA</td>
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<td>ESSM / STAMO Upgrades</td>
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### GUN WEAPON SYSTEM

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<th>Advanced Galley</th>
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BACK UP
Cruiser & Destroyer Modernization

Mid-life modernization enables CG47 and DDG 51 class ships to achieve 35 year service life. Average life of unmodernized surface combatants < 20 years. Current 22 CG47s and 62 DDG 51s are required to achieve CNO’s 2020 force structure.

- The CG and DDG Mod Programs consists of upgrades to address changes in technology and likely threats since initial design that will ensure these ships are relevant through the 2020’s.
  - Upgrade to All Electric to improve QOL and save manpower and maint $ (> $4.7M per year – CG 47 only)
  - Hull strengthening and stability mods to correct class issues
  - Smart Ship type installations to save manpower through better use of technology
  - Use of COTS to field 2nd and 3rd spirals of OA computing plant to support affordable and rapid future capability upgrades.
  - Improvement to strike group interoperability and data sharing
  - Improved capability against complex, high speed/maneuverable ASCMs
  - Improved AAW capability against small fast targets in clutter environment
  - Improved littoral SA and hard kill against low flying a/c and fast in-shore attack craft
  - Improved USW and enhanced torpedo defense, especially in littorals

4 AEGIS ships can be modernized to achieve almost twice current average service life for less than the cost of 1 new AEGIS combatant
Cruiser Modernization

Transforming the Existing Fleet

Navy Precision Fires: 5” / 62 Gun/MK 160 GCS

VLS Mods: Tactical Tomahawk

7PH 1C Computer Program, Cooperative Engagement Capability (CEC) & Common Data Link Management System (CDLMS)

Robust Joint Command & Control

“Smart Ship” COTS-based Integrated Control Systems

ASW: SQQ 89A V(15)

Force Protection: CIWS BLK 1B, Evolved Sea Sparrow Missile & SPQ-9B

MH-60R
DDG Proposed Upgrades

Building and Transforming the Existing Fleet

OA Computing Environment, Cooperative Engagement Capability (CEC)

TBMD & Littoral SigPro

Robust Joint Command & Control

Tactical Tomahawk

Force Protection:
CIWS BLK 1B, Evolved Sea Sparrow Missile, SM-6

ASW: SQQ 89A(V) 15

MH-60R
DDG Mod HM&E Upgrades

ADVANCED GALLEY

WIRELESS COMMS

INTEGRATED BRIDGE

DIGITAL VIDEO SURVEILLANCE SYSTEM

MCS and DAMAGE CONTROL UPGRADES

GIGABIT ETHERNET LAN

Achieving the Full Service Life