



# DDG 51 Arleigh Burke Class Destroyers



**Surface Navy Association  
Washington, DC  
15 January 2020**



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# DDG 51 Program Highlights



- **DDG 51 program in serial production with 21 ships currently under contract at two shipyards**
- **DDG 51 Flight III on Track (FY17 and Follow ships)**
  - First Flight III, DDG 125 (HII Ingalls) achieved Lay Keel on 07 Oct 2019 with a ceremony held on 07 Nov 2019
  - Flight III delivery planned in FY23 with IOC planned in FY24
  - First AN/SPY-6(V)1 arrays scheduled to arrive in HII Ingalls shipyard in June 2020
- **FY18-22 Multiyear Procurement contracts awarded Sept 2018**
  - BIW awarded 5 Flight III ships including one Option ship
  - HII awarded 6 Flight III ships
  - First FY18-22 MYP ship, DDG 128, to start fabrication in April 2020

**13 Flight III Ships Under Contract through FY22**



# DDG 51 Program Overview



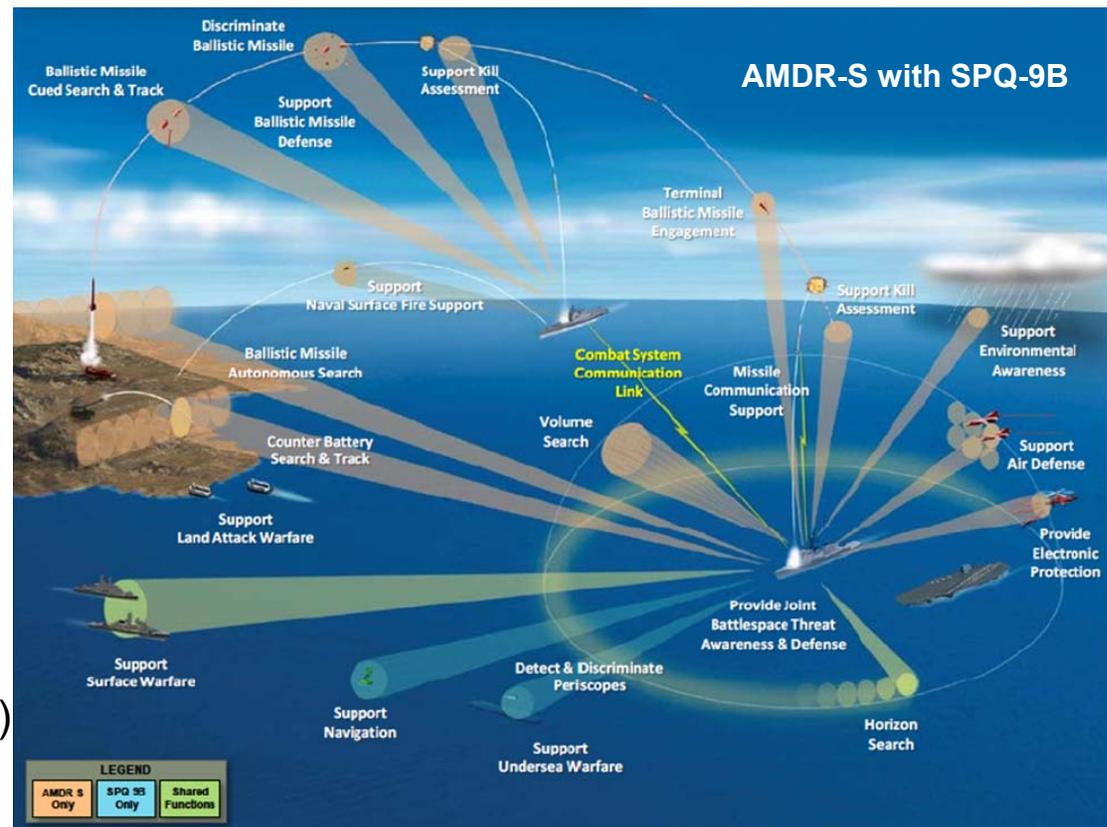
- The DDG 51 Class are multi-mission warships designed, built and netted to execute Sea Control and Power Projection missions

- **Warfighting Requirements Foundations**

- Flight I: TLR-1983
- Flight IIA: ORD-1994
- Flight III: CDD-2014

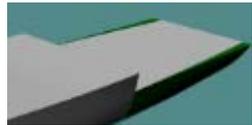
- **Warfighting Capabilities:**

- Integrated Air and Missile Defense (IAMD)
- Strike Warfare (STW)
- Anti-Submarine Warfare (ASW)
- Anti-Surface Warfare (ASuW)
- Intelligence, Surveillance, and Reconnaissance (ISR)
- Naval Surface Fire Support (NSFS)





