

State of IAMD 2014

“IAMD Achievements”



RADM Joseph Horn

Program Executive Officer Integrated Warfare Systems

June 12, 2014



Program Executive Officer
RADM J. Horn
Executive Director
W. Bray (SES)

PEO IWS Team

- 52 Military
- 403 Civilians

Director,
Above Water Sensors
 Vacant (SES)

Chief Financial Officer

Acquisition Officer

Director, Corporate Operations

Human Capital Resources Manager

Director,
Integrated Combat Systems
 W. Williford (SES)

Chief Architect

Chief Logistician

Technical Authority
 SEA 05

Chief of Staff

Executive Assistant

Executive Officer

NSSPO
 IWS 3D

CIR
 IWS 2I

RAM
 IWS 3B

Above Water Sensors
 IWS 2.0

Surface Ship Weapons
 IWS 3.0

Undersea Systems
 IWS 5.0

Command & Control
 IWS 6.0

Future Combat Systems
 IWS 7.0

AEGIS Fleet Readiness
 IWS 1.0F

SSDS Fleet Readiness
 IWS 10.0F

Director,
Cruiser & Destroyer
Combat Systems

AEGIS
 IWS 1.0

ZUMWALT
 IWS 9.0

International & FMS
 IWS 4.0

LCS
 IWS 8.0

Ship Self Defense System (SSDS)
 IWS 10.0

SCSC Wallops Island

AEGIS TECHREP

Product
Major Program Managers

Sustainment
Major Program Managers

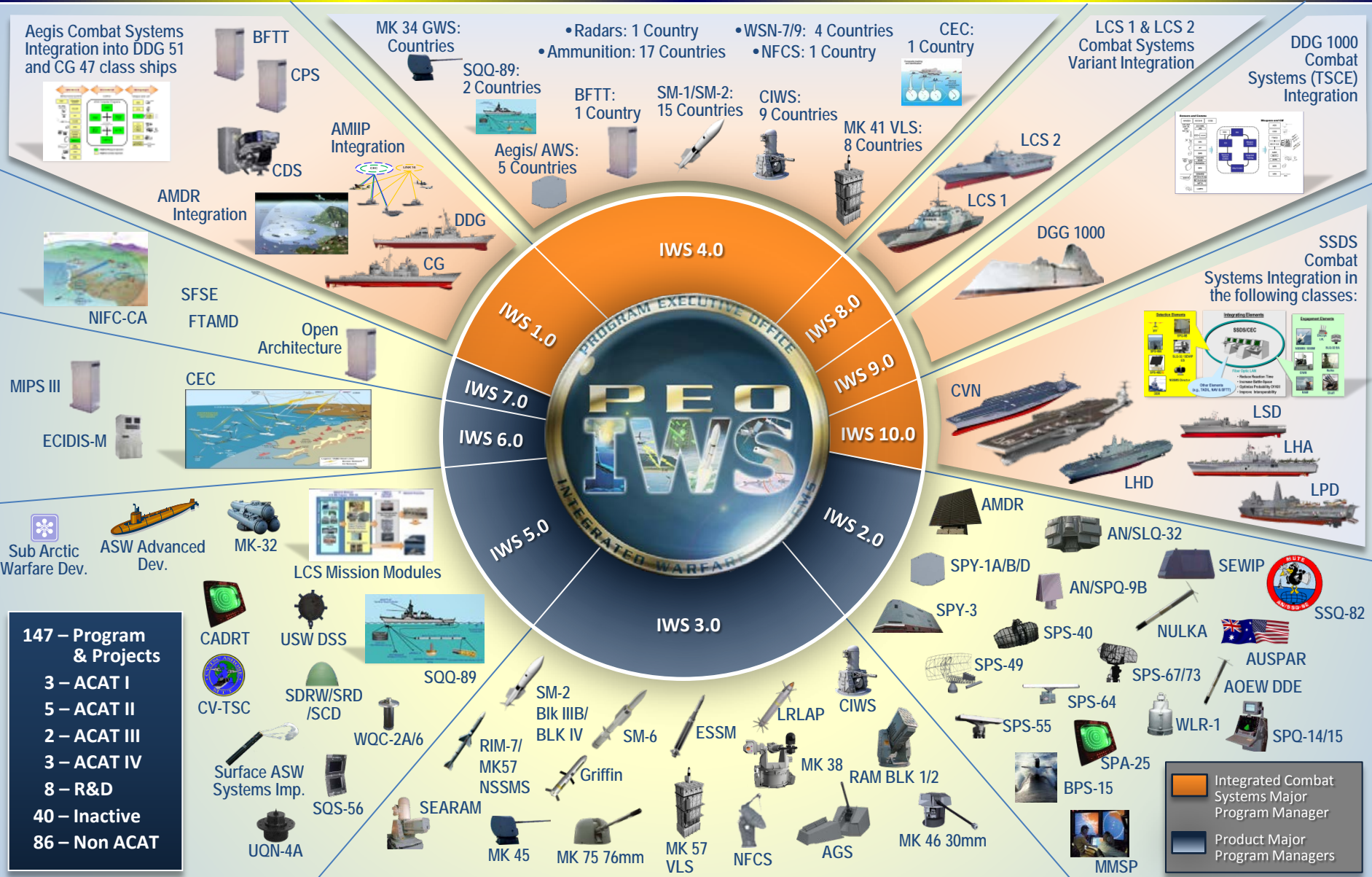
Integrated Combat Systems
Major Program Managers

