Fleet Maintenance Assets

SEAPOWER THROUGH ENGINEERING

TOPIC LEARNING OBJECTIVES

Upon successful completion of this topic, the student will be able to:

1. Identify the definitions of organizational, intermediate, and depot (O, I, D) levels of maintenance.
2. Given activity names, identify their levels of maintenance and product lines.
3. Identify the typical organizational structure (names and functions of major departments) of I and D level maintenance activities.
4. Identify the Supervisor of Shipbuilding (SUPSHIP) and Regional Maintenance Center (RMC) missions and be able to differentiate between the repair and new construction roles.
5. Identify the reporting chain and source of funding for the I and D level activities.
6. Identify the workforce composition and workforce training mechanisms at maintenance activities.

STUDENT PREPARATION

Student Support Material

1. None

Primary References

1. OPNAVINST 4700.7
2. NAVSEAINST 5450.14 Standard Naval Shipyard Organization Manual
3. NAVSEAINST 5450.145 Operation of NAVSEA Regional Maintenance Offices

Additional References

1. None

Overview

- Levels of maintenance
- Maintenance activities
- SUPSHIPs and RMCs
- Reporting chains, funding, and technical authority
- Workforce composition and training

Organizational (O) – Level Maintenance

- Consists of planned maintenance from Planned Maintenance System (PMS) and limited repair
- Typical work ranges from simple lubrication of equipment to modular change out and valve overhaul
- Takes advantage of operator experience and skills to ensure ship is as self-sufficient as possible

That level of maintenance/repair commonly done by the ship's crew

Intermediate (I) – Level Maintenance

- Consists of planned and corrective maintenance on shipboard Hull, Mechanical and Electrical (HM&E) systems and components
- Typical work ranges from routine calibration to gas turbine engine change outs. Examples:
  - Basic pump and engine overhauls
  - Corrosion control of scuttles, stanchions, and watertight doors
  - Rigging and weight testing of HM&E equipment
- Takes advantage of on-the-job training (OJT) of sailors on shore duty and civilian workforce at an Intermediate Maintenance Activity (IMA) or Facility (IMF)
- Sailors can earn special skill NECs (welding, pipefitting, etc.) in I-level repair through CNRMC's Navy Afloat Maintenance Training Strategy (NAMTS)

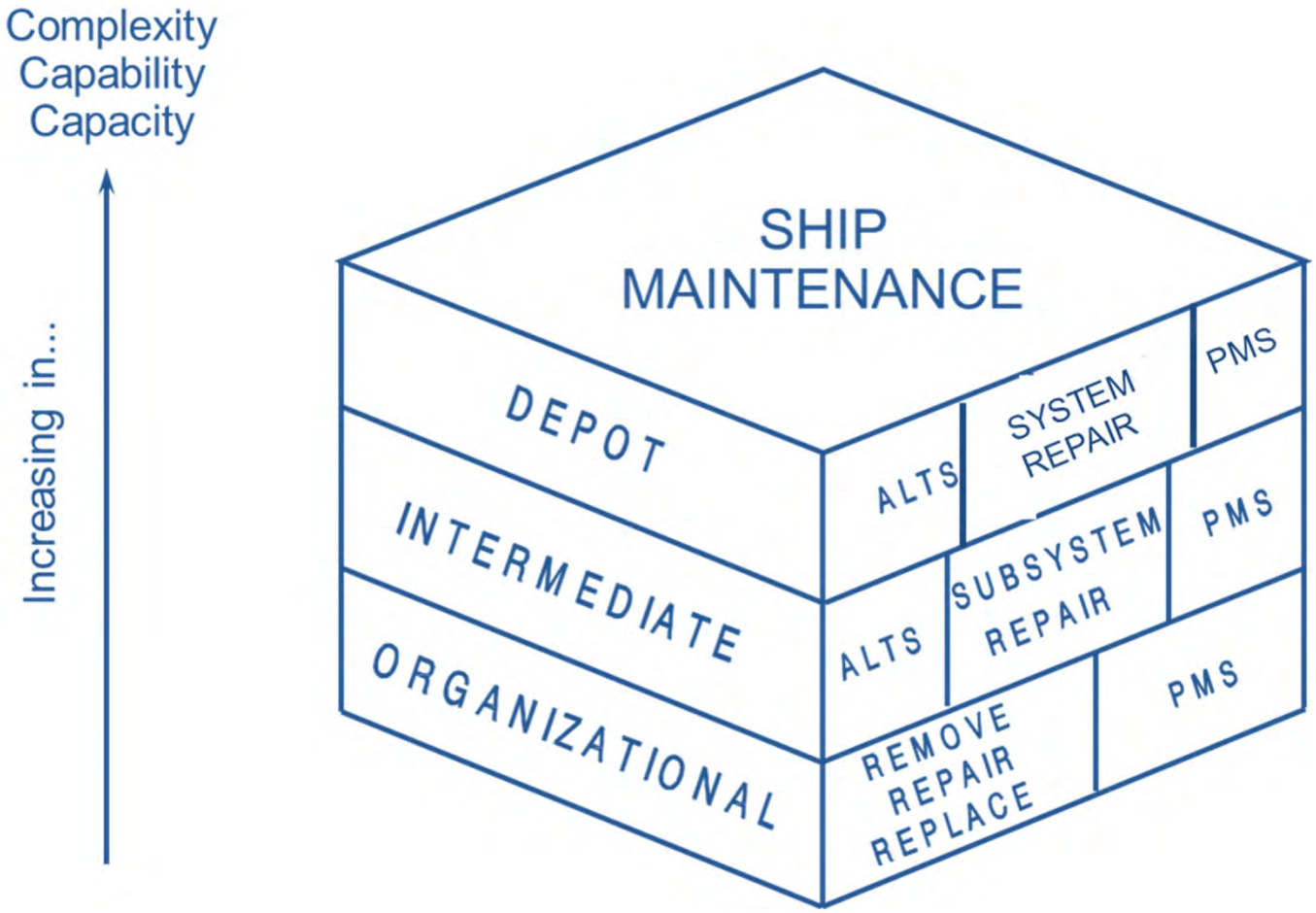
That level of maintenance/repair ***beyond the capacity or capability of ship's force****, usually* ***requiring additional skills/training*** *and/or* ***industrial plant equipment***

Depot (D) – Level Maintenance

- Consists of major industrial work requiring specialized equipment, machinery, and skill sets
- Typical work ranges from major system overhauls and equipment alterations, such as:
  - Ship docking/underwater hull work/shafting
  - Engine rebuilds
  - Modernization/ship alteration installation
  - Array resurfacing
- Takes advantage of skilled expertise of civilian and contracted private-sector workforces

*That level of maintenance/repair, often **beyond the capability or capacity of an IMA**, **which is extensive, very complex, and labor intensive***

Maintenance Levels



Maintenance Trends

- In general, O-level maintenance tasks have shifted responsibility under new models, however tasks are shifting once again after further review
  - Example: O-level maintenance for LCS and DDG-1000 shifted to ashore activities for + checks
  - LCS manning has been increased and crews will be picking up + checks over the next 5-7 years
- I & D level consolidation efforts by region resulted in:
  - Puget Sound Naval Shipyard & Intermediate Level Facility
  - Pearl Harbor Naval Shipyard & Intermediate Level Facility
- Government Accountability Office (GAO) report in July 2020 addressed surface maintenance trends:
  - Workforce capability and capacity
  - Unplanned work
  - Adherence to planning
  - Condition of facilities
  - Insufficient capacity
  - Information technology
  - Modification and alterations

Overview

- Levels of maintenance
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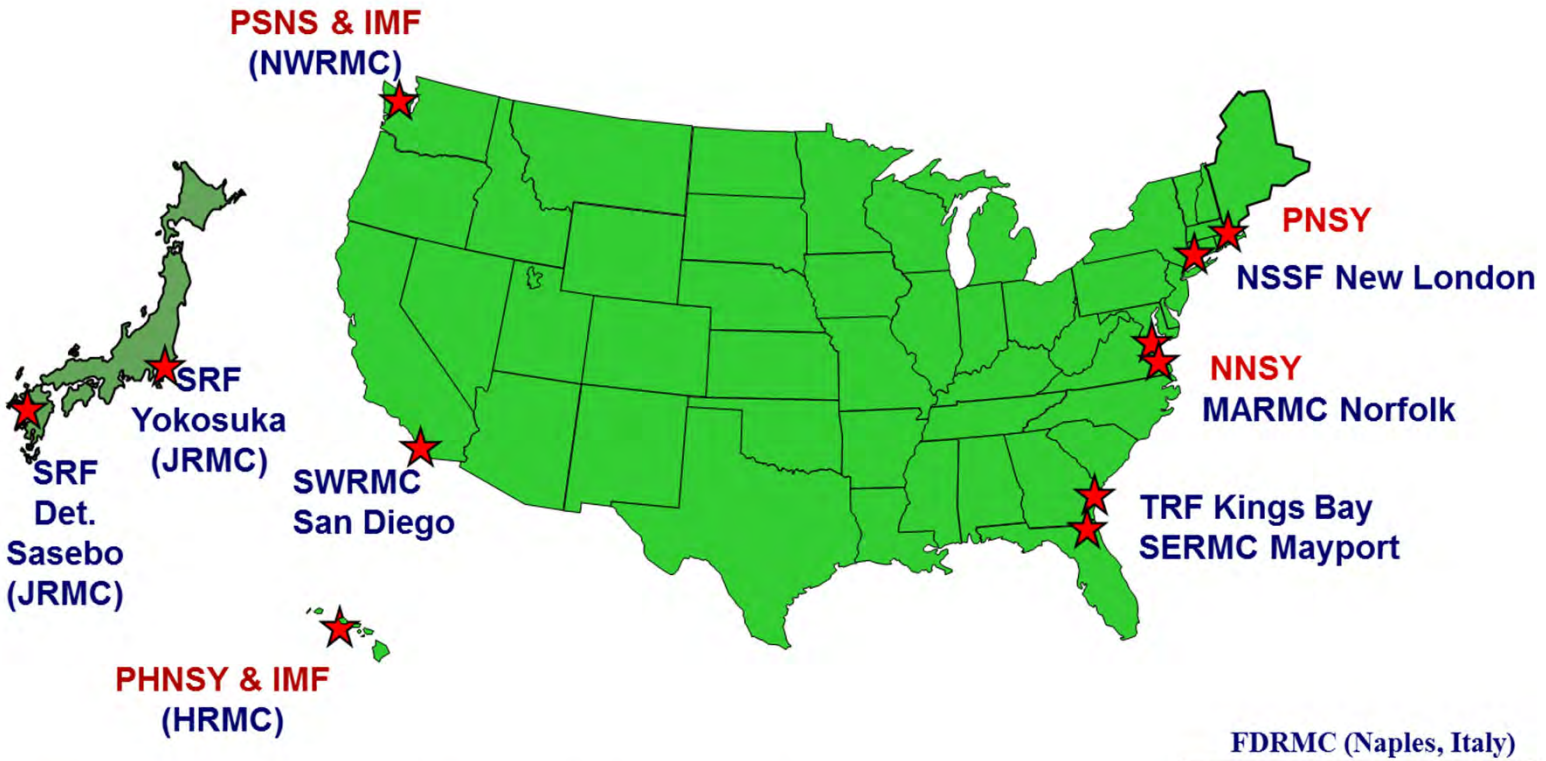
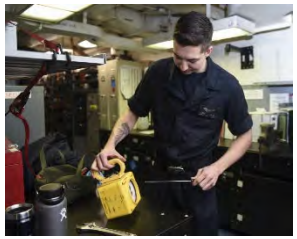
Shore Maintenance Activities



