Surface Navy Association National Symposium 2020

In-Service Aircraft Carriers Program

CAPT Charles Ehnes

Program Manager, PMS 312

"Aircraft Carrier Readiness is our Mission"

Then and Now…

1975

2020

Enduring, Relevant, and Capable

In-Service Aircraft Carriers

Provide Class Maintenance, Fleet Modernization and Life Cycle Management of the Aircraft Carrier Fleet in support of the Naval Aviation Enterprise and Naval, Joint and Coalition Force Operations

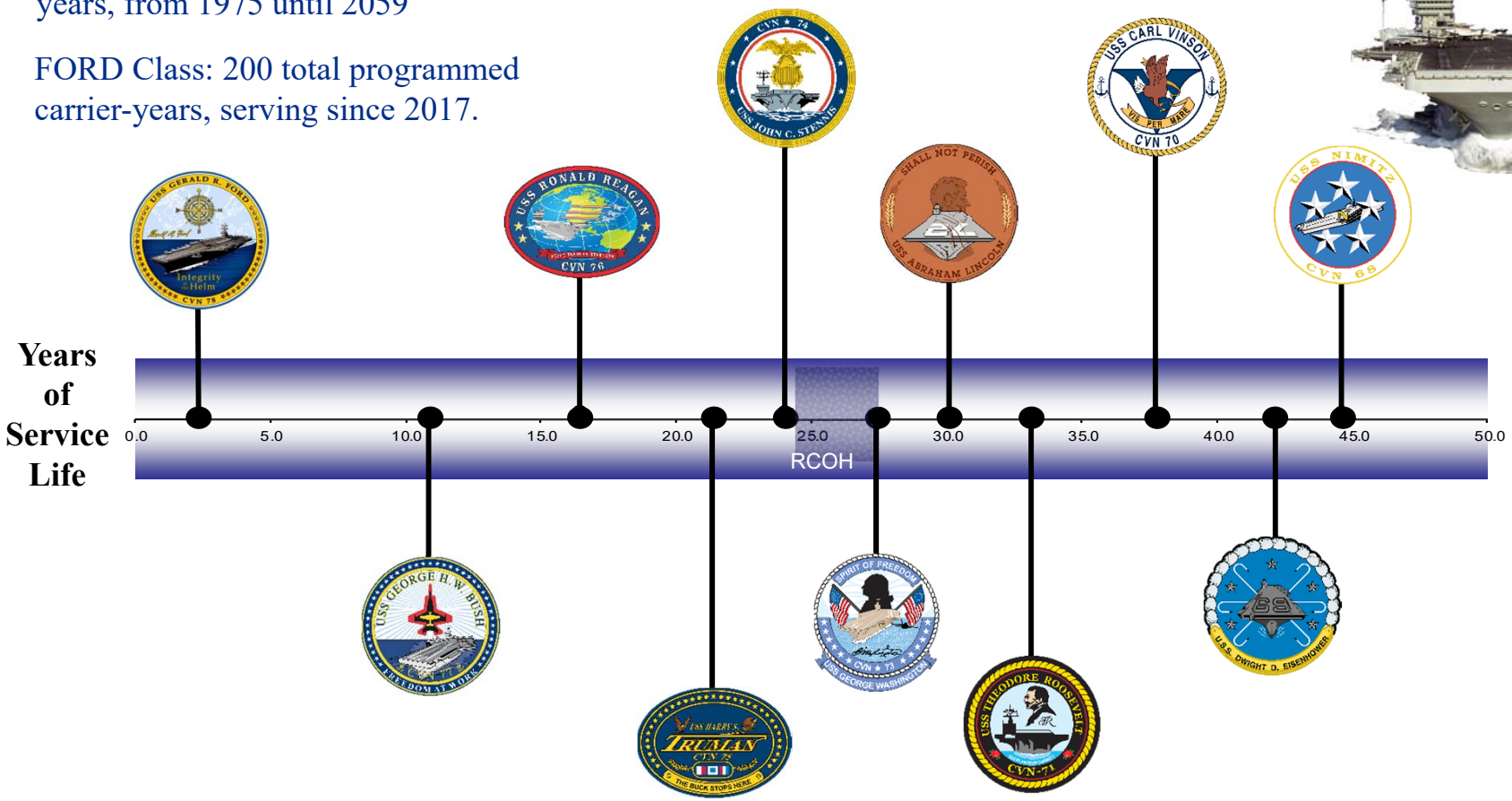
- Refueling Complex Overhaul
- In-Service Sustainment
  - Class Maintenance Plan
- Inactivation
  - CVN 65 Near Term
  - Preps for CVN 68 Class
- Transitioning CVN 78 to In-Service