Testing

Main Thing: "To develop, deliver, and sustain operationally dominant combat systems to Sailors and Marines."



PEO IWS Portfolio



Aegis Combat Systems Integration into DDG 51 and CG 47 class ships

BFTT
CPS

MK 34 GWS: 2 Countries

SQO-89: 2 Countries

• Radars: 1 Country
• Ammunition: 17 Countries

• WSN-7/9: 4 Countries
• NFCS: 1 Country

CEC: 1 Country

LCS 1 & LCS 2 Combat Systems Variant Integration

DDG 1000 Combat Systems (TSCE) Integration

AMIIP Integration
CDS

SM-1/SM-2: 15 Countries

Aegis/ AWS: 5 Countries

BFTT: 1 Country

CIWS: 9 Countries

MK 41 VLS: 8 Countries

LCS 2

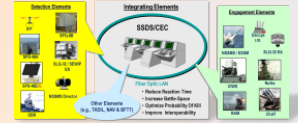
DGG 1000

AMDR Integration

DDG
CG



SSDS Combat Systems Integration in the following classes:



CVN

LSD
LHA
LHD
LPD

SFSE
FTAMD

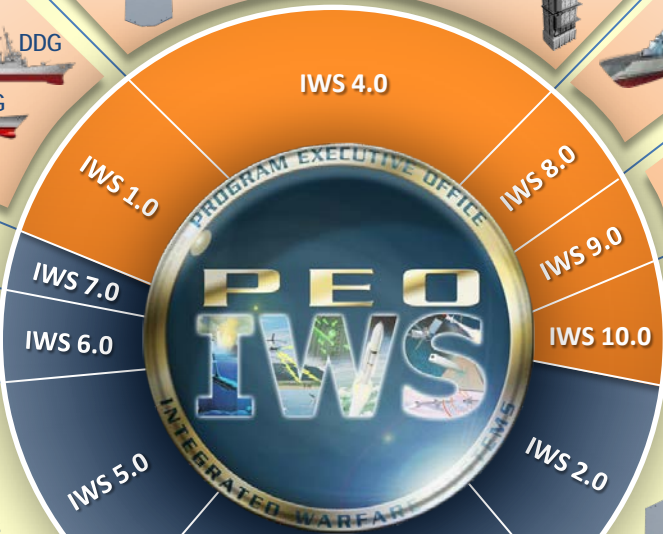
Open Architecture

CEC

MIPS III
ECIDIS-M

Sub Arctic Warfare Dev.
ASW Advanced Dev.

MK-32
LCS Mission Modules



AMDR
AN/SLO-32
SPY-1A/B/D
AN/SPQ-9B
SEWIP
SSQ-82

- 147 – Program & Projects
- 3 – ACAT I
- 5 – ACAT II
- 2 – ACAT III
- 3 – ACAT IV
- 8 – R&D
- 40 – Inactive
- 86 – Non ACAT