The maintenance activities not shown are the Repair Tenders (AS class) and the Supervisors of Shipbuilding Commands

Maintenance Organizations



- Organizational (O) Level:
  - Ship's Force
- Intermediate (I) Level:
  - Submarine tenders
  - Strike Force Intermediate Maintenance Activity
  - Naval Submarine Support Facility
  - Trident Refit Facility
- Depot (D)/Intermediate (I) Level:
  - Naval Shipyard & IMFs
  - U.S. Naval Ship Repair Facility
  - Regional Maintenance Centers
  - Supervisors of Shipbuilding (minor role)
  - Private shipyards (Contractors)
  - Some Warfare Center Divisions

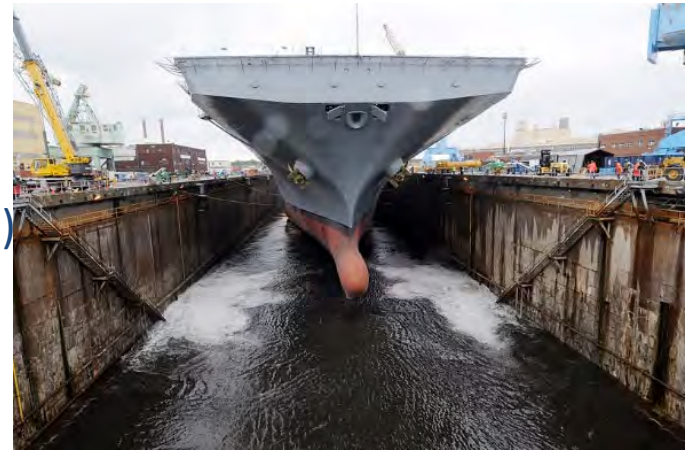
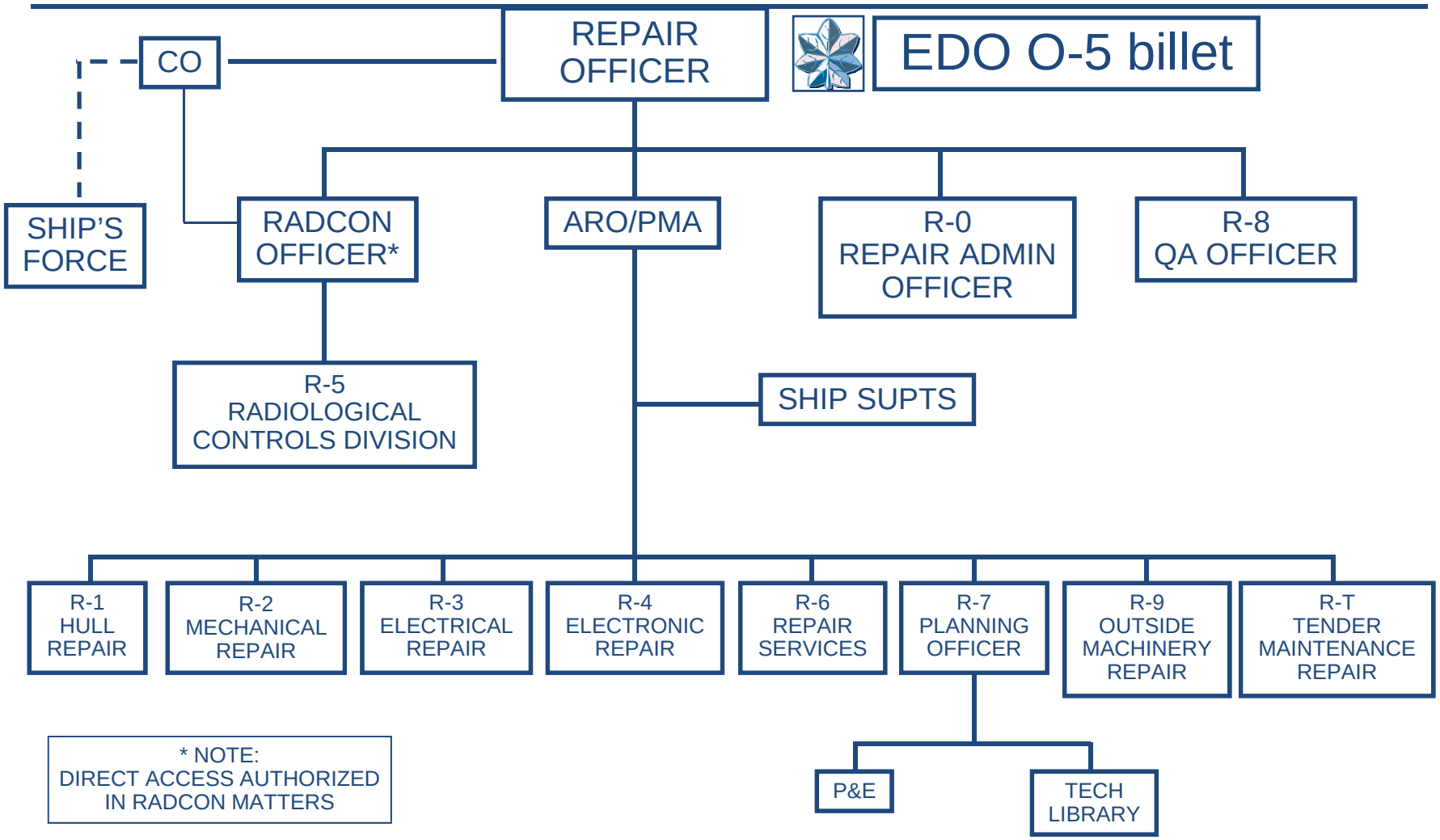


Photo sources:
dvids.net
navaltoday.com
commons.wikimedia.org

Afloat Maintenance Activities

- Submarine tenders (I-level):
  - USS EMORY S. LAND (AS 39) – Guam
  - USS FRANK CABLE (AS 40) – Guam
  - Product line:
    - Provide deployable intermediate level maintenance to submarines throughout Pacific Fleet
    - Repair battle damage and other casualties
    - Peacetime mission is to provide intermediate-level maintenance support in the Indo-Asia-Pacific region
- Strike Force IMA (SFIMA):
  - An afloat Intermediate Maintenance Activity (IMA) utilizing CVN/LHA/LHD and collective organic capability
  - Maximizes battle force self-sustainment while deployed

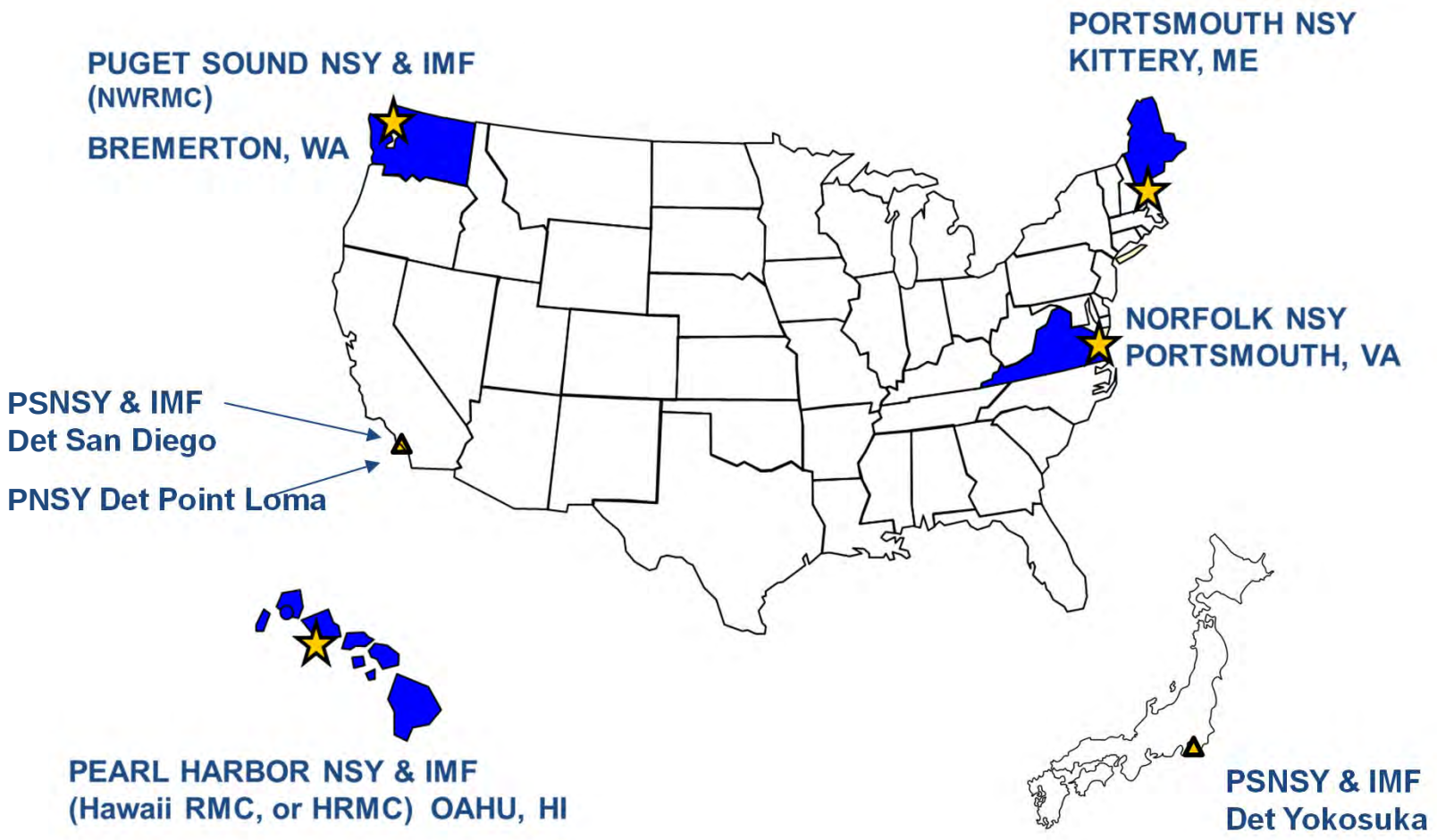
Tender Repair Organization



Submarine Support Facilities (I-level)