# Flight III Changes



## Full Load Operational Displacement Enhancement System (FLODES)

### Enclosures

- Added starboard enclosure and stacked RHIBs

### AN/SPY-6(V)1; AMDR-S SPY+15dB

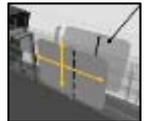
- 14.1 ft x 13.6 ft x 5 ft Array Structure
- Replaces AN/SPY-1D(V)

### BL 10 / TI 16 for Flight III Upgrade to AWS

- Added 3 Warfare Commander consoles

### Rapid Removal Routes

- Incorporates reservations for depot level structural cuts to facilitate future Combat Systems equipment upgrades



### Water Mist

- Baseline change to install Water Mist in Machinery Spaces to replace Halon 1301



### AC Plant

- 5 x 350 Ton HES-C AC Plants Replacing 5 x 200 Ton AC Plants

### 4160VAC Electric Plant

- 3 x 4MW, 4160 VAC SSGTGs replacing 3 x 3MW, 450 VAC SSGTGs
- Add ship service transformers, PCMs, modified switchgear
- Modified controls for MCS and MFMs

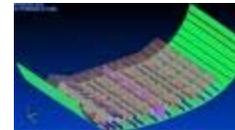


### Heptafluoropropane (HFP)

- HFP in Gas Turbine Modules & Flammable Liquid Storerooms replaces Halon 1301

### Increased Innerbottom Scantlings

- Adds 90 LT to improve KG



- *Capability Increase*
- *Enabling Changes*
- *Other Changes*

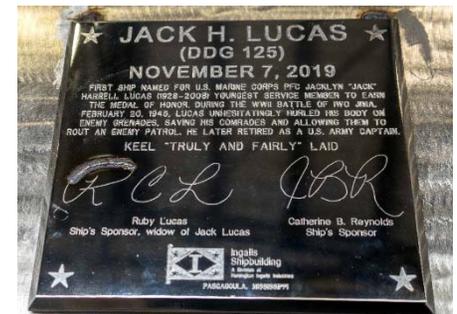
Habitability Changes and roll-down impacts to incorporate AN/SPY-6(V)1 and equipment



# DDG 125 (JACK H. LUCAS) Construction



- **DDG 125 is the first Flight III ship**
  - Flight III baseline consists of the integration of the AN/SPY-6(V)1 radar along with upgrades to the electrical power and cooling capacity plus additional associated changes
- **DDG 51 Flight III Ships on Track (FY17 and Follow ships)**
  - DDG 125 (HII Ingalls) Start Fab achieved 07 May 2018
  - Ship currently 24% complete
- **Production Milestones**
  - ✓ Start Fab: 07 May 2018
  - ✓ Lay Keel: 07 Oct 2019
  - ✓ Lay Keel Ceremony: 07 Nov 2019
    - Float Off: Jul 2021
    - AEGIS Light Off: Jan 2022
    - Delivery: Apr 2023
    - Initial Operating Capability: 2024



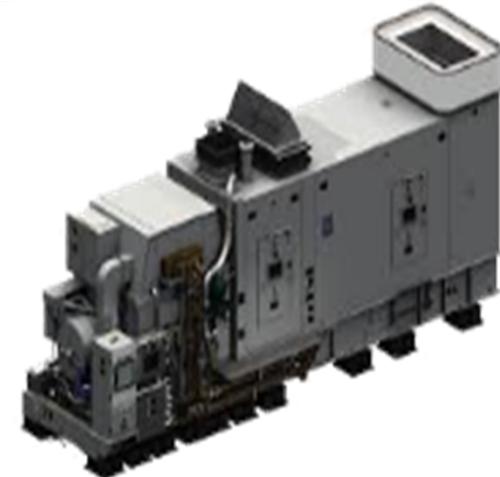


# Flight III Testing



- **Flight III Electric Plant Testing**

- Electric plant hardware integration testing has started at the Land Based Engineering Site (LBES) in Philadelphia, PA
- Industry partners are engaged to support the FLT III HM&E integration efforts
- Recent accomplishments include:
  - 9160 Generator Initial Light Off
  - Completion of Power Conversion Module (PCM1) stand-alone testing



Ship Service Gas Turbine Generator

- **CSEDS SPY-6 Power Distribution Testing**

- Aegis Baseline 10/SPY-6 interface and power distribution testing ongoing at the Combat System Engineering Development Site (CSEDS) in Moorestown, NJ



PCM 7 Installed and Fully Operational at CSEDS



# AN/SPY-6(V)1 Air & Missile Defense Radar Overview

## ■ Missions

- Simultaneous:
  - Ballistic Missile Defense
  - Air Defense (Anti-Air Warfare)
  - Anti-Surface Warfare
- With simultaneous weapons support functions:
  - Electronic Protection
  - Environmental Awareness