CADRT
USW DSS
CV-TSC
SDRW/SRD /SCD
SQO-89
WQC-2A/6
RIM-7/ MK57 NSSMS
Griffin
SEARAM
UQN-4A

SM-2 Btk IIIb/ BLK IV
SM-6
ESSM
LRLAP
CIWS
MK 38
RAM BLK 1/2
MK 45
MK 75 76mm
VLS
NFCS
AGS
MK 46 30mm

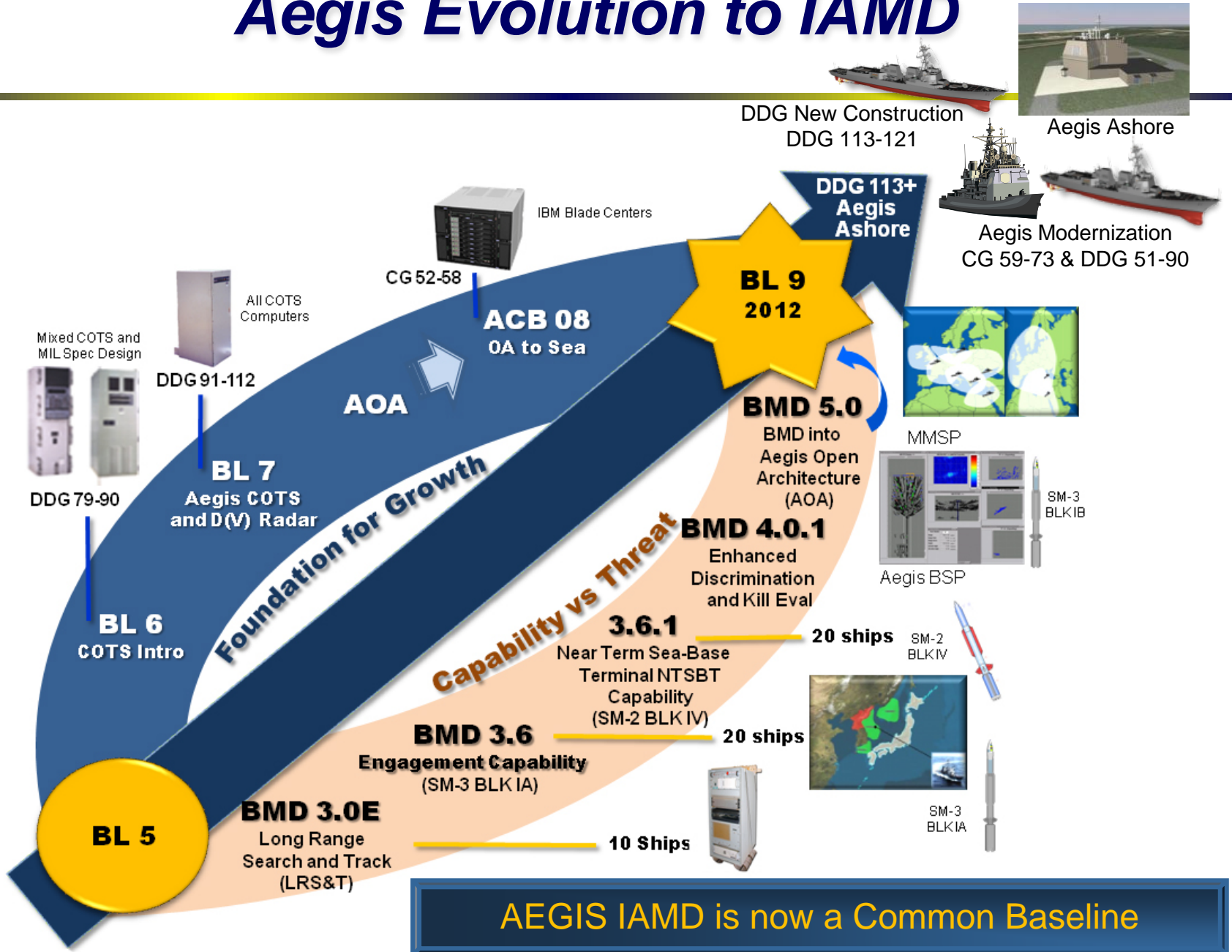
SPY-3
SPS-40
NULKA
AUSPAR
AOEW DDE
SPS-49
SPS-64
SPA-25
BPS-15
MMSp
WLR-1
SPQ-14/15

Legend:

- Integrated Combat Systems Major Program Manager (Orange)
- Product Major Program Managers (Blue)