"Aircraft Carrier Readiness is our Mission"

In-Service Aircraft Carriers: Years of Service

NIMITZ Class: 500 total carrier-years, serving over 84 years, from 1975 until 2059

FORD Class: 200 total programmed carrier-years, serving since 2017.

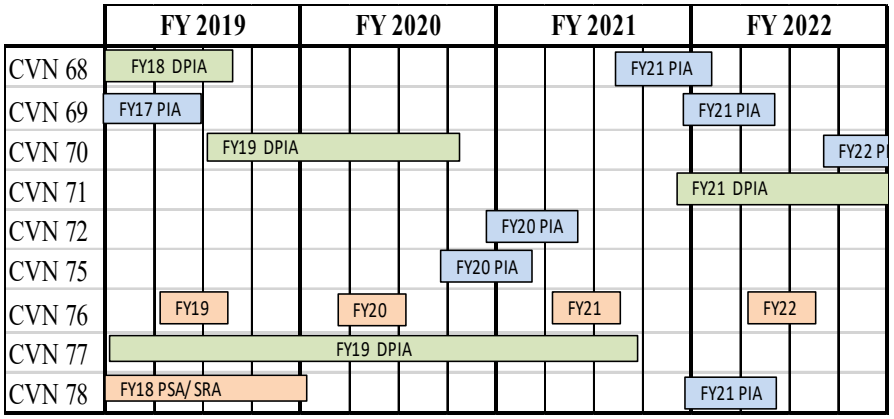


Only 58% through the service life of the NIMITZ-Class → 211 carrier-years remaining.

AIRCRAFT CARRIER STATUS

HULL	STATUS
USS NIMITZ (CVN 68)	UNDERWAY TRAINING
USS DWIGHT D. EISENHOWER (CVN 69)	INPORT UPKEEP
USS CARL VINSON (CVN 70)	DPIA
USS THEODORE ROOSEVELT (CVN 71)	DEPLOY JAN 2020
USS ABRAHAM LINCOLN (CVN 72)	POST DEPLOYMENT POM PERIOD
USS GEORGE WASHINGTON (CVN 73)	RCOH
USS JOHN C. STENNIS (CVN 74)	RCOH PREPS
USS HARRY S TRUMAN (CVN 75)	DEPLOYED
USS RONALD REAGAN (CVN 76)	SRA
USS GEORGE H. W. BUSH (CVN 77)	DPIA
USS GERALD R. FORD (CVN 78)	PDT&T