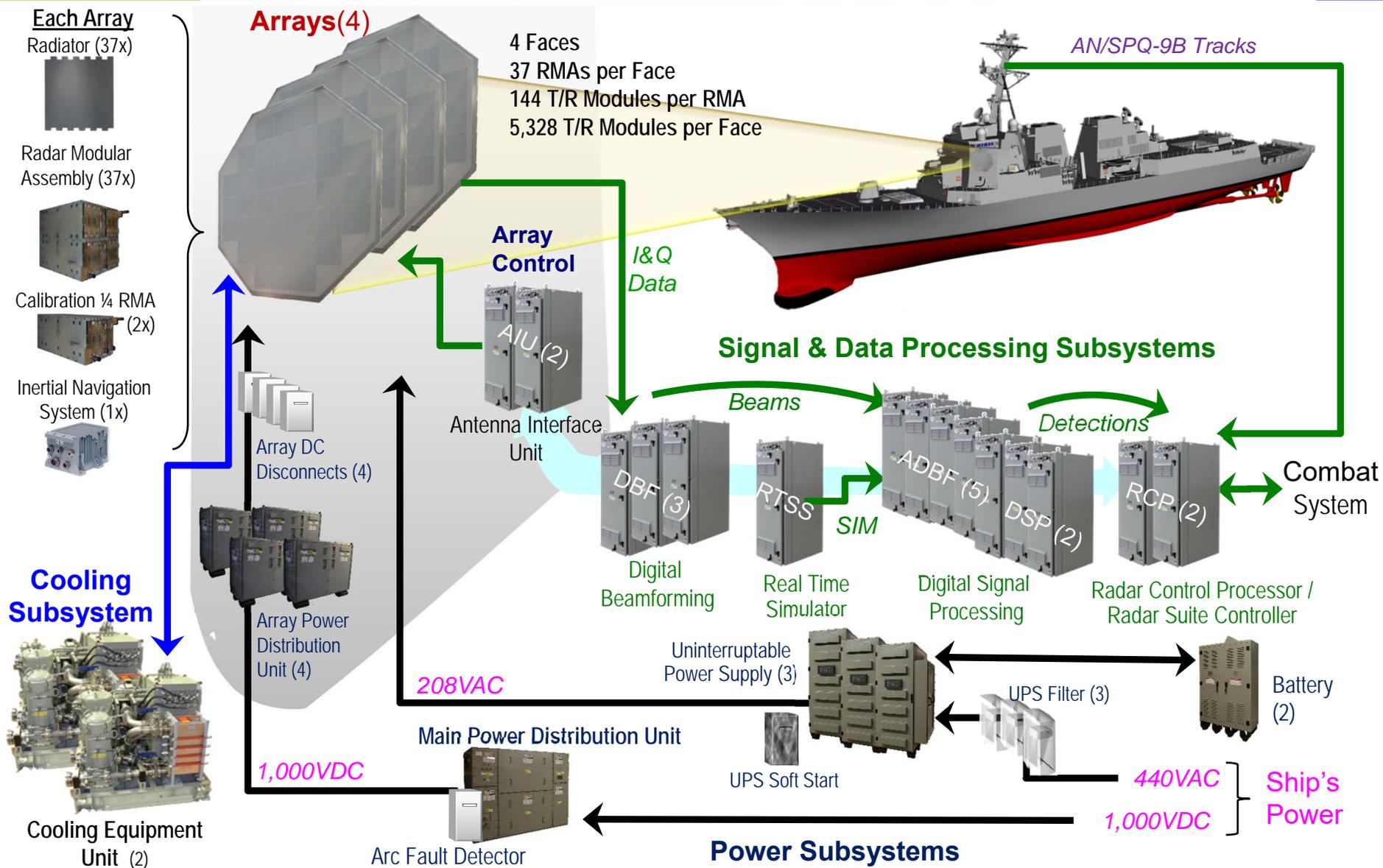
## ■ Radar Suite

- AN/SPY-6(V)1 AMDR
  - Next generation S-band solid-state radar with digital beamforming architecture
- X-Band radar (AN/SPQ-9B)
  - Horizon search to complement AN/SPY-6(V)1
- Radar Suite Controller (RSC)
  - Radar resource management, coordination and interface to the AEGIS combat system