Aegis Evolution to IAMD





Testing Achievements

BL 9 Events

| | | | | | | |
|----------------------------|-----|------------------------------------|---|---|---------------------------|-------------|
| May 13 Aug 13 | CHV | | | | | |
| | | SM2 vs. Sub High Alt | ESSM vs. Sub Low Alt | SM2 vs. Sub Low Alt | SM6 vs. Sub Low Alt (EOR) | NIFC-CA SM6 |
| Sep 13 | NOR | | DT events conducted during PAU periods | | | |
| | | SM2 vs. Sub High Alt | First BL 9.A Ship Deployment Capable – Jan 15 | | | |
| Feb 14 | JPJ | | | First BL 9.C Ship Deployment Capable – Sep 15 | | |
| | | SM2 vs. Sup High Alt (AAW) | SM2 vs. Sup High Alt (IAMD) | | | |
| 25-29 Mar | NOR | | | | | |
| 1-7 May | NOR | | | | | |
| | | SM2 vs. Sub Low Alt (Area Def.) | | | | |
| May 14 | JPJ | SM6 NIFC-CA May 14 TRACKEX | | | | |
| | | SM6 vs. Low Alt Sub (EOR) | SM6 vs. Long Range Crossing Sub (EOR) | NIFC-CA 2A | | |
| TEMP 1669 Jun 14 | JPJ | | | | | |
| | | IAMD TRACKEX | 2xSM2 vs. 1/2 Raid A4 | | | |
| SM6 NIFC-CA Jun 14 | | | | | | |
| | | SM6 vs. High Alt. Sup | NIFC-CA 2A | NIFC-CA 2B | NIFC-CA 2C | |
| CG 60 BL 9A IT (TBD) | NOR | | | | | |
| | | 2xSM2 vs. 1/2 P _{RA} A4 | | | | |

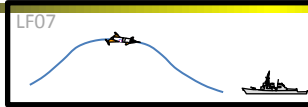


Testing Achievements

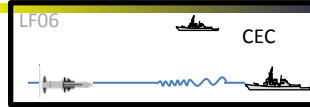
BL 9 Events

CG 62
BL 9A IT
(Aug – Sep 14)

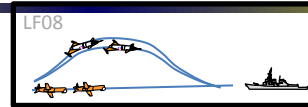
CHV



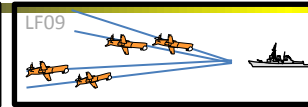
LF07
SM2 vs. Sup High Diver



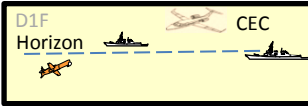
LF06
2x SM2 vs. Sup Low Alt (EOR)



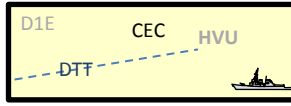
LF08
2x SM2 - 1 ESSM vs. Raid S1



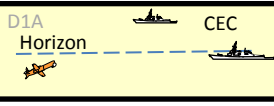
LF09
4x SM2 vs. Raid S3



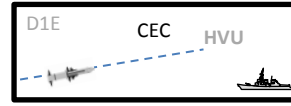
D1F
SM6 vs. Low Alt Sub (EOR)



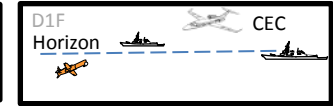
D1E
SM6 vs. Low Alt. Sup (EOR)



D1A
SM6 vs. Max Downrange (EOR)



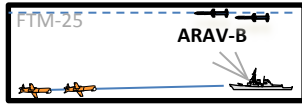
D1E
SM6 vs. Low Alt. Sup (EOR)



D1F
SM6 vs. Low Alt Sub (EOR)

DDG 53
FTM-25
(Oct 14)

JPJ



FTM-25
2x SM-3 vs. 2x ARAV-B
2x SM-2 vs. 2x BQM-74E

DDG 65
CSSQT
(Dec 14)

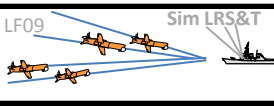
BEN



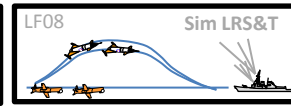
LF02
SM2 vs. Sub Low Alt (AAW)



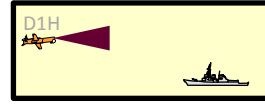
LF04
SM2 vs. Sub Low Alt (IAMD)



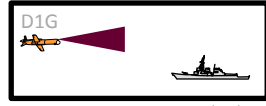
LF09
4x SM2 vs. Raid S3 (IAMD)



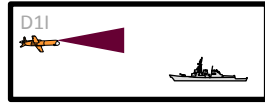
LF08
2x SM2 - 1 ESSM vs. Raid S1 (IAMD)



D1H
SM6 vs. Sub S-Band (EA)



D1G
SM6 vs. Sub X-Band (EA)



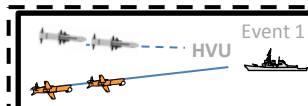
D1I
SM6 vs. Sub X-Band (EA)



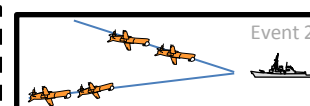
D1H
SM6 vs. Sub S-Band (EA)

CG 62
BL 9A OT
(TBD)

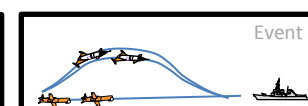
CHV



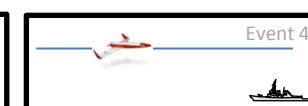
Event 1
7x SM2 vs. Sub & 2D Sup Raid (AAW)
New Event DOT&E Directed