Life Cycle Management and Modernization



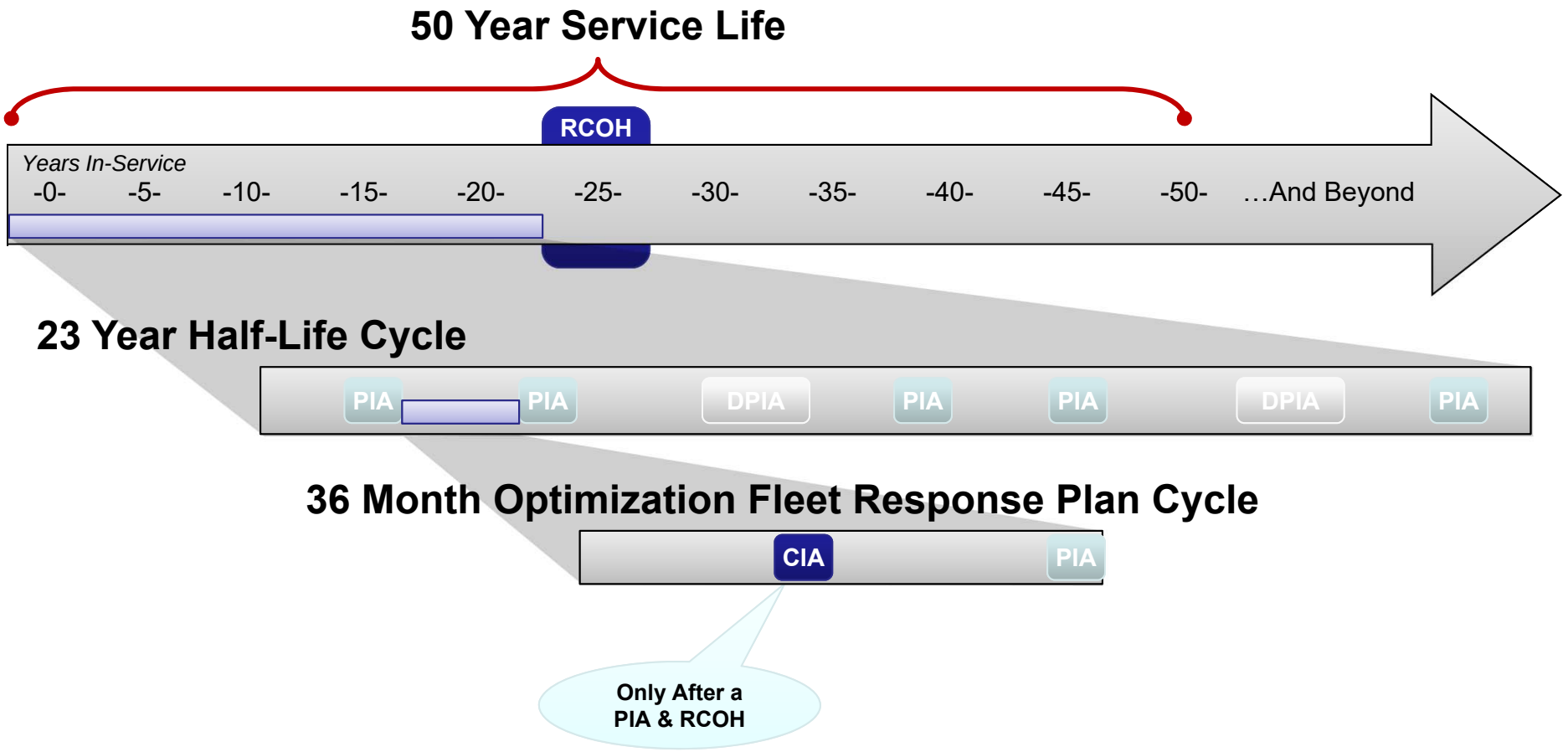
Mission Statement: To provide primary centralized Aircraft Carrier life-cycle management, maintenance and modernization planning closely aligned to Fleet and PEO Aircraft Carriers needs and priorities.

