

DDG 1000 Class Destroyer





04 April 2017

Sea Air Space (SAS)



DDG 1000 Program Manager, PMS 500

CAPT Kevin Smith



DDG 1000 Program Highlights



- DDG 1000 arrived San Diego, CA 08 Dec 2016
 - Commissioning in Baltimore, MD 15 Oct 2016 during sail around and prior to arrival in her homeport
 - Early combat systems activation and Test & Evaluation activities completed during transit
- DDG 1000 Post Delivery Availability (PDA) and Combat Systems Activation (CSA) activities commenced Jan 2017
 - Industrial work will be completed in San Diego in preparation to activate combat systems (weapons, sensors and communications)
 - Test & Evaluation to commence in FY18 prior to Initial Operating Capability (IOC) in FY20
 - Completed first underway period 27 Feb and second underway period 17 March 2017
- Integrated Power System (IPS) provides complete electric plant integration
 - Generates approximately 78 megawatts allowing for integration of future emerging technologies





DDG 1000 Program Highlights



- Started DDG 1001 fabrication March 2010 92% complete (as of 10 Mar 2017)
 - Hangar arrived Oct 2013, deckhouse arrived Sep 2014 at BIW and erected Nov 2014
 - Christening completed 18 June, Float Off completed 20 June
 - Generator Light Off achieved one month early on 01 March
 - ~ 11,500 of 345,500 work orders remaining; test & activation underway
- Started DDG 1002 fabrication April 2012 59% complete (as of 10 Mar 2017)
 - Keel lay occurred 30 Jan 2017
 - Fabrication underway; 94 of 94 units under construction
 - Steel deckhouse / hangar design complete, production 63% complete