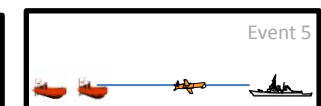
Event 2
7 Missiles vs. Raid S3



Event 3
7 Missiles vs. Raid S1



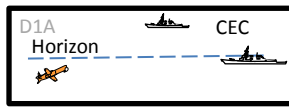
Event 4
GWS vs. UAV



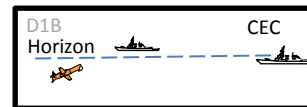
Event 5
SUW Raid - SM2 vs. Sub Low Alt

DDG 53
SM-6
(Feb 15)

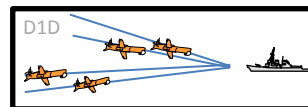
JPJ



D1A
SM6 vs. Max Downrange (EOR)



D1B
SM6 vs. Max Crossrange (EOR)



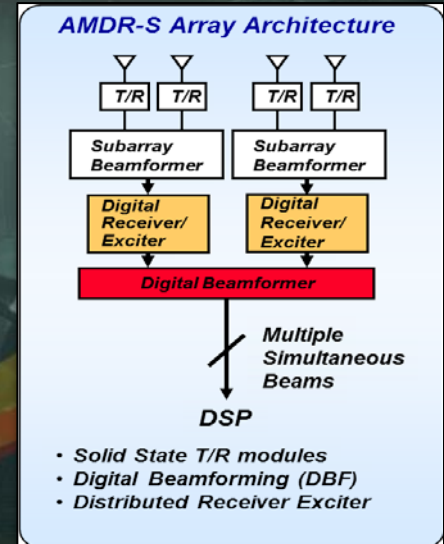
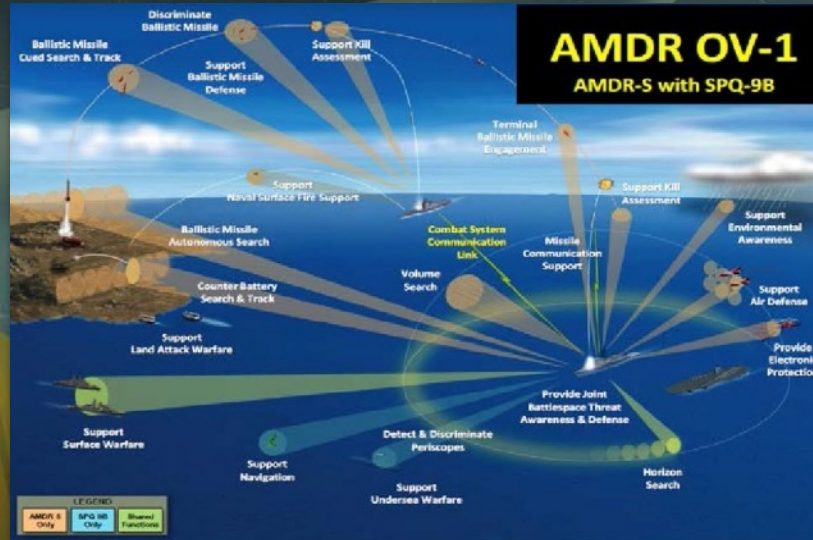
D1D
2x SM6 vs. 4x BQM-74E



Detection Achievements

Major Accomplishments:

- Significant improvements in SPY-1 operational availability from 85% to 98%
- Enhanced SPY operational readiness, capability and proficiency, reduced Lost Operational Days from 25.2 days so 2.8 days per six month deployment
- The Air Missile Defense Radar finalized the Capability Development Document (CDD) and development contract was awarded to Raytheon
- Deployers routinely meet SPY Effective Transmit Power above +.5db required for BMD
- SEWIP Block II has passed Milestone C and approved for Low Rate Initial Production. System will bring enhanced EW capability to Surface Navy