- NAVSEAINST 5450.130 dtd 8 Sept 06

- **Life Cycle Management, Competition & Innovation**
  - Corrosion Control, Preservation & Structural Repairs
    - Laser Ablation Initiative
  - Baseline Availability Work Package (BAWP) Management
    - Technical Foundation Paper (TFP) and Class Maintenance Plan (CMP)
  - Private Sector Maintenance Contracts
  - Digital Ship Sustainment and Maintenance
  - 3D Scanning and Modeling
  - Small Business Reverse Industry Day
  - Distance Communication and Maintenance System (DCoMS) –World Wide Tele-maintenance
  - Obsolescence
    - 400 Hz Solid State Frequency Converters
    - Modular Refrigeration System
- **Modernization Top Focus Items**
  - Modular Refrigeration System
  - Future Aviation Integration (F-35, CMV-22, MQ-25)
  - Cybersecurity
  - Additive Manufacturing

LCM and Modernization increases Lethality, Agility and Affordability

CVN 68 Class OFRP Lifecycle Maintenance Plan



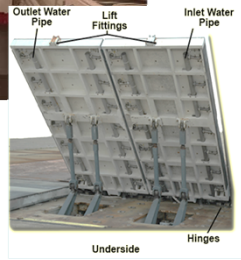
Legend

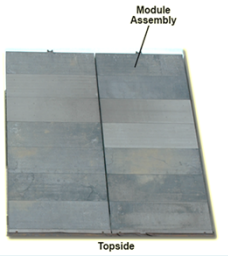
RCOH	Refueling Complex Overhaul -- 44 months + 60 day CIA	PIA	Planned Incremental Availability -- 6 months
DPIA	Docking Planned Incremental Availability -- 16 months	CIA	Continuous Incremental Availability -- 1.5 months

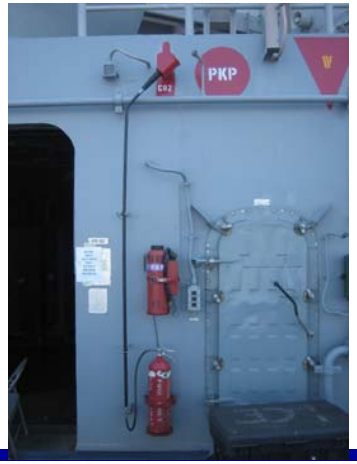
Air-Ship Integration

Merging the Future Air Wing with 50-year platforms

- JBD w/ Side Panel Cooling & Orifice Mods
- Li-Ion Battery Handling and Storage
- F-35 Pilot Equipment & Helmet Storage
- V-22 Fire Wand Clips
- V-22 Blade Storage on CVN
- CMV-22 CVN Space Modifications
- Unmanned Aviation Warfare Center (UAWC) HM&E
- UAWC ARC-210 Radios
- ARC-210 MUOS MOD
- MQ-25 UHF LOS Topside Antenna







Contracting for CVN LCM

Refueling Complex Overhaul and Inactivation

Huntington Ingalls Newport News Shipbuilding, HII-NNS

In-Service CVN Maintenance

Navy Public Shipyards, supported by -

- Southwest: HII-NNS
- Pacific Northwest: General Dynamics NASSCO
- Mid-Atlantic: General Dynamics NASSCO

Alteration Installation Teams

- Contracted teams working under Naval Warfare Center Supervision
- Installation of Ship Alterations
- Opportunities for Small Businesses

In-Service Aircraft Carriers

PROGRAM MANAGER also serves as:

Carrier Team One ESC member

Carrier Readiness Team Co-Chair

CRT CARRIER READINESS TEAM

Carrier Team One

Vision

A professional Community that delivers CVNs to the Fleet from maintenance availabilities reliably and affordably, ready to execute their enduring National Defense mission.

Mission

Improve performance of CVN availabilities by strengthening our people, driving collaboration and providing the best available knowledge to the Community.