- Naval Submarine Support Facility (NSSF)
  - Product line:
    - To provide intermediate level maintenance to fast-attack subs, support vessels and service craft
  - Work closely with:
    - Regional Support Group (RSG), Groton
    - Nuclear Regional Maintenance Department (NRMD)
  - Comprised of about 800 military, civilians, and Contractors (from Electric Boat Corp)
  - Located in Groton, CT
- Trident Refit Facility (TRF)
  - Product line:
    - To provide industrial support for incremental overhaul and repair of SSBN/SSGN submarines
    - TRF provides I-level maintenance during refits (70 days U/W followed by a 35-day refit cycle)
  - Supported by NRMD
  - Replaces equipment using a rotable pool concept in the TRIPER (Trident Planned Equipment Replacement) program
  - Locations: Kings Bay, GA; Bangor, WA

Naval Shipyards



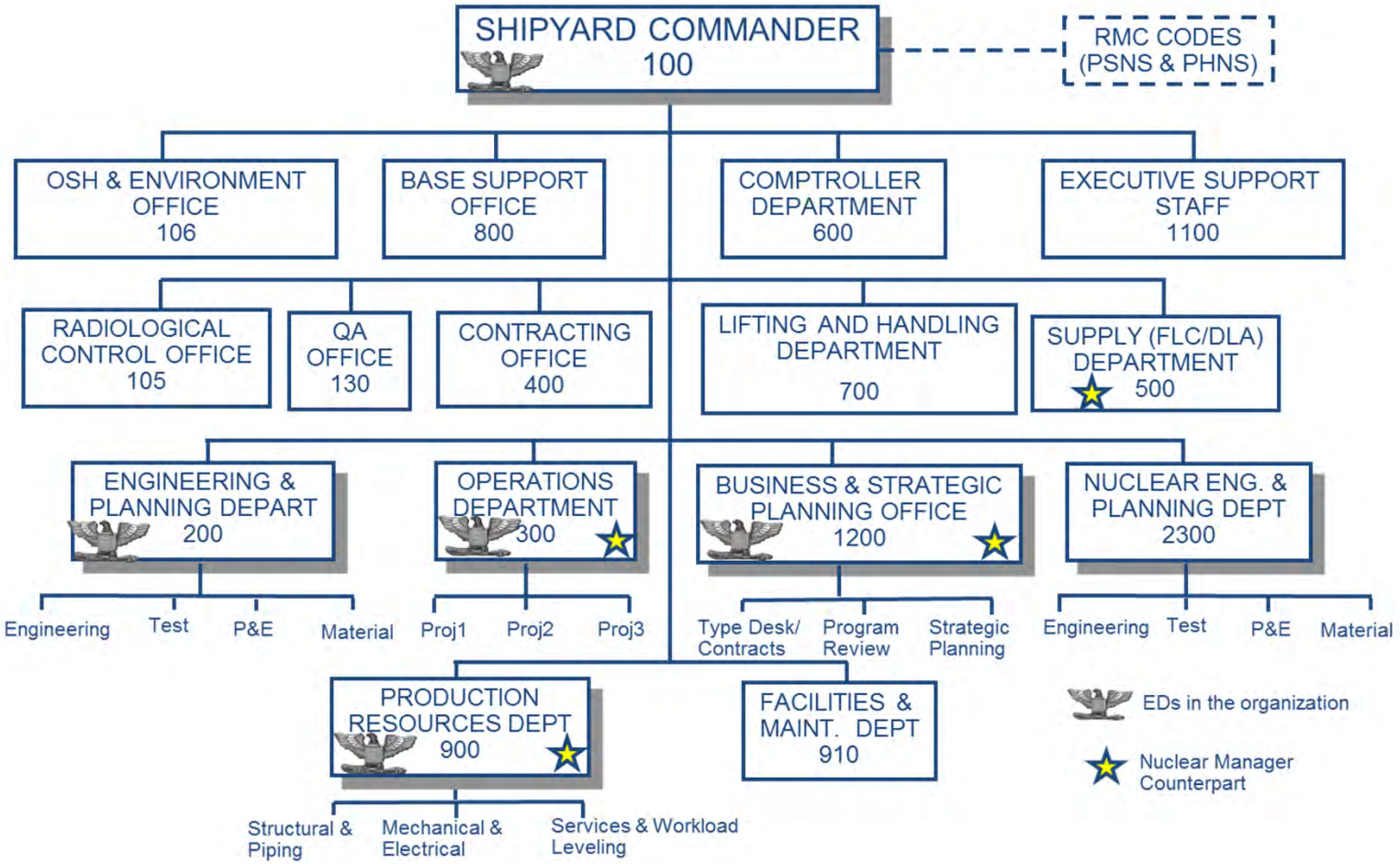
Naval Shipyards

- Mission: To provide affordable, timely, and quality depot level maintenance, modernization, inactivation, disposal, and emergency repair of carriers and submarines
  - Maintain waterfront areas which contain unique dry-docks, piers, and production shops
  - Provide a competitive base for ship repair
  - Retain a skilled, strike-free workforce
  - Support the Navy through organic resources and capabilities in nuclear and conventional ship repair and modernization
- The Naval Shipyards are depot-level activities and have incorporated regional intermediate-level maintenance functions
- "***Public Shipyards***"

Product Lines

- Puget Sound NSY & IMF
  - Submarine availabilities, refueling
  - CVN availabilities
  - Inactivation, Recycling & Reactor Compartment disposal (IRR)
  - Regional Maintenance Center functions
    - Surface ship availabilities
- Pearl Harbor NSY & IMF
  - Submarine availabilities
  - Regional Maintenance Center functions
    - Surface ship availabilities
- Portsmouth NSY
  - Submarine availabilities, defueling
- Norfolk NSY
  - Submarine availabilities, refueling, defueling, & conversions
  - CVN availabilities