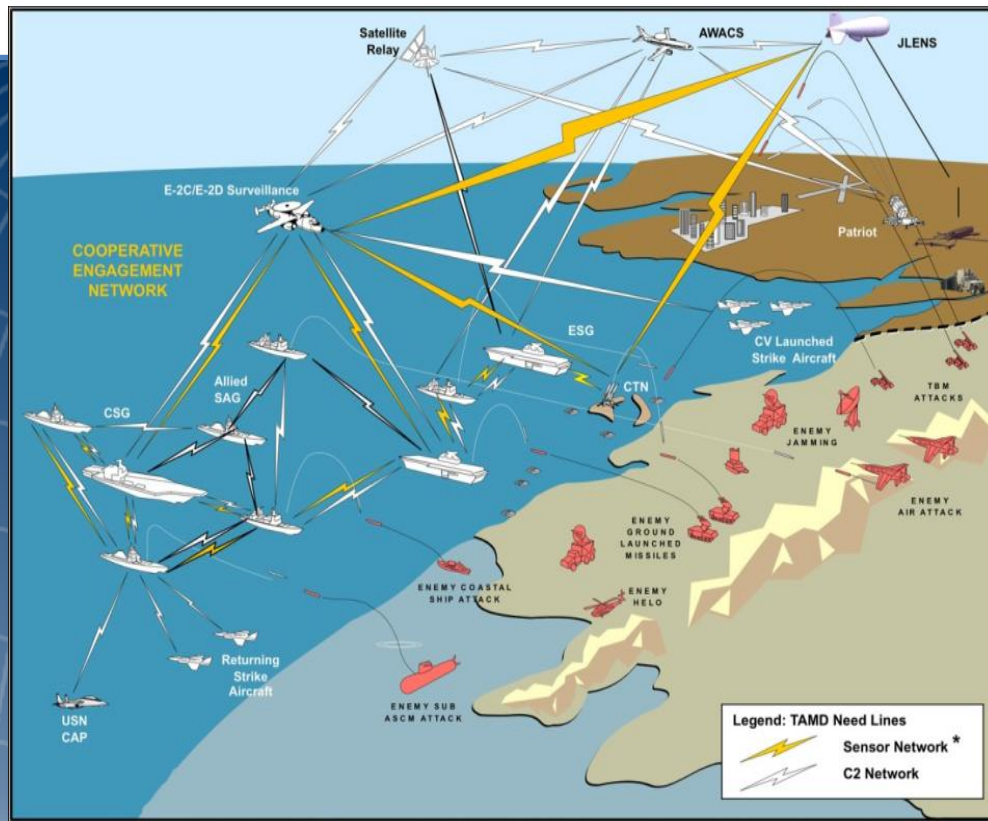




Command and Control Achievements

Major Accomplishments:

- Certified Accelerated Mid-term Interoperability Improvement Project (AMIIP) for AEGIS, SSDS and the E2C
- Fire Control Loop Improvement Project (FCLIP) implemented on SSDS, ESSM, RAM, CEC and SPQ-9B to enhance ASCM defense on SSDS ships
- Successfully conducted a series of tracking and firing exercises of AEGIS Baseline 9 in a NIFC-CA environment.





Engagement Achievements

- **By the Numbers**

- **Procurement**

- 200 SM-2s (Recertified for Fleet use)
- 89 SM-6s
- 700 RAM
- Over 80 Block 1B Phalanx CIWS installations

- **Flight Tests**

- 29 RAM BLK IA Missiles firings with a 94% success rate
- 8 RAM BLK 2 missiles
- 50 ESSM
- 113 SM-2 firings
- 25 SM-6 firings
- 31 Long Range land Attack Projectile (LRLAP)

- **“First of” events**

- **AEGIS Baseline 9C: NIFC-CA, and SM-6 Surface-to-Air Active Missile with OTH Targeting and Integrated BMD**

- Installed on JOHN PAUL JONES (DDG 53)
- Installation underway on BENFOLD (DDG 65) and BARRY (DDG 52)

- **AEGIS Baseline 9A: NIFC-CA and SM-6**

- Installed on CHANCELLORSVILLE (CG 62) and NORMANDY (CG 60)
Installation underway on PRINCETON (CG 59)





QUESTIONS?



DDG / CG Modernization IAMD Features



**Ballistic Missile
Defense**

AEGIS ACB

CEC

ESSM

**Multi-Mission
SIGPRO**

SEWIP

NIFC-CA

SM-6



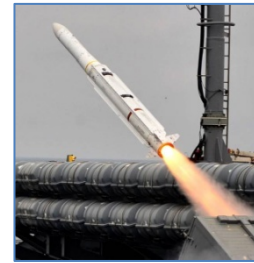
BMD



CIWS BLK1B



SM-6



ESSM



ACB

***First Install
USS Chancellorsville (CG62)
April 2012***

***First Install
USS John Paul Jones (DDG 53)
September 2012***



Baseline 9 Capabilities

NIFC-CA

- Distributes the AEGIS Shipboard fire control loop, via a network of remote sensors achieving independent engagement consummation Over The Horizon (OTH)
- Kill Chain: active missile, elevated sensor, sensor network, and a weapons control system