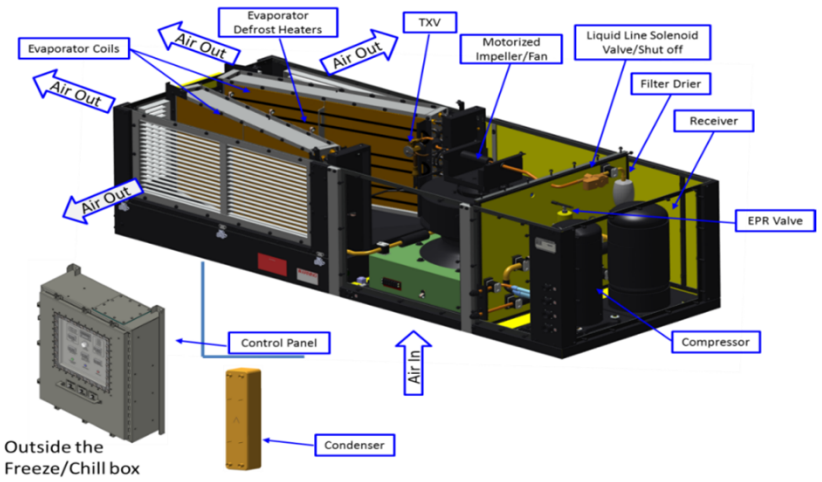
Objectives

- Deliver Carriers “On time” -
- Enable a Culture of Affordability -
- Empower & Equip our Talented People -
- Create a High Velocity Learning Environment -

Technology Initiatives

1.5 Ton Modular Refrigeration Units

- Rapid Innovation Fund Development
- Joint TYCOM/Program Office cost share to accelerate fielding
- Estimated $165M lifecycle cost savings



Additive Manufacturing

- 3D Scanning Summit
- CVN74 AM Lab
- CVN69 AM Lab install in progress
- Formal AM guidance in development

Distance Comms Management Sys (DCoMS)

<u>Above</u>– Portable DCoMS shipboard components.
<u>Right</u> - Shipboard machinery space view from the shore-site SME's computer via DCoMS.

Schedule

- 1.5 Ton Modular Regrigeration Units
  - First Install Complete: CVN71 FY18
  - Second Install in progress: CVN70
- DCoMS
  - Demonstration Testing Shipboard Nov 2019
  - 6 Month Shipboard Trials Jan-Jun 2020
- Additive Manufacturing
  - First Shipboard Lab Installs: CVN74 OCT 18, CVN69 in progress
  - Powdered Metal NPC: Drain Strainer Orifice on CVN75, MAR 19

Backup

Use of Composites on Carriers

Deck Grating

Electrical Enclosures

Extensive use Topside… but more opportunities exist

Modular Refrigeration System (MRS)

Modular Refrigeration Units (MRU)

- Self-contained and “hatchable” system promises to eliminate 90% of current maintenance requirements and require minimal operator support/training

Rapid Innovation Funding (RIF) Program

- Enabled the CVN community to accelerate the technology transition several years
- Accelerated fielding plan will support $7M in savings in retiring maintenance on legacy NIMITZ class refrigeration system

“Tele-Maintenance”

Distance Communication Maintenance System (DCoMS)

- “Over the Horizon” Communication system being developed to help “Subject Experts” remotely assist Ship’s Force resolve maintenance issues
- DCoMS is a portable ship-to-shore maintenance communication system which enables shore-site “Subject Expert” to actively support important maintenance related activities aboard Navy ships
- *Initiated as SBIR (N103-218)*

Portable system: 2 Backpacks - less than 25lbs each, Includes gear (2.3lbs) for sailor to wear and carry laptop

Shipboard Additive Manufacturing

Near term

- Training Aids
- Rapid reverse-engineering
- Form-Fit-Function verification

Mid

- Low-criticality direct-print parts
- Warfighter Prototyping

Far

- Tailored solutions for the mission and warfighter
- High-criticality direct print parts with local approval

USS JOHN C. STENNIS (CVN 74)
Additive Manufacturing capability currently installed for testing and evaluation

“Backfit” 3D Technology for Nimitz Class

Laser scanning technology closes “3D Gap”

- CVN 78 designed in 3D product model
- CVN 68 designed in “2D” drawings

HII-NNS is using Digital Work Instructions for:

- Simple Ripout
- Interferences
- Installation
- Simple Repair & Maintenance
- Complex Repair & Modernization