Naval Shipyard Organization

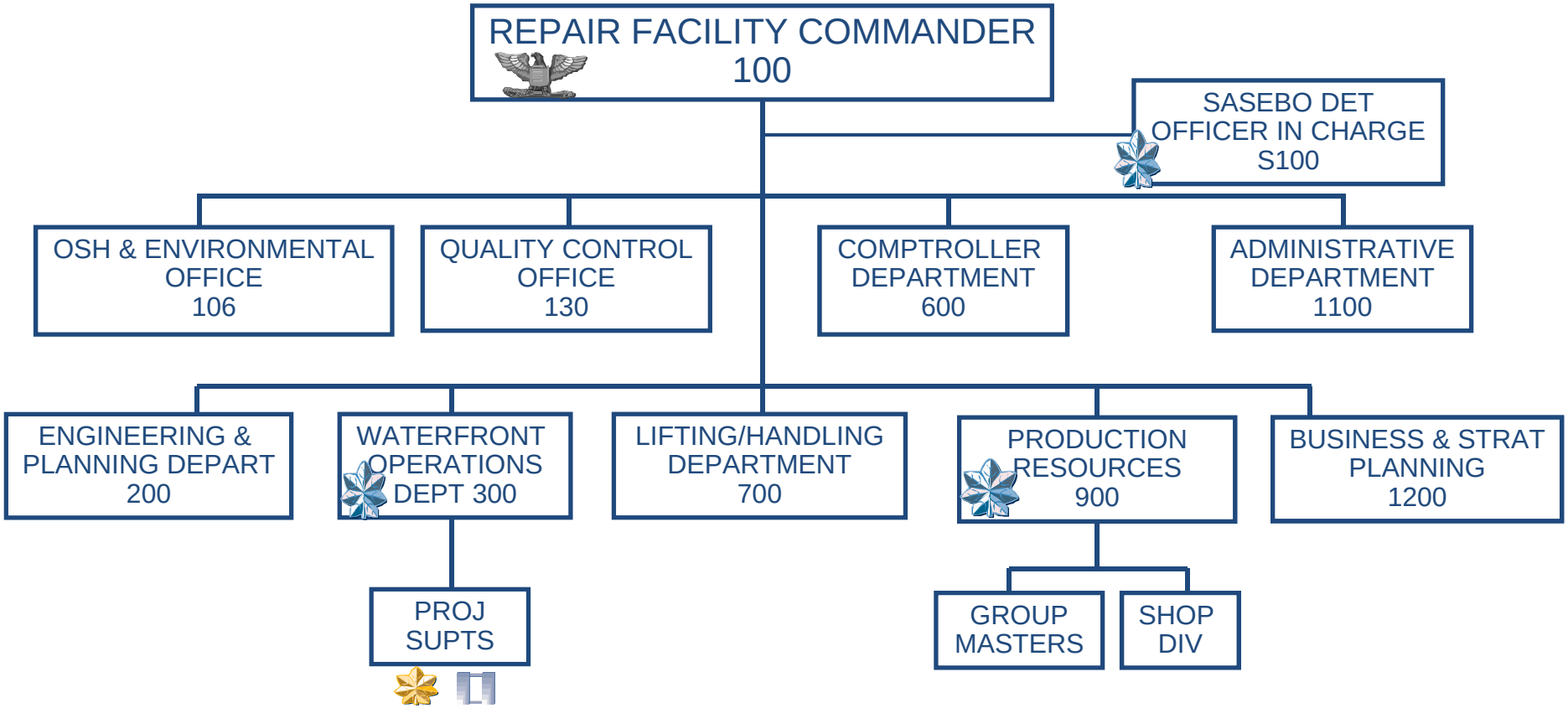


Ship Repair Facility

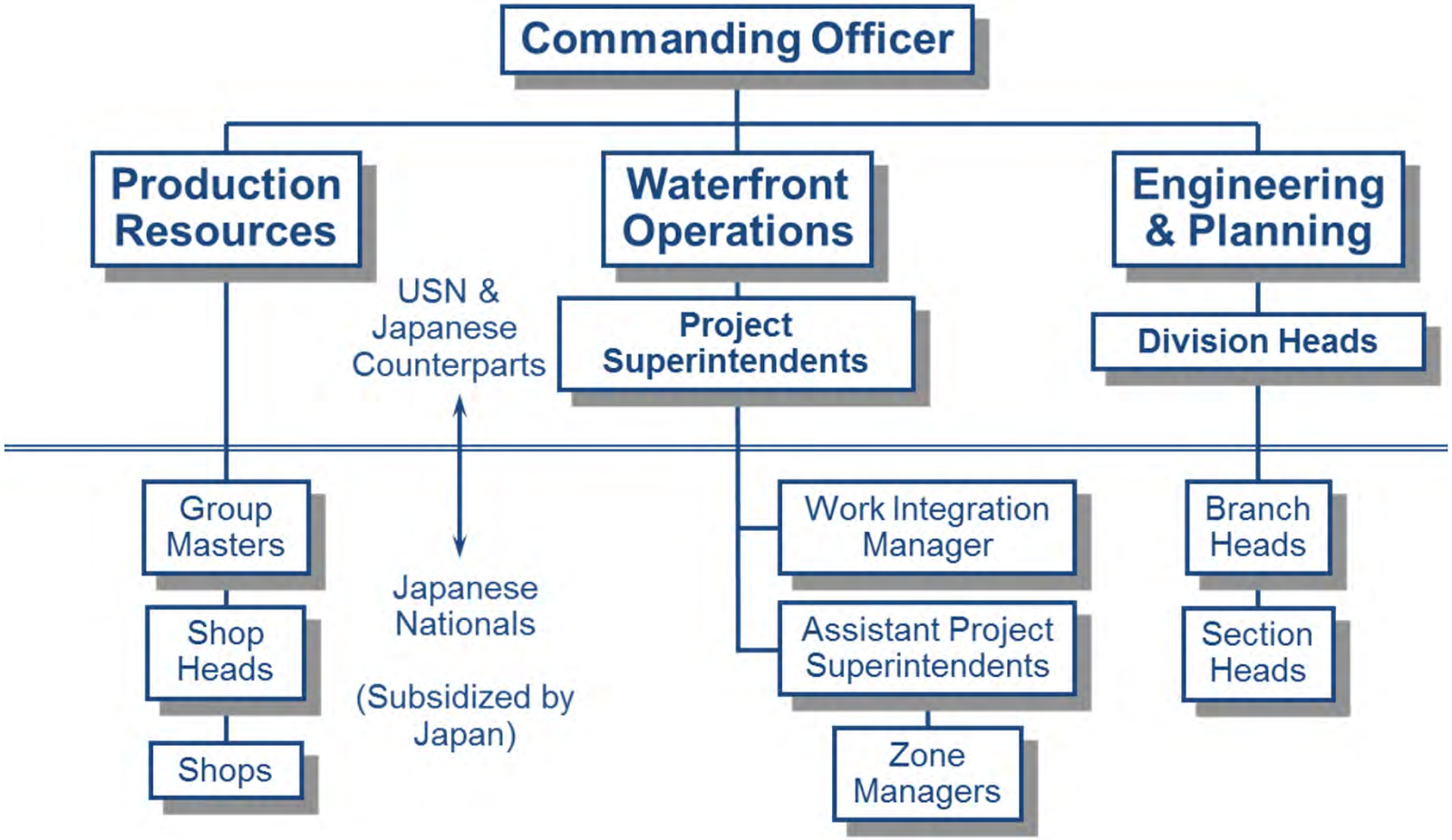
- U.S. Naval Ship Repair Facility (SRF) Yokosuka & Japan Regional Maintenance Center (JRMC) is a non-nuclear depot level facility
  - Services:
    - Naval Supervising Activity for C7F AOR
    - Planning and execution of I and D level availabilities (CNO, CMAV, CM, EM) (Yokosuka) by organic workforce
    - Planning and project management oversight of KTR-executed I- and D-level availabilities (CNO, CMAV, CM, EM) (Sasebo)
    - Combined USN and Japanese dive locker for underwater ship husbandry services
    - Fleet Technical Assistance
    - Assessments
  - Product Lines:
    - Yokosuka: 14 homeported ships (11 DDGs, 1 CGs, 1 LCC, 1 CVN)
    - Detachment Sasebo: 9 homeported ships (1 LHA, 3 LPD, 1 LSD, 4 MCMs)
    - Any 7th Fleet voyage/emergent repair as brokered by TYCOM

Mission: Keep the 7th Fleet operationally ready

SRF Organization



SRF Organization



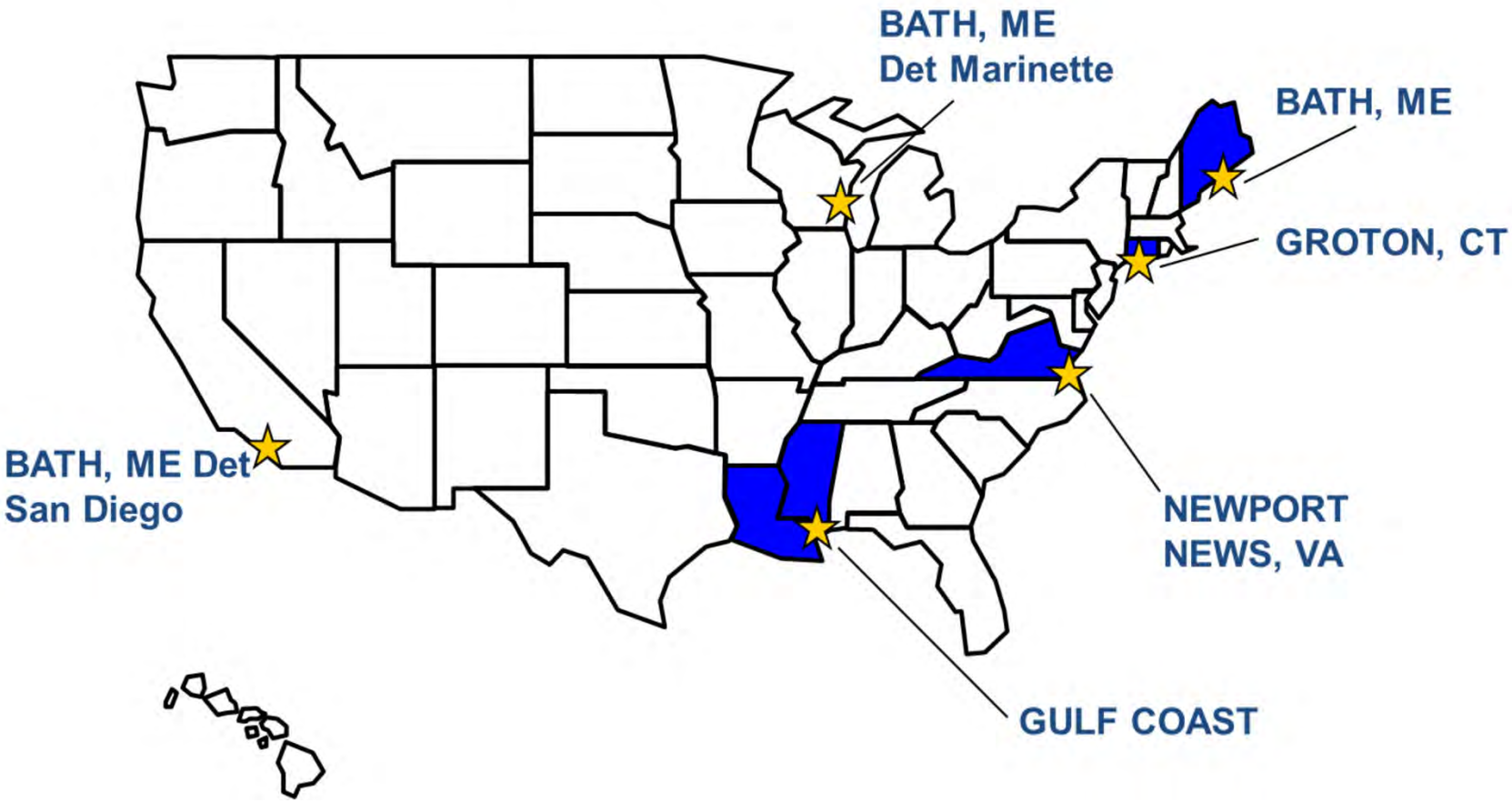
Overview

- Levels of maintenance
- Maintenance activities
- SUPSHIPs and RMCs
- Reporting chains, funding, and technical authority
- Workforce composition and training