**Highly capable, efficient and reliable**



# AN/SPY-6(V)1 AMDR Overview



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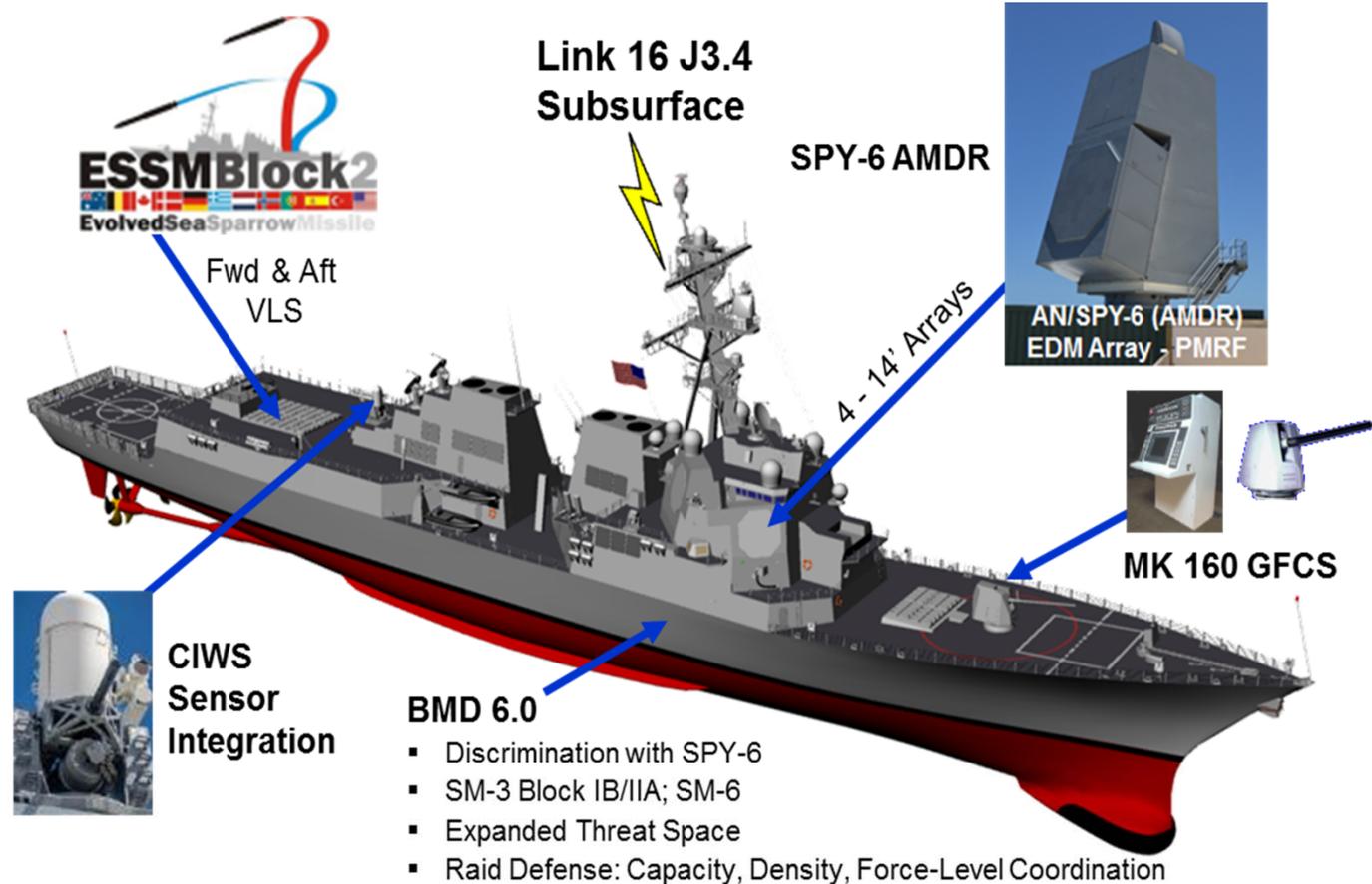
# DDG 51 Flight III AEGIS Baseline 10 Combat System



AEGIS Baseline 10.0

## Plus Capabilities From Previous Baselines:

- NIFC
- IAMD
- ASW
- ASUW
- Passive EW



**Next Generation IAMD Capability  
Concurrent Raids of Air & Ballistic Missile Threats  
Buying Back Battlespace from Evolving Threats**



# Why Does AEGIS Baseline 10 Matter?



*AEGIS Baseline 10.0*

- BL 10.0 brings greatly increased single ship IAMD capabilities to pace current and future threats
- The systems engineering and integration of major new AEGIS Weapon and Combat System elements ensure a coordinated system response to the threat
- FLT III is poised to take the lead on force level command
- Integration efforts are on track to support USS Jack H. Lucas (DDG 125) ALO in JAN 2022

**BL 10.0 integration of SPY-6 sets the technical foundation for The Fleet**



# Summary



- **DDG 51 program remains one the most successful shipbuilding programs with 67 ships delivered to the Fleet.**
- **Shipyards have established serial DDG 51 production with 21 ships on contract through FY22.**
- **Flight III will keep pace with Integrated Air and Missile Defense (IAMD) threats. Thirteen Flight III ships are currently on contract.**



**Delivering capability to the fleet for current and future missions.**