DDG 1000 Class Destroyer

Sea Air Space Symposium

DDG 1000 Overview

9 April 2013

Distribution Statement A: Approved for public release. Distribution is unlimited.
DDG 1000 Program Highlights

• Started DDG 1000 fabrication February 2009 – 82% complete (as of 29 Mar 2013)
  – 9 of 9 Ultra Units on Land Level
  – Resulting in full ship (15,000 tons, 610 feet long)
  – Hangar arrived May 2012 at BIW and erected Jul 2012
  – Deckhouse arrived Nov 2012 at BIW and Erected Dec 2012

• Started DDG 1001 fabrication March 2010 – 58% complete (as of 29 Mar 2013)
  – 100% of DDG 1001 is in fabrication at BIW and HII

• Started DDG 1002 fabrication 4 April 2012

• Integrated Power System (IPS) testing at Philadelphia Land Based Test Site (LBTS)
  – Full Power (local control) completed 11 May 2011
  – IPS with Engineering Control System (ECS) completed 20 March 2012
Bath Iron Works (BIW)

DDG 1000 Mid-forebody – October 2011

DDG 1000 Integrated Hull – January 2013

DDG 1001 Mid-body – February 2013

Huntington Ingalls Industries (HII)

- All of DDG 1000 class products (Composite Deckhouse, Composite Hangar, four (4) Aft Peripheral Vertical Launch System (PVLS) modules) delivered 2010-2012
- DDG 1001 class products are nearly 2/3 complete
  - Aft PVLS zones 3160 & 3170 delivered August 2012
  - Aft PVLS zones 3260 & 3270 >80% complete and delivery is Summer 2013
  - Composite Hangar >70 % complete and delivery in Summer 2013
  - Composite Deckhouse ~60% complete and delivery in Winter 2014

2012 Deliveries

• 94% of Mission Systems Equipment (MSE) delivery complete for DDG 1000 and 1001
  – Equipment delivered on time or early to shipyard

• Dual Band Radar (SPY-3 / VSR)
  – Developmental testing at Wallops Island completed Sep 2010
  – X Band Mods under development

• Software development progressing to support ship activation and delivery
  – Software Releases (SR) 1-5 complete and certified
  – SR 6 coding complete; Integration & Testing in progress
  – Spiral SW Release under contract and timed to support Post Delivery Availability (PDA) / Post Shakedown Availability (PSA) / Initial Operational Capability (IOC)

• Advanced Gun System (AGS) manufacturing underway at 3 facilities (Cordova, AL; Fridley, MN; and Louisville, KY)
  – 1st Ship AGS magazines and guns delivered early to BIW
  – 2nd Ship magazine installation in progress
  – Testing of 1st AGS gun at Dugway Proving Grounds, UT completed
  – All 3 Ship sets under contract

• Long Range Land Attack Projectile (LRLAP) development and testing ongoing
  – Rocket motor redesign complete including hot/cold/ambient static fire tests
  – Low Rate Initial Production (LRIP) planned for FY14
Raytheon’s Systems & Software Scope

External Communications
• 1 X/Ka Open Ocean SATCOM Antenna
• 4 CEC Arrays
• 6 EMEs for radio terminal and ICC

Sensors
• SPY-3 Radar with Volume Search
• SQQ-90 Acoustic Sensor Suite
  (HF, MF, MFTA Handling Equipment)
• EO/IR Systems (3 Sensors)
• IFF System
• Electronic Surveillance
• 6 EMEs for Sensor Electronics

Ship Control Systems
• Integrated Bridge System (IBS)
• Navigation System
• Engineering Control System

Total Ship Computing Environment
• 2 Data Centers (4 EMEs)
  – Data Processing & Storage
  – 6 Information Domains
• Time/Nav. Data Distribution
• Network, High Assurance Guards,
  Encryption Devices, Phones, Cameras
• 1 Manned & 1 Equipment SCIF
• 48 Large Screen Displays
• Admin PCs/Laptops/PDAs

Weapons
• 20 MK57 Vertical Launching
  System (4-cell Modules)

Radar Support Systems
• Common Array Power System (CAPS)
• Common Array Cooling System (CACS)

Total Ship Computing Software
• 6.7M SLOC
• Integrated Engineering Control &
  Combat Systems Software

Total 2,300 delivered
line items per ship

Ship Activation
Support
DDG 1000 Mission Systems

- IFF System
- ExComms X/ka Antenna
- TSCE Data Center
- MK57 VLS
- SPY-3 Radar
- Common Array Cooling
- Common Array Power

BAE Systems
AGS / LRLAP Status

• Completed delivery of Magazines and Gun Mounts for DDG 1000 & 1001
  – Magazines installed in DDG 1000
  – Gun mounts being readied for installation on DDG 1000
• On contract for DDG 1002 AGS with production underway
• Six successful LRLAP flights in January and March 2013 campaigns
  – Demonstrated max range capability
  – Demonstrated outstanding accuracy
  – Demonstrated HOB operation with excellent lethality
  – On track for next flight test series in June 2013
# DDG 1000 Characteristics

## Hull
- Wave-Piercing Tumblehome

## Characteristics
<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length</td>
<td>610 ft</td>
</tr>
<tr>
<td>Maximum Beam</td>
<td>80.7 ft</td>
</tr>
<tr>
<td>Navigational Draft</td>
<td>27.6 ft</td>
</tr>
<tr>
<td>Speed</td>
<td>30 kts</td>
</tr>
<tr>
<td>Displacement Full Load</td>
<td>15,612 LT</td>
</tr>
<tr>
<td>Installed Power</td>
<td>78 MW</td>
</tr>
<tr>
<td>Crew Size</td>
<td>148</td>
</tr>
</tbody>
</table>

## Integrated Power System (IPS)
- (2) Main Turbine Generators (MTG)
- (2) Auxiliary Turbine Generators (ATG)
- (2) 34.6 MW Advanced Induction Motors

## Sensors
- SPY-3 X-Band Multi-Function Radar (MFR)
- Volume Search Radar (VSR) (Space & Weight Reservation)
- HF & MF Bow Sonar Arrays
- Multi-Function Towed Array
- EO/IR System
- ES System

## Weapons
- (80) Advanced Vertical Launch (AVLS) cells for Tomahawk, ESSM, Standard Missile
- (2) Advanced Gun System (AGS) 155 mm guns
- (600) 155 mm rounds
- (2) Close In Guns (CIGS)
- Torpedo Defense (Space Reservation)
- Anti-Terrorism

## Superstructure
- Composite Structure

## Aviation
- MH60R and (3) VTUAVs (Capacity for 2 MH 60Rs)

## Boats
- (2) 7m RHIBs
- (sized for (2) 11m RHIBs)

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Summary

• **DDG 1000 will be a multi-mission surface combatant tailored for the littorals**
  – Signature reduction, active and passive self-defense systems, and enhanced survivability features
  – Designed to fulfill volume firepower and precision strike requirements
  – Provides credible forward naval presence while operating independently or as an integral part of Naval, Joint, or Combined Expeditionary Strike Forces
  – Reduced Life Cycle Cost

• **DDG 1000 Initial Operational Capability (IOC) in 2016**