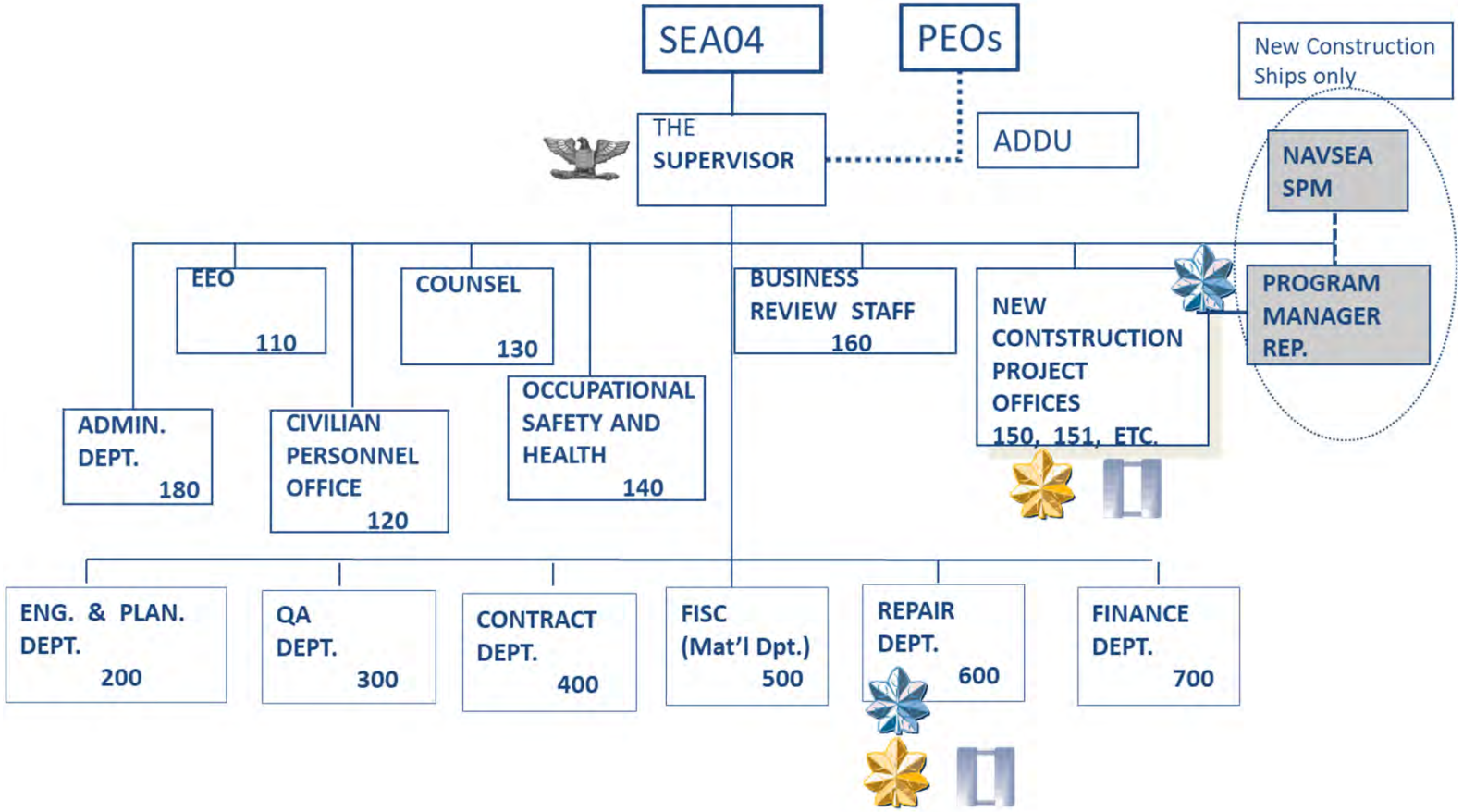
Supervisor of Shipbuilding (SUPSHIP)

- Primary mission: Administer Navy new construction, nuclear repair, and modernization contracts
  - Administrative Contract Officer (ACO) for all DoD shipbuilding and conversion (Procurement Contracting Officer (PCO) is SEA 02)
  - Manage project schedules and performance (Project Offices)
  - Engineering and technical oversight
  - Budget and administer funds
  - Manage and coordinate contracts
  - Monitor and evaluate logistics support
  - Conduct aircraft carrier Refueling and Complex Overhaul (RCOH) (Newport News Shipbuilding)
  - Experiencing a growing repair role at the nuclear SUPSHIPs

SUPSHIP Organization

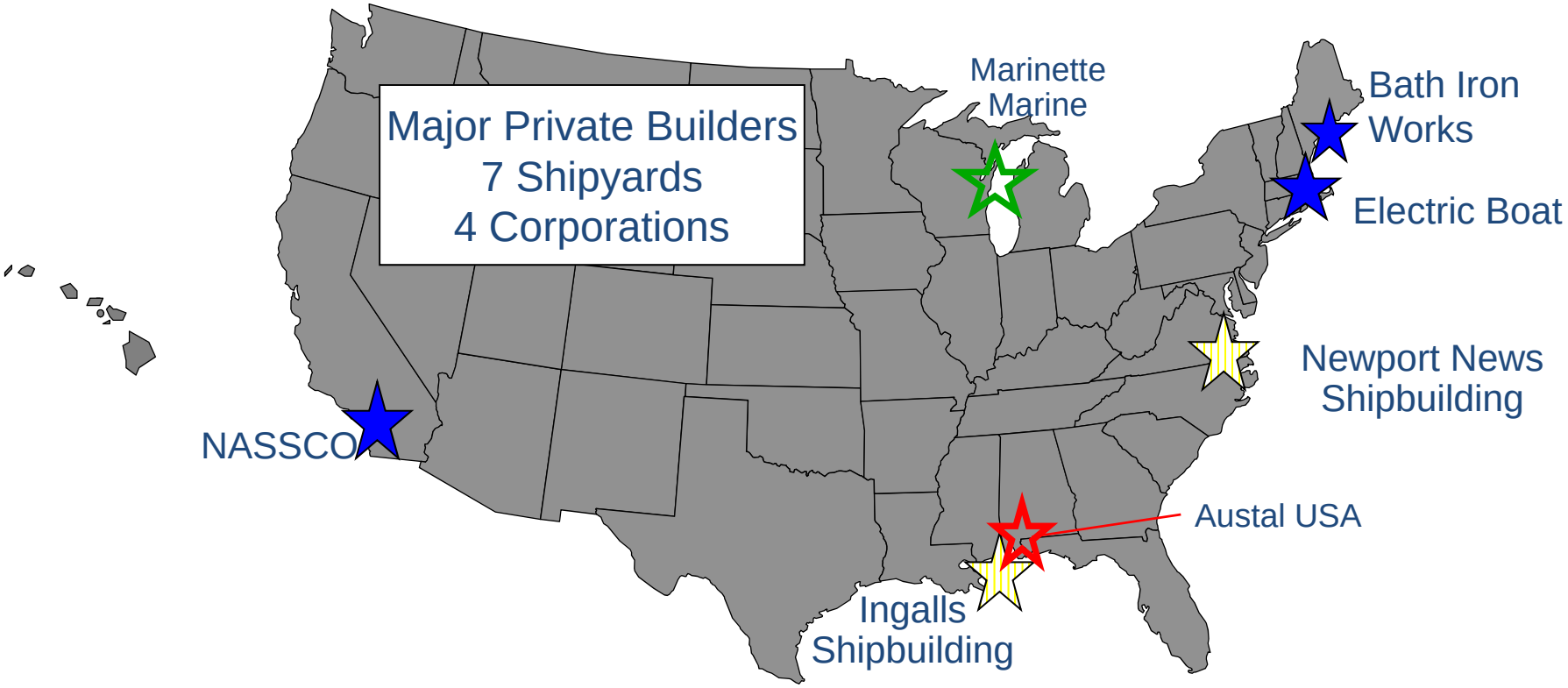


SUPSHIP Organization



Some SUPSHIPs also have a Code 900

Major Platform Private Shipyards



HUNTINGTON-INGALLS INDUSTRIES: NEWPORT NEWS SHIPBUILDING and INGALLS SHIPBUILDING

GENERAL DYNAMICS: NASSCO, BATH IRON WORKS, & ELECTRIC BOAT

FINCANTIERI MARINETTE MARINE: MARINETTE MARINE

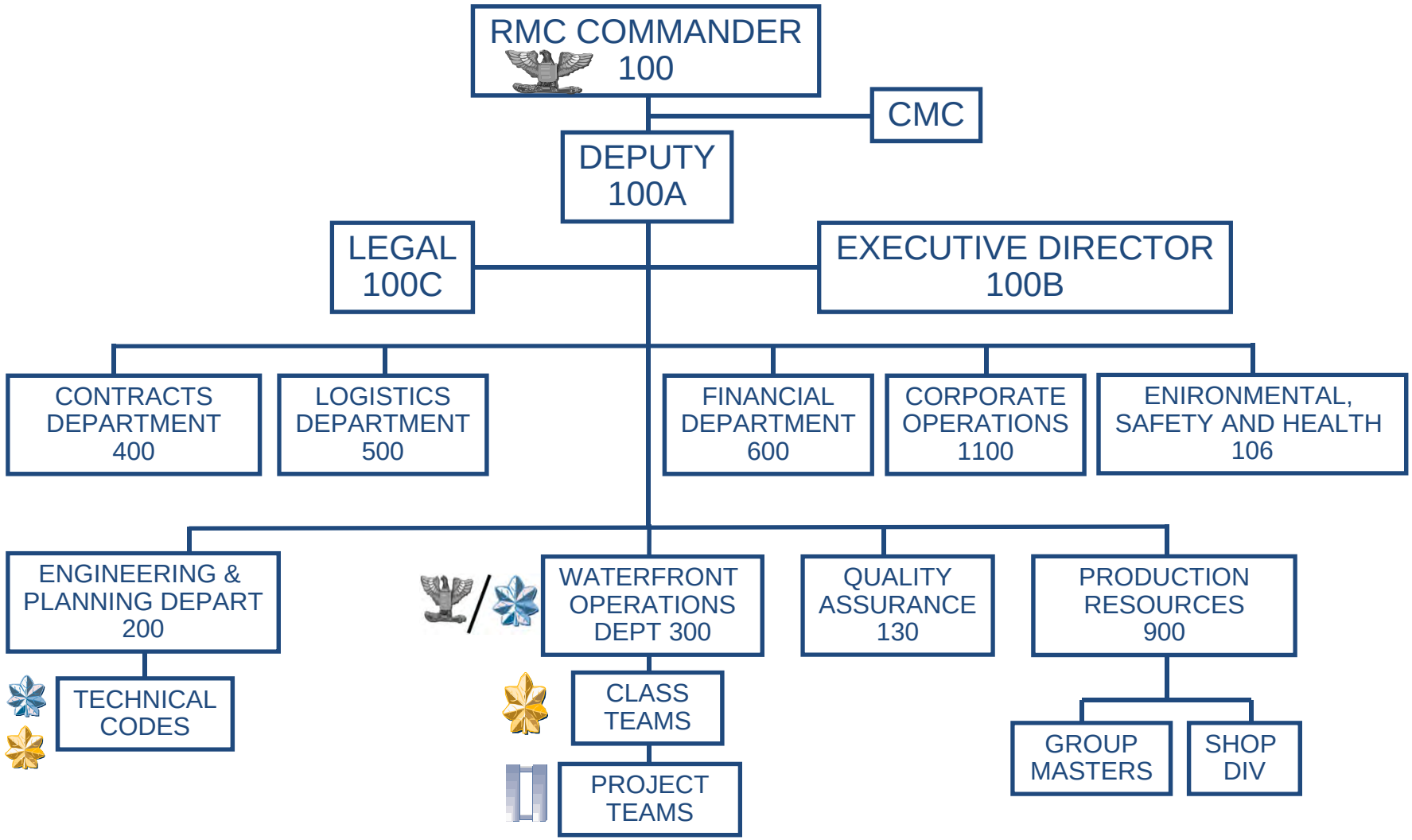
AUSTAL: AUSTAL USA

*Major platform only. KTR's for other platforms (small boats, barges, etc.) not included

Regional Maintenance Centers (RMCs)