E-2D

JLENS

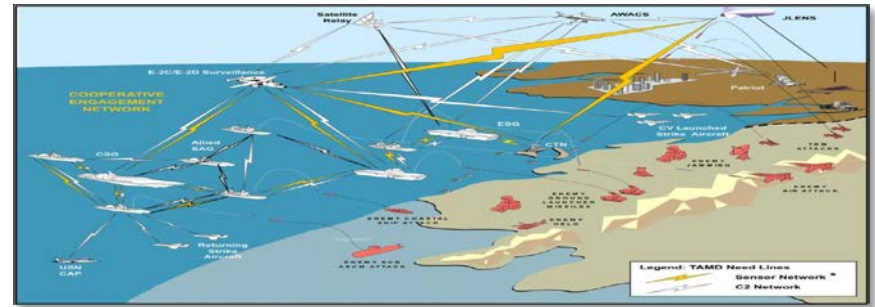
CEC

AEGIS

SM-6

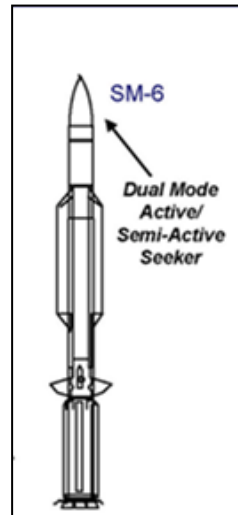
Cooperative Engagement Capability

- Increases AD capabilities by integrating sensors and weapons into a single real-time network
- Expands battle space; enhances SA; improves depth of fire; longer intercept ranges; and reaction times
- Data distribution for composite tracking



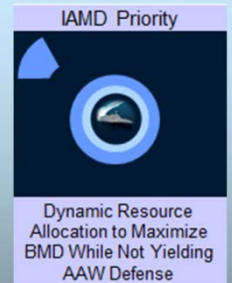
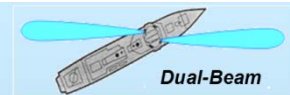
SM-6

- Self-defense, area defense and theater defense
- Supersonic missile launched from AMOD ships
- Dual Seeker (Active and Semi-Active)
- Uses the MK72 booster of the SM-2 Blk IV and the SM-3
- Supports Joint Integrated Fire Control
- OTH engagement Capability



Multi-Mission Signal Processor

- Improved Performance in Littoral Environments
- Improved Performance Against Sea Skimmers
- Dual-Beam Operation
- Improved BMD Search
- Enhanced BMD LRS&T Performance
- Aegis BSP Enhanced Range Resolution, Discrimination & Characterization





IAMD Planning and Training

Maritime IAMD Planning System (MIPS)

- Navy operational level planning system for IAMD, NIFC-CA Planner
- Provides planning function & near-real time plan monitoring function
- Supports tracking and engagement of difficult targets in a complex environment
- Located at Maritime Operations Centers of numbered Fleet commands and onboard some afloat units
- Network Communication pillar for NIFC-CA



IAMD Weapons Tactics Instructor Course (WTI)

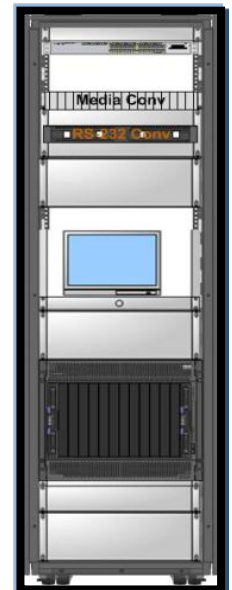
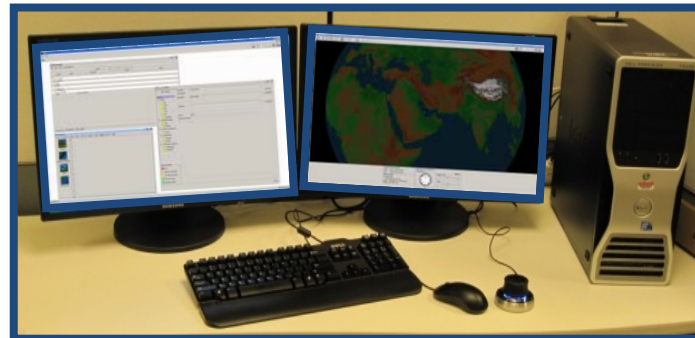
- 19 Week NAMDC course that covers capabilities, training strategies and threats
- Train individuals to improve unit and strike group proficiency

Advanced Warfare Training (AWT)

