



## Surface Maintenance Engineering Planning Program (SURFMEPP)

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Presented to VSRA

PRESENTED BY:  
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SURFMEPP Commanding Officer

## Our Mission

We provide centralized surface ship life cycle maintenance engineering, class maintenance and modernization planning, and management of maintenance strategies.

## Our Vision

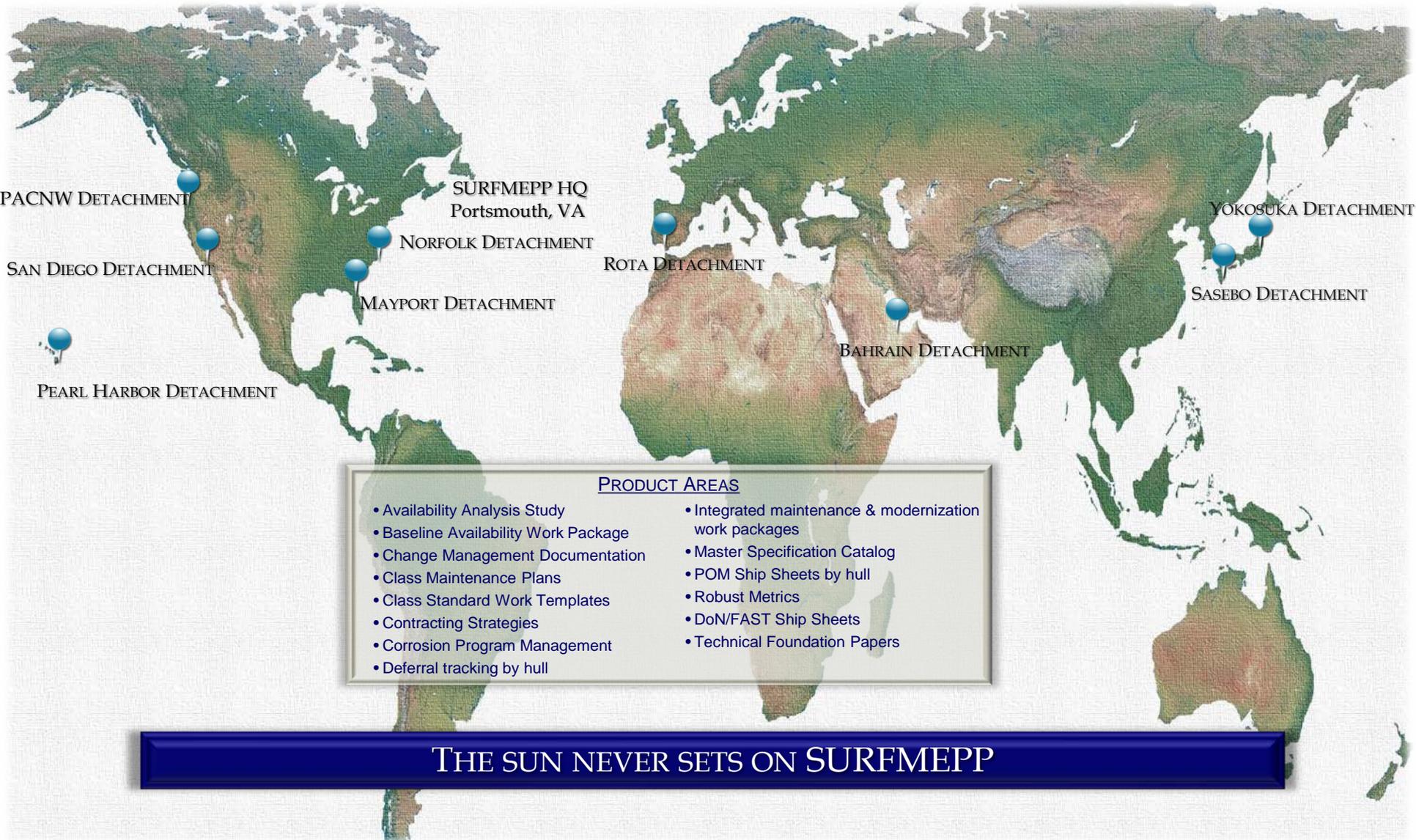
We are the nation's team accountable for surface ship life cycle maintenance engineering.