- Mission:
  - D-level repair (project and contract management oversight of private-sector contractor companies performing the work)
  - I-level repair with RMC workforce, I-level workforce training
  - Fleet Technical Assistance (onsite and distance support)
  - Assessments (Total Ship Readiness Assessments (TSRA))
  - Underwater Ship Husbandry (UWSH) diver support
  - Regional calibration
  - Additional support (logistics support)

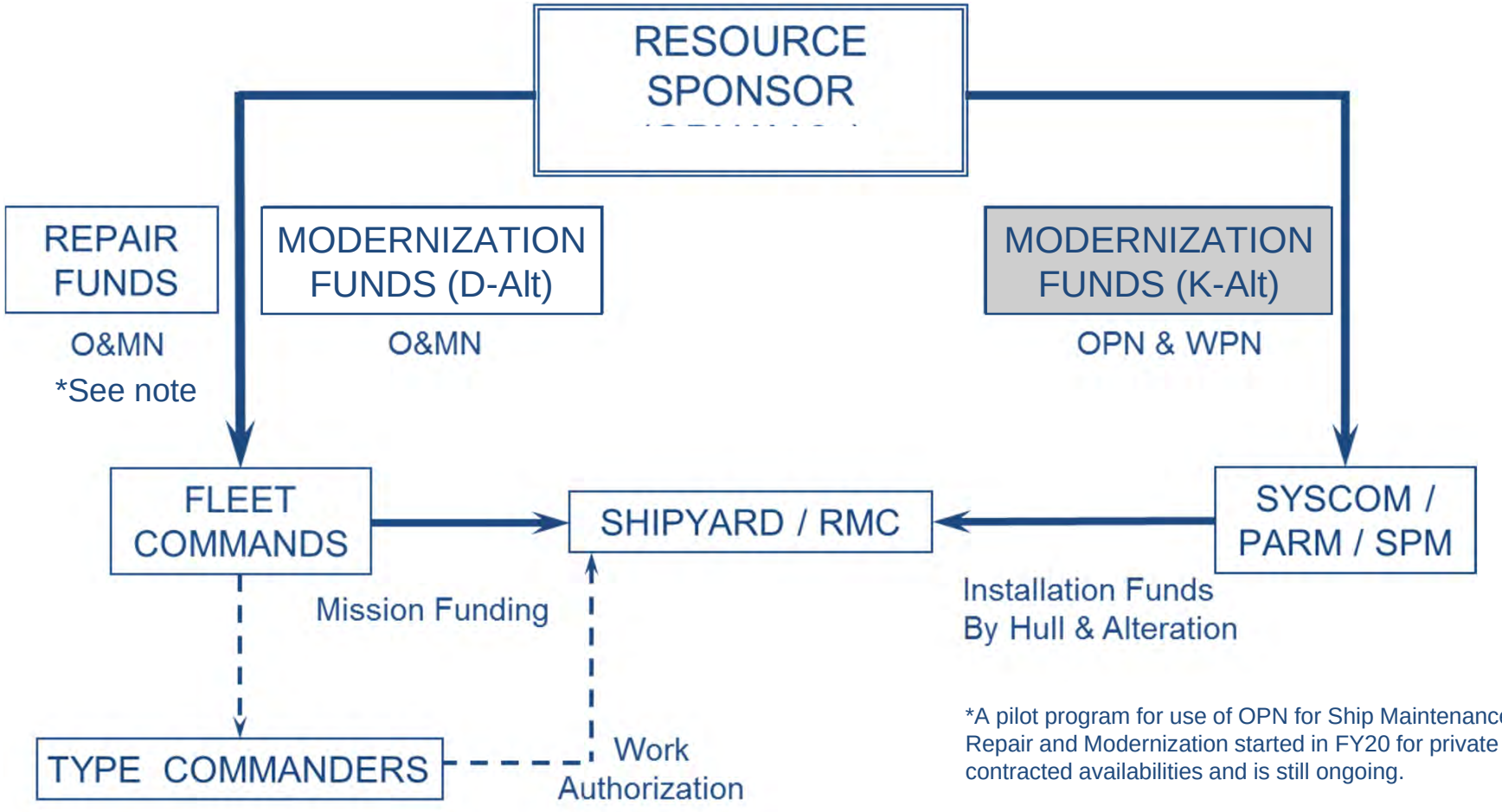
RMC Organization



Overview

- Levels of maintenance
- Maintenance activities
- SUPSHIP and RMC stand-up
- Reporting chains, funding, and technical authority
- Workforce composition and training

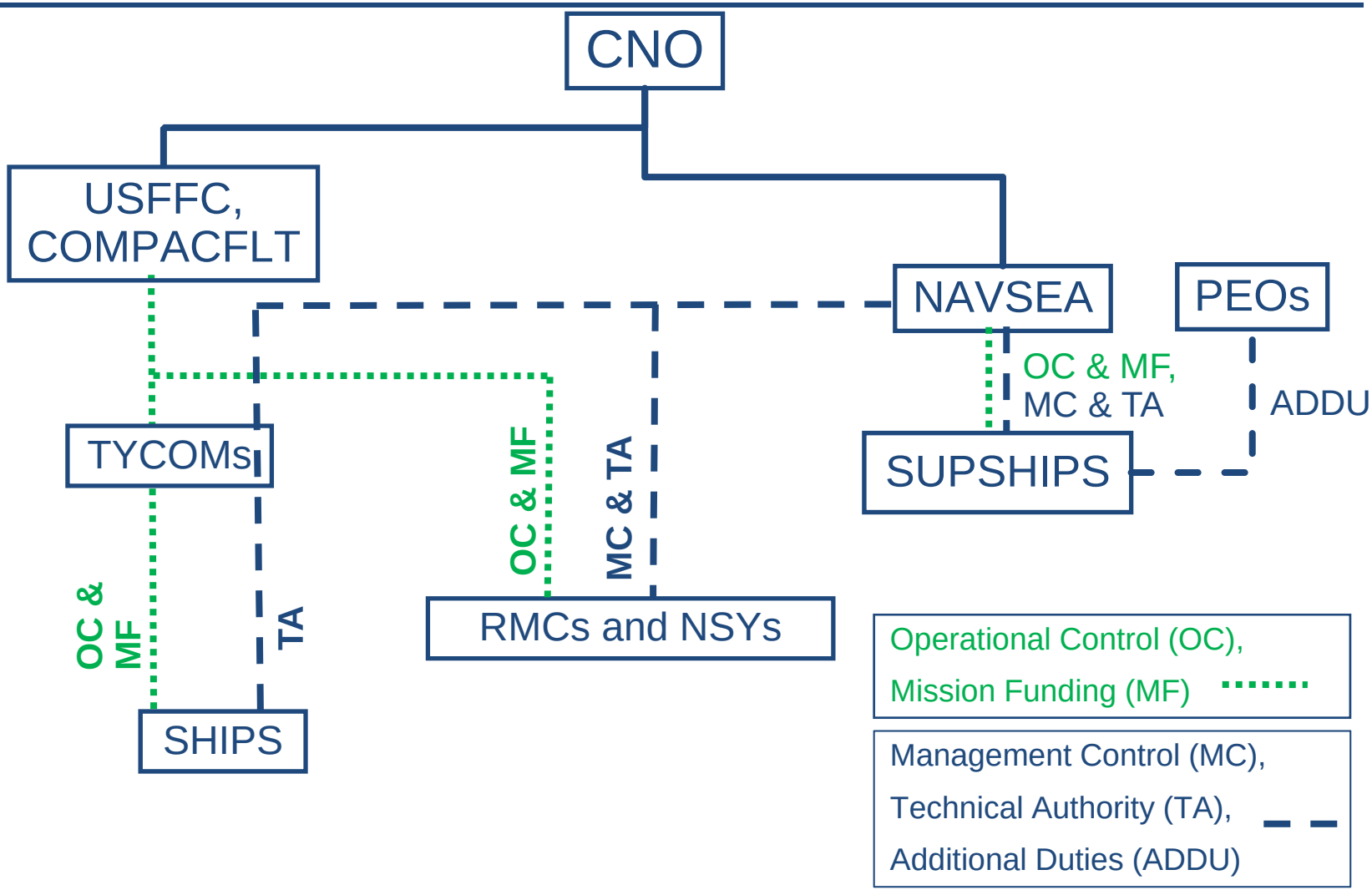
Funding for NSYs and RMCs



*A pilot program for use of OPN for Ship Maintenance, Repair and Modernization started in FY20 for private contracted availabilities and is still ongoing.

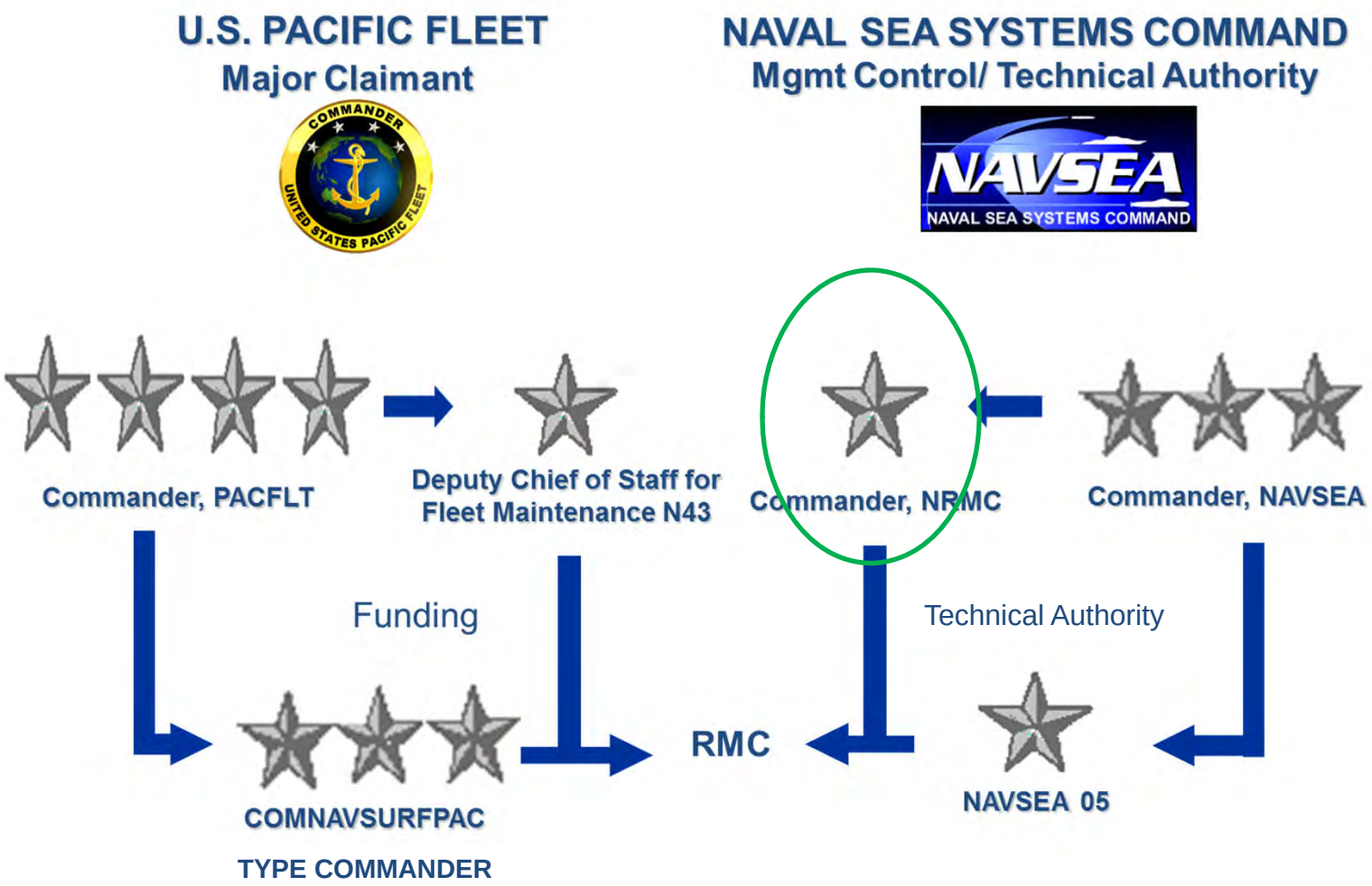
Different funding streams from different customers

Chains of Command



NSY Chain of Command

RMC Chain of Command



Responsibilities

- OPNAV (N83B)
  - Establish policy and procedures for ship maintenance
  - Shipyard man-day allocation
  - Schedule (publish) ship depot-level availabilities
- Fleet Commanders (via Fleet Maintenance Officers)
  - Assess material readiness
  - Maintenance funding
- TYCOM
  - Act as Fleet Commander's agents for assigned platform
  - Authorize work
  - Screen maintenance requirements to RMCs or Depots
  - Manage maintenance budget as assigned by Fleet Commander

Responsibilities

- NAVSEA 04/05
  - Develop technical requirements and engineering standards – Technical Authority
  - Approve maintenance strategies
  - Establish industrial activity operating and workload policy
- SEA 21/CNRMC
  - Integrates maintenance strategies, modernization plans, training and programmatic efforts
  - Overall in-service life-cycle management of surface ships
  - Primary technical interface with the fleet for modernization, maintenance, and inactivation

Overview

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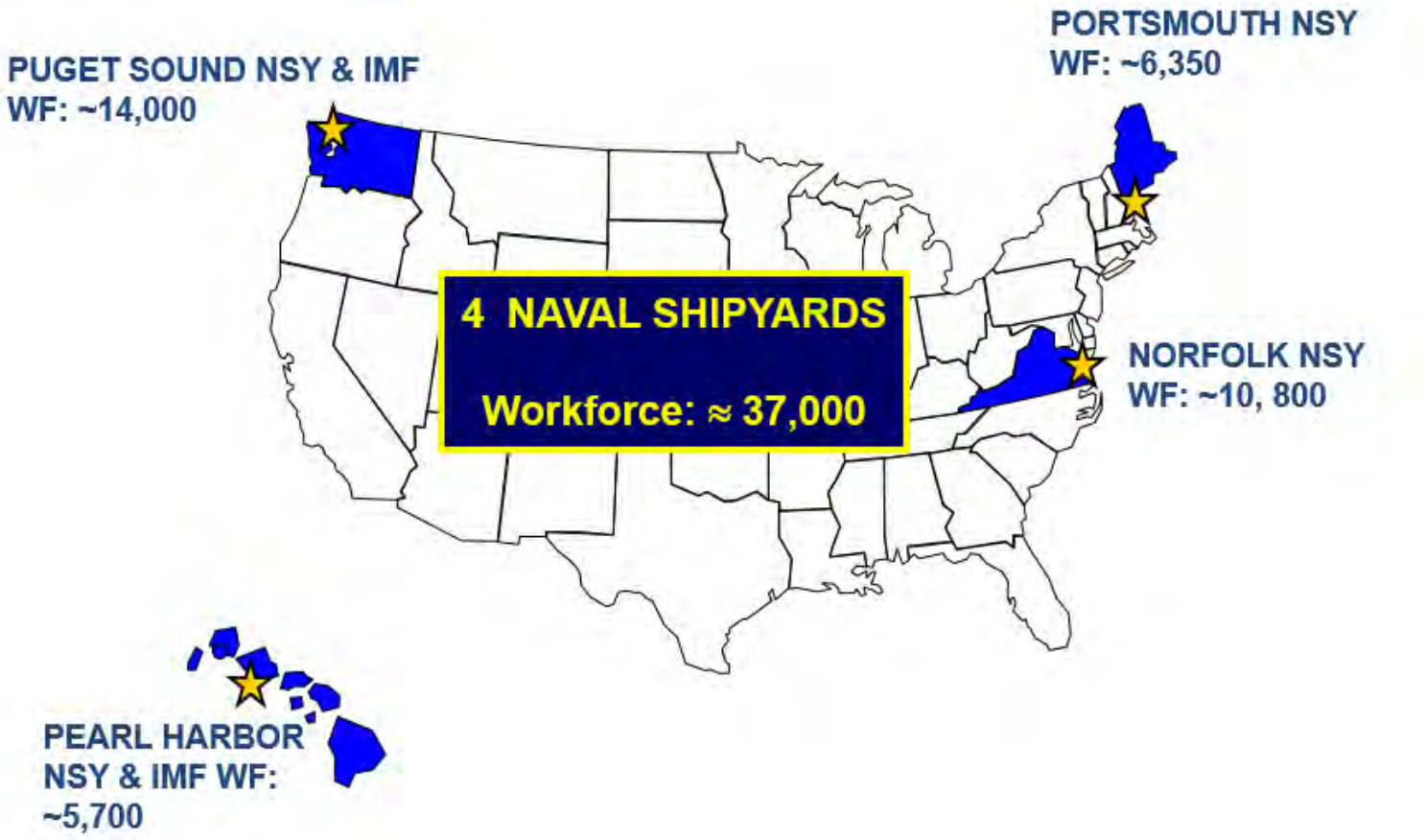
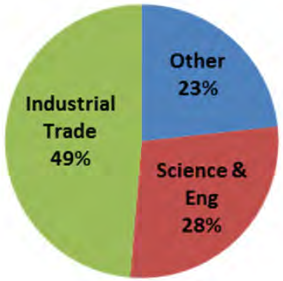
NSY Manning

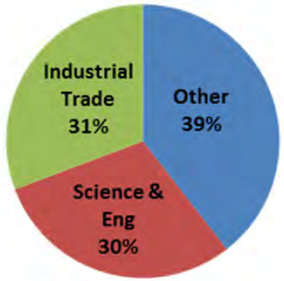

PUGET SOUND NSY & IMF
WF: ~14,000
PORTSMOUTH NSY
WF: ~6,350
4 NAVAL SHIPYARDS
Workforce: ≈ 37,000
NORFOLK NSY
WF: ~10, 800
PEARL HARBOR
NSY & IMF WF:
~5,700

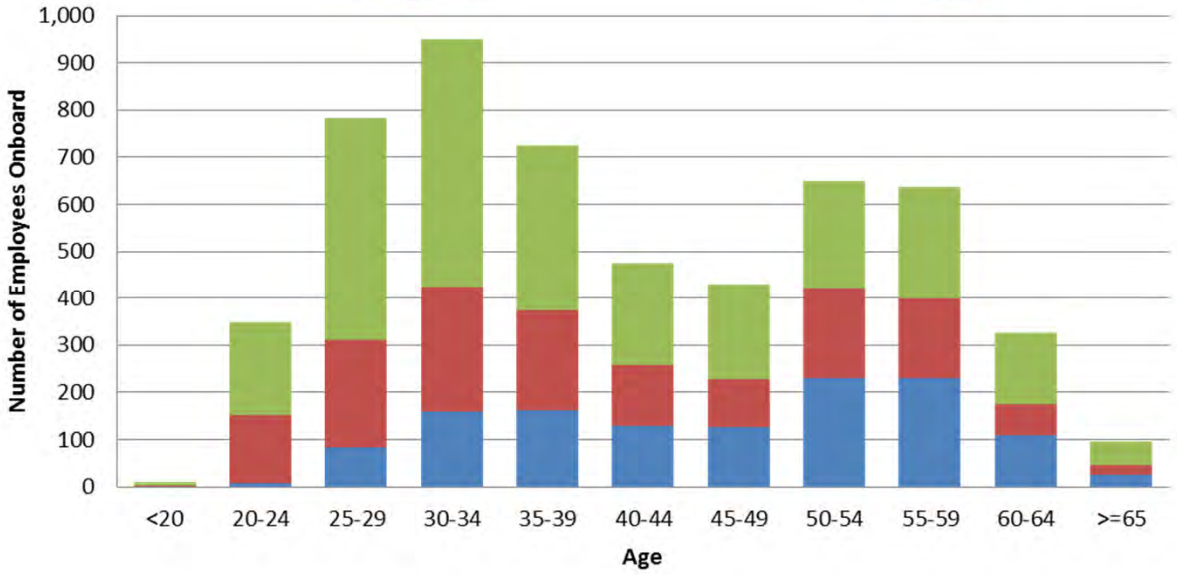
PNSY Workforce Demographics

Skill Mix of the Current Workforce (%)



Skill Mix of the Workforce Eligible to Retire (%)





8.0% of Total Workforce is Retirement Eligible

16.5% of Current Workforce will be Eligible by FY27

Number of Industrial Trade Employees: 2,644
Average Age: 39.4

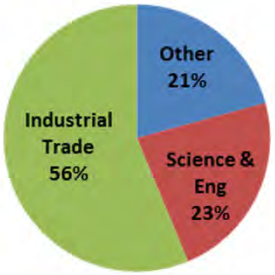
Number of Science & Engineering Employees: 1,526
Average Age: 40.0