DDG 1000 SAIL AWAY 7 September 2016







DDG 1000 BALTIMORE, MD 15 October 2016







DDG 1000 ARRIVAL SAN DIEGO, CA











DDG 1000 SAN DIEGO







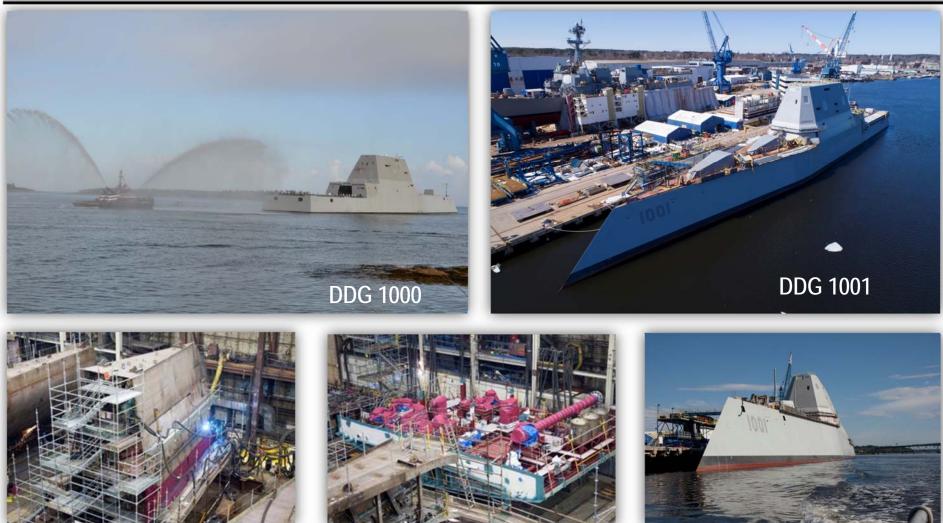






DDG 1000/1001/1002



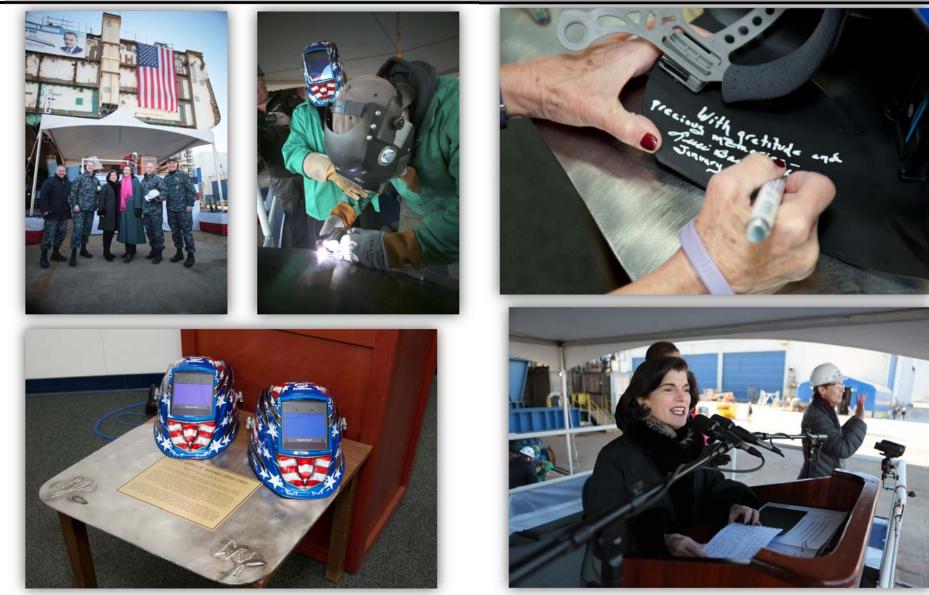


DDG 1002 Pre-Fabrication Units 94 of 94 Under Construction



DDG 1002 KEEL LAY 30 JANUARY 2017







DDG 1000 Requirements



- Carry the fight to the enemy through offensive operations and destroy enemy targets ashore with precision strike and volume fires
- Contribute to littoral dominance: surface, air, sub-surface
- Employ an open architecture total ship computing approach
- Be highly survivable
- Reduce crew size
 Requirements Document
- DD(X) Operational Requirements Document, Change 1 approved, dated Jan 2006
- DD(X) will transition from a single step to full capability approach to a spiral acquisition
 - Spiral acquisition fields operationally and supportable capability in as short a time as possible, with the explicit intent of delivering improved or updated capability in the future
- Acquisition Risk Mitigated thru spiral development, modeling & simulation, and a combination of land-based / at-sea testing

Key Performance Parameters	Threshold	<u>Objective</u>
Interoperability Top Lo	and the second se	•
Number of Guns		▲
Gun Magazine Capacity	600	1200
Vertical Launch Cells		128
Radar Cross Section		
Manning	175	125
Survivability (5)		••••••
Force Protection (2)		
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Designed to meet all requirements; Evolutionary Acquisition – Spiral Development



DDG 1000 Characteristics



Overall Length Vaximum Beam	610 ft 80.7 ft	Displacement Full Load	15 410 LT
	20 7 ft		15,612 LT
	00.7 IL	Installed Power	78 MW
Vavigational Draft	27.6 ft	Crew Size	147
Speed	30 kts Int (2) (2) (2) (2)	Main Turbine Generators (MTC Auxiliary Turbine Generators (G) ATG)
• <u>Super</u>	structure		
s for - D Stea Juns - D <u>Boats</u> (2) RI	DG 1000 / 1001 el DG 1002 HIBs	(2) MH 60Rs	3) VTUAVs /
	for - D Stea Stats (2) RI	the second secon	Integrated Power System (IPS) () Main Turbine Generators (MTC) () Auxiliary Turbine Generators (() Auxiliary Turbine



DDG 1000 Critical Technologies



Engineering Development Models (EDMs) Used to Mitigate Production Risk Prior to Milestone B Decision

Dual Band Radar (DBR)



- **Composite Deckhouse & Apertures Test Article**
- Composite production ability proven
- Tested for RCS and EMI
- Validated RCS KPP can be achieved



- MFR (X Band) at sea-based testing complete
- VSR (S Band) land based testing complete
- Leap ahead clutter rejection capability in the littorals
- MFR Volume Search modification complete
- MFR Testing underway
 - Wallops (2015-2017)
 - SDTS (2018)
 - DDG 1000 (2016-2018)

Integrated Power System (IPS)

- Full scale testing of components
- Full rated power and torque validated
- **Full Power testing completed**
- **ECS LBTS testing completed**
- HM&E Activation Complete
 - Alpha Trials Dec 2015
 - Builder's Trials Mar 2016
 - Acceptance Trials Apr 2016

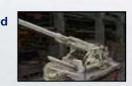
Autonomic Fire Suppression System (AFSS)

- At-sea weapons effect autonomic fire suppression testing demonstrated
- Critical technology enables reduced manning



Advanced Gun System (AGS)

- Full scale Gun and Magazine produced
- Automated Magazine and Gun rate of fire validated
- Commenced testing onboard DDG 1000



Peripheral Vertical Launch System (PVLS) / **Advanced VLS**

- Detonation tests and missile restrained firing testing complete
- Enhanced survivability design proven and ability to carry all current missiles (SM 2/3/6, ESSM, VLA with CEU mods)
- Commenced testing onboard DDG 1000



Total Ship Computing Environment (TSCE)

- Software Releases 1-8 complete
- **Open Architecture principles** applied
- Release 7 supported DDG 1000 • sail around
- **Commenced testing onboard DDG 1000**
- **Release 8 ready for install** onboard DDG 1000 early 2017



Hull Form Scale Models

- Sea keeping, stability and RCS performance validated by model testing
- Underwater explosion testing complete – hull whipping requirement validated
- Heavy Weather Guidance received June 2015

Integrated Undersea Warfare (IUSW)

- At-sea mine avoidance capability proven
- Reduced ASW manning validated
- Commenced testing onboard DDG 1000













- 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
- HM&E delivery of DDG 1000 completed 20 May 2016
 - Commissioned 15 Oct 2016 in Baltimore, MD; arrived San Diego, CA 8 Dec 2016
 - Commenced Post Delivery Availability (PDA) / Combat Systems Activation (CSA) in homeport San Diego

• DDG 1001,1002 under contract and significant production underway

- DDG 1001/1002 completion 92% / 60% as of March 2017
- DDG 1001 GLO 01 March 2017
- DDG 1002 Keel Lay 30 January 2017