- We defend surface ship maintenance requirements that are aligned and responsive to OPNAV, Fleet, and NAVSEA priorities.
- We execute engineered life cycle analysis in support of Navy leadership decisions that impact both readiness and attainment of Expected Service Life (ESL).
- We ensure validated maintenance requirements are programmed and planned for execution.
- We will remain the conscience of surface navy maintenance.
- We will remain a world-class employer of choice that fosters an environment of innovative thinking, collaboration, and work life balance.





# SURFMEPP Global Footprint



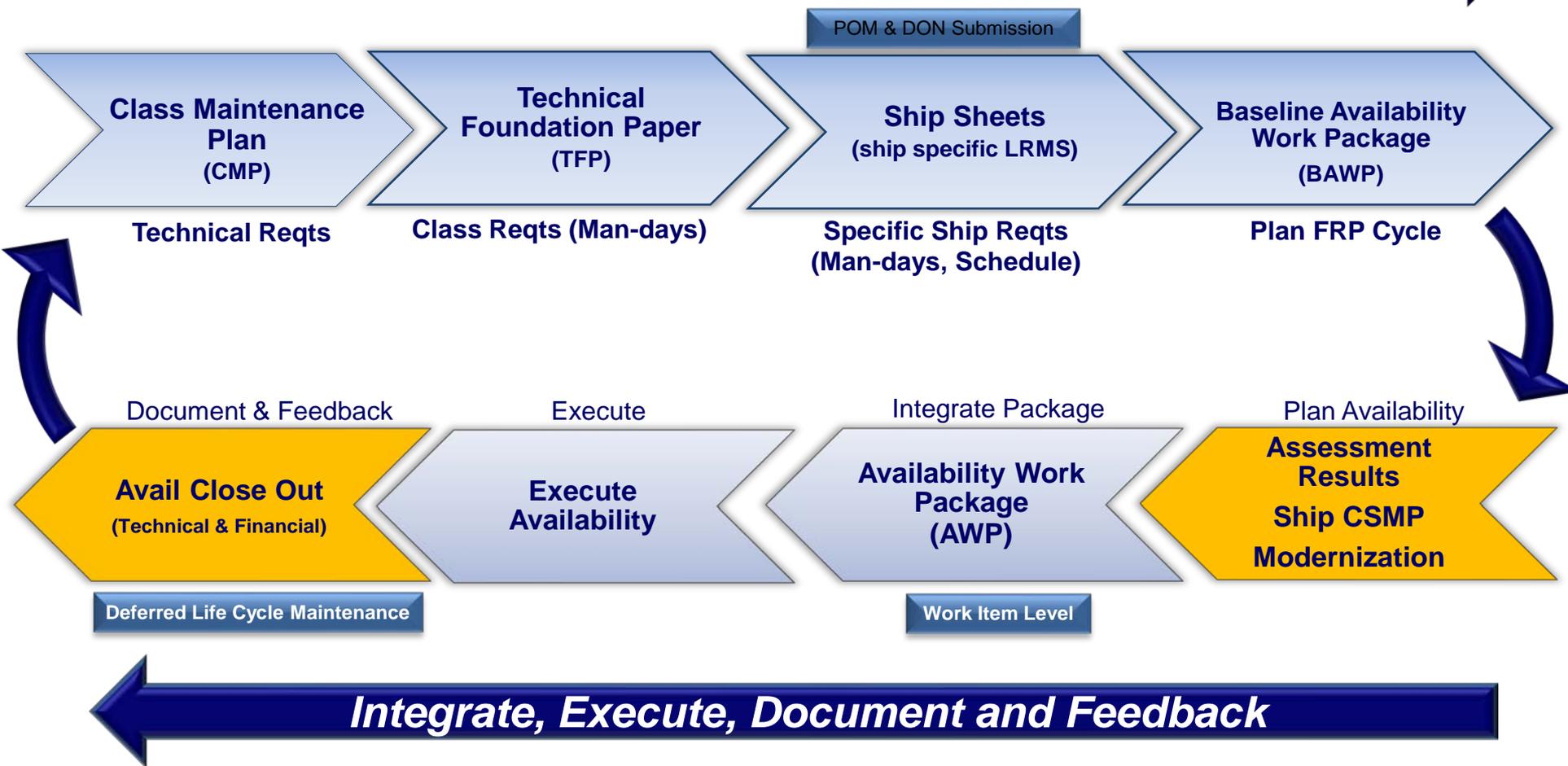
THE SUN NEVER SETS ON SURFMEPP



# SURFMEPP Product Value Stream



**Plan Long Range Requirements into Availabilities**





# Class Standard Work Templates

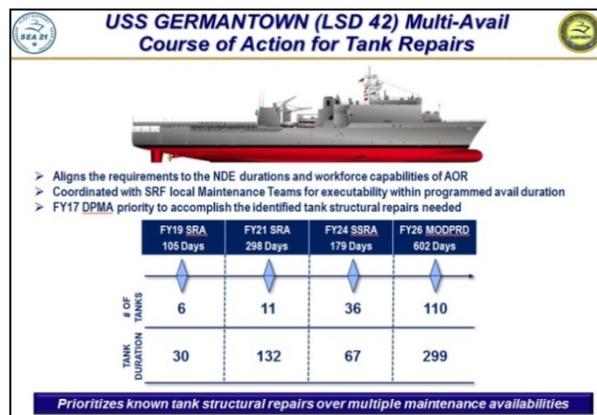


- Standardized references and requirements: JFMM 4E compliant
- Latest NAVSEA Standard Item and phraseology requirements
- Reduce work item development time: Incorporates lessons learned
- Contractually sound. Ready for maintenance team use.
- Improves cost return analysis for feedback into the budget
- Incorporates front loaded repairs to reduce growth work
  - 658 template improvements recommended since January 2017
  - 423 new templates developed for mandatory directive repair strategies
  - Examples include:
    - Intake/Uptake repairs
    - Cleaning and pumping of tanks/bilges
    - Tank base metal repairs
    - DDG51 Rudder shear wave test
    - Underwater hull repairs
    - Ventilation duct repairs
    - Flight Deck Tie Downs
    - LHD Side Port Door repair

***CSWTs reduce growth work and number of RCCs generated.  
Makes planning & execution easier.***

## Flight Deck Tie-downs

- Growth and New Work Item
- Developed Directive Front-loaded CMP Task and CSWT to repair 10% of tie-downs
- Combined with Non-Skid and RAST Maintenance strategies once per O-FRP cycle
- Applies to all Amphibs and Combatants



## Multi-Avail COAs

- Backlog of structural repairs in tanks
- Prioritized by risk to operations and structural failure
- Repairs executed over multiple CNO availabilities
- Developed with MT input to ensure capacity and capability

## Fuel Oil Service Tanks

- Originally not required to be coated
- Identified multiple hulls that had pitting at margin plates in tanks
- Worked with SEA05D to change requirement to now coat UHS
- Coating will mitigate pitting and holing risk



**Executable Avails. Reduces growth and new work. Supports on-time delivery.**

## POLYSILOXANE COATING



USS PONCE LPD-15 experimental coating application March 2006, "3 years of service"

Standard Topside Silicone Alkyd Coating "< 6 month"

Proof of Concept New Technology

- Directive CMP task for freeboard and mast each docking availability
- Offers longer service life (2 to 3x traditional LSA), requires less maintenance, cures faster when applied, needs fewer overall coats, and can be cleaned rather than repainted
- Reduces the gradual "pinking" of traditional silicone alkyd low solar absorption formulas

## COMPOSITES FOR "RUST RUNNERS"



- Successful corrosion control can be realized through the use of fiber reinforced composite materials
- Examples include: composite electrical enclosure and conduit terminals, vent screens, pipe hangers and deck grating



## CORROSION RESISTANT MATERIAL UPGRADES

- CRES hardware alternatives that mitigate rust staining and reduce sailor maintenance
- Local work template developed



## ULTRA HIGH SOLIDS "SINGLE COAT"

- Single coat paint improves on the traditional three-coat process by eliminating the time it takes each successive coat to dry.
- Provides corrosion-resistance, durability, and an improved appearance to each space in which it is applied

## PEEL & STICK NON-SKID

- Eliminates rust bleed-thru and provides additional protection from undercutting on-deck corrosion
- Engineered for interior/exterior use, mostly in critical areas where foot traffic is high
- Installation within Ship's Force capability



## FLUIDIZED BED COATINGS FOR WT DOORS, LOUVERS, AND CLOSURES

- Coats removable ship parts with efficiency and uniformity, > 9 years service life
- 6 minutes to coat a WT door compared to 40 for the current powder coating process



## LPD Bulwarks DMS



- Improperly installed drains and insufficient coating application
- Structural failures, running rust on ship exterior and water intrusion into adjacent compartments
- CMP Task for structural repair and preservation with UHS coating every docking availability

## DDG Struts DMS



- Significant pitting on struts
- Area of growth work during availabilities
- CSWT / CMP task front-loaded clad weld and weld seam repairs every docking availability

## DDG Intakes and Uptakes DMS



- High growth and new work
- Not easily accessible and challenging geometry
- CMP task front-loaded structural repairs and UHS coatings
- Reduces growth work and risk to avail duration by better Advanced Planning

## Tank and Void Maintenance



- The largest cost, integration and avail schedule driver
- Periodic surveys aligned with front-loaded mandatory CMP repair tasks
- Considers avail type and tank location (docking-inner-bottom tanks)
- CSWT directs repair and preservation work at integrated engineered intervals

## Polysiloxane Cleaning Kits



- Kits and NSNs developed to order for ships force
- Reduces the amount of paint on the hull and mast by cleaning the Polysiloxane vice painting
- CoP worked to procure initial kits for each ship with combined SEA21, SURFMEPP and CNRMC effort

## Frontloaded Tasks



- Included structural items into the tank advanced planning process
- Frontloads a historical average for clad welding, plate and stiffener repairs
- Reduces growth and new work in execution
- Reduces risk to duration

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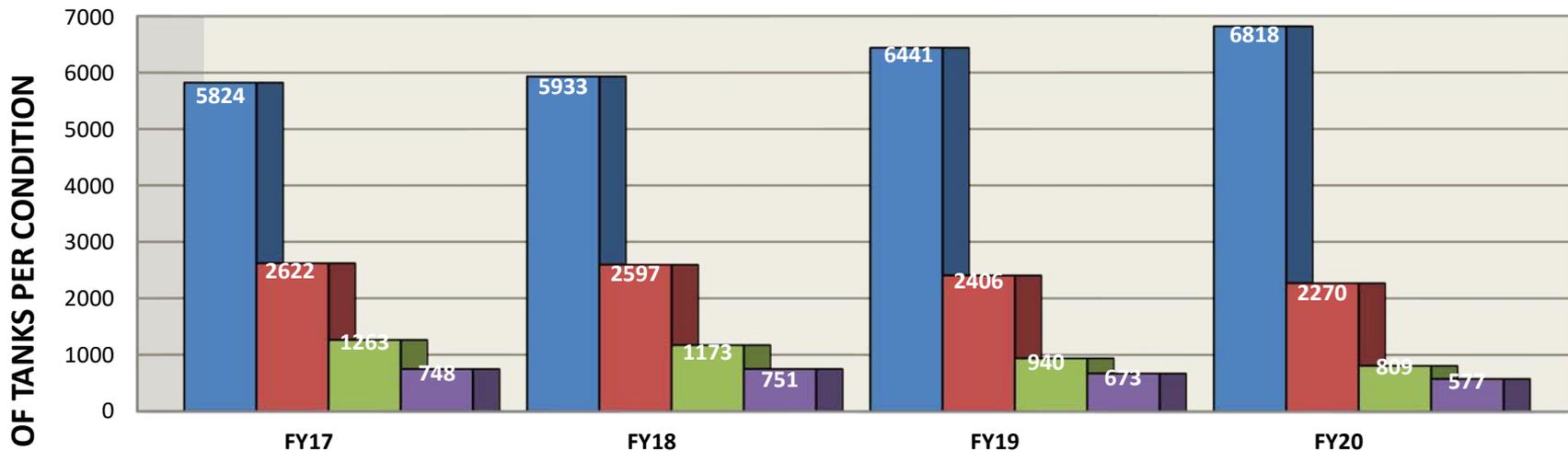
## Fluidized Bed Coatings



- Coats removable ship parts with efficiency and uniformity (dipped)
- Process proven to attain >9 years service life
- Reduces maintenance of critical closures (QAWTDs/Scuttles)
- CMP and CSWT tasks to support critical closure coating
- Larger louvers continued remediation in Canada

# Tank and Void FY Projections

## TANK COATING CONDITION PROJECTIONS