Number of Other Employees: 1,265
Average Age: 46.3

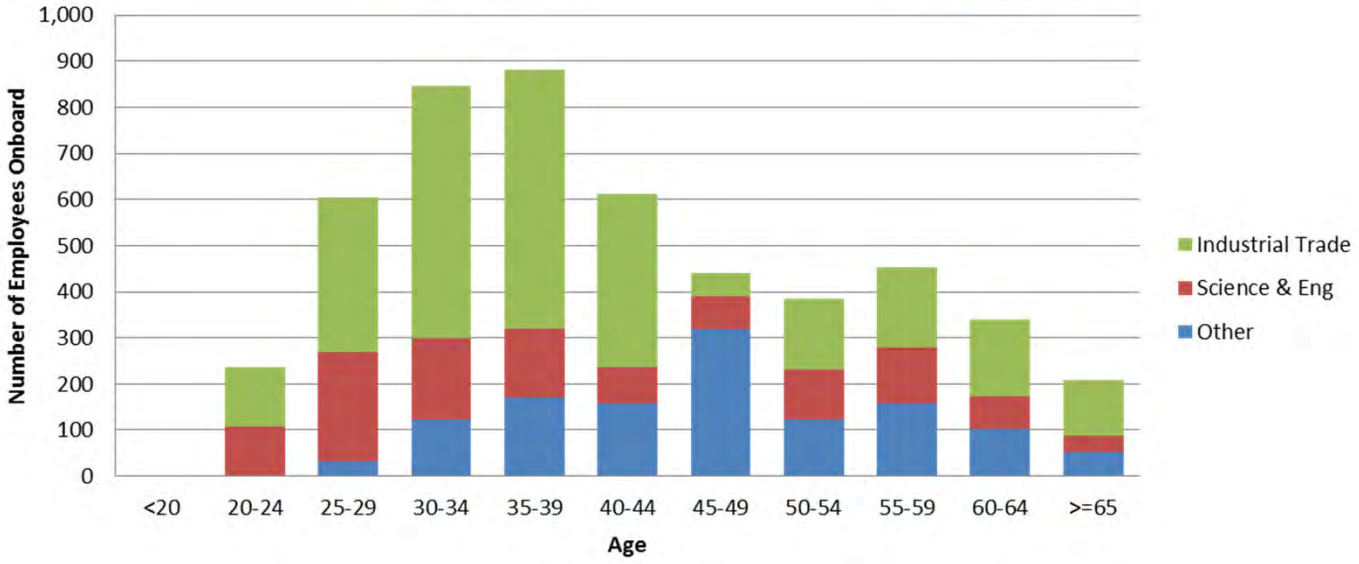
As of FY17 Q1, 40.7% of the workforce has ≤5 years of experience in the shipyard

NNSY Workforce Demographics

Skill Mix of the Current Workforce (%)



Skill Mix of the Workforce Eligible to Retire (%)



13.1% of Total Workforce is Retirement Eligible

19.9% of Current Workforce will be Eligible by FY27

Number of Industrial Trade Employees: 2,819
Average Age: 40.6

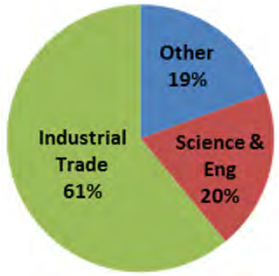
Number of Science & Engineering Employees: 1,151
Average Age: 39.9

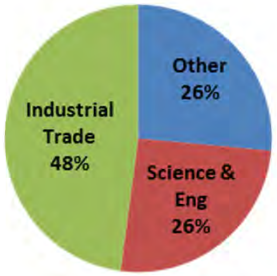
Number of Other Employees: 1,039
Average Age: 46.8

As of FY17 Q1, 46.2% of the workforce has ≤5 years of experience in the shipyard

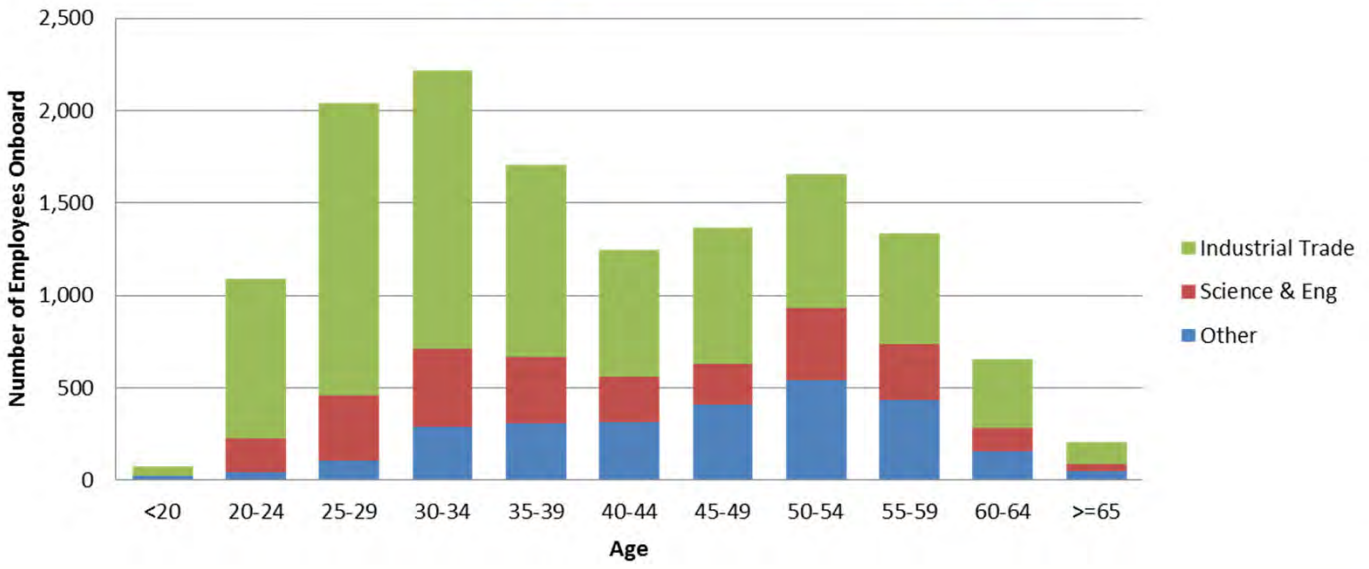
PSNS & IMF Workforce Demographics

Skill Mix of the Current Workforce (%)





Skill Mix of the Workforce Eligible to Retire (%)



5.2% of Total Workforce is Retirement Eligible

15.2% of Current Workforce will be Eligible by FY27

Number of Industrial Trade Employees: 8,286
Average Age: 38.1

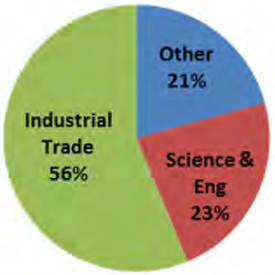
Number of Science & Engineering Employees: 2,656
Average Age: 41.2

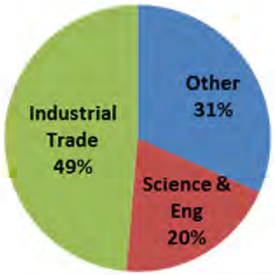
Number of Other Employees: 2,646
Average Age: 46.2

As of FY17 Q1, 43.3% of the workforce has ≤5 years of experience in the shipyard

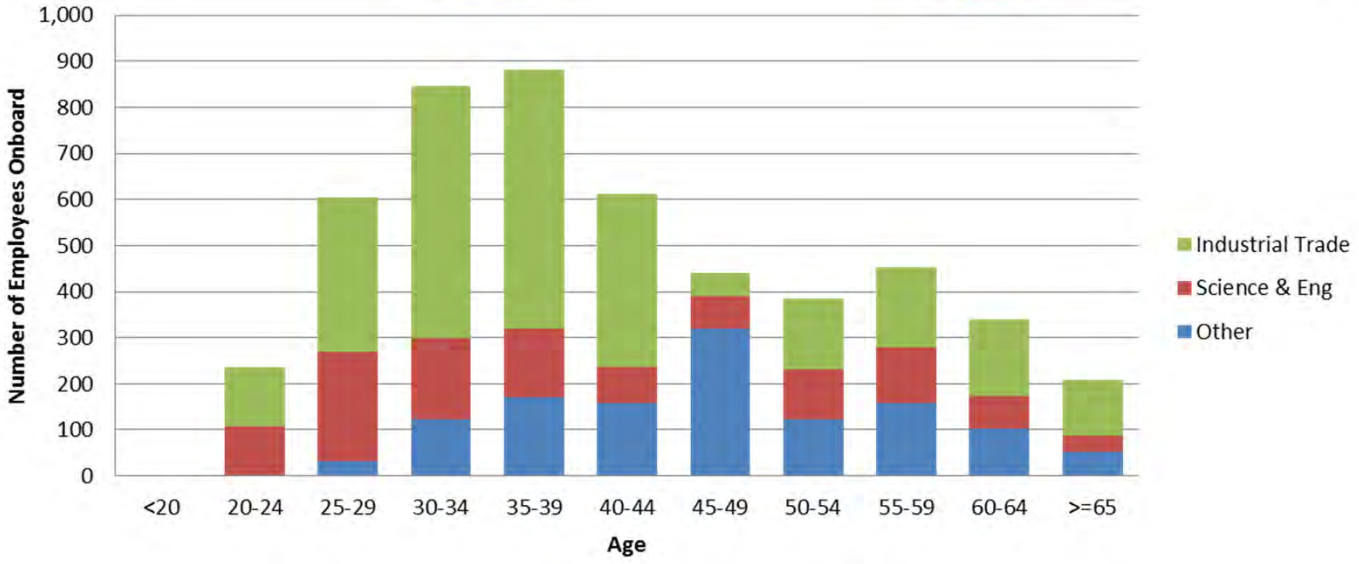
PHNSY & IMF Workforce Demographics

Skill Mix of the Current Workforce (%)





Skill Mix of the Workforce Eligible to Retire (%)



13.1% of Total Workforce is Retirement Eligible

19.9% of Current Workforce will be Eligible by FY27

Number of Industrial Trade Employees: 2,819
Average Age: 40.6

Number of Science & Engineering Employees: 1,151
Average Age: 39.9

Number of Other Employees: 1,039
Average Age: 46.8

As of FY17 Q1, 35.8% of the workforce has ≤5 years of experience in the shipyard

Summary

- What are the levels of maintenance?
- What are the Intermediate Maintenance Activities?
- What are the Depot level maintenance activities?
- What is the primary mission of the SUPSHIPs?