- CSCS and ATG course covering watchstander and team scenarios

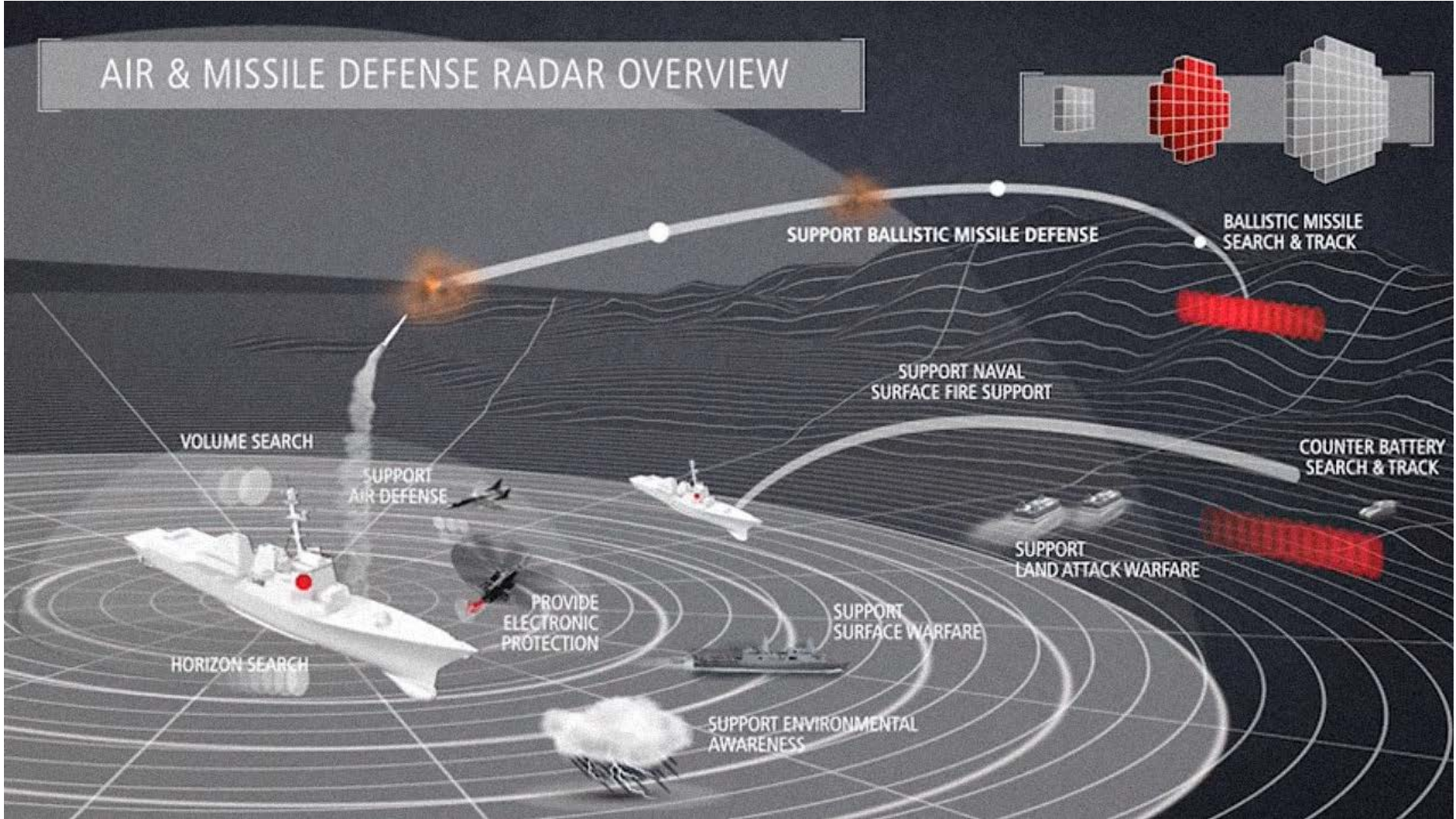
NIFC-CA Training

- Update of curriculum and NTSP in progress





AMDR / DDG-51 FLT III / ACB Next Fills Critical Gaps in Maritime IAMD Capability





Air & Missile Defense Radar (AMDR) Next Generation Radar

- AMDR-S employs a Digital Beam Forming (DBF) architecture
 - FLT III version more than doubles the range over SPY-1 or VSR
 - Provides advanced robust BMD detection & discrimination
 - Efficient, precise search & track using multi-beam operation
- AMDR-X based on proven phased-array technology
 - Robust AAW horizon detection
 - Advanced illumination & link support for missiles
- Suite coordination compensates for challenging multi-mission environments
- Open systems approach allows AMDR to scale & adapt to future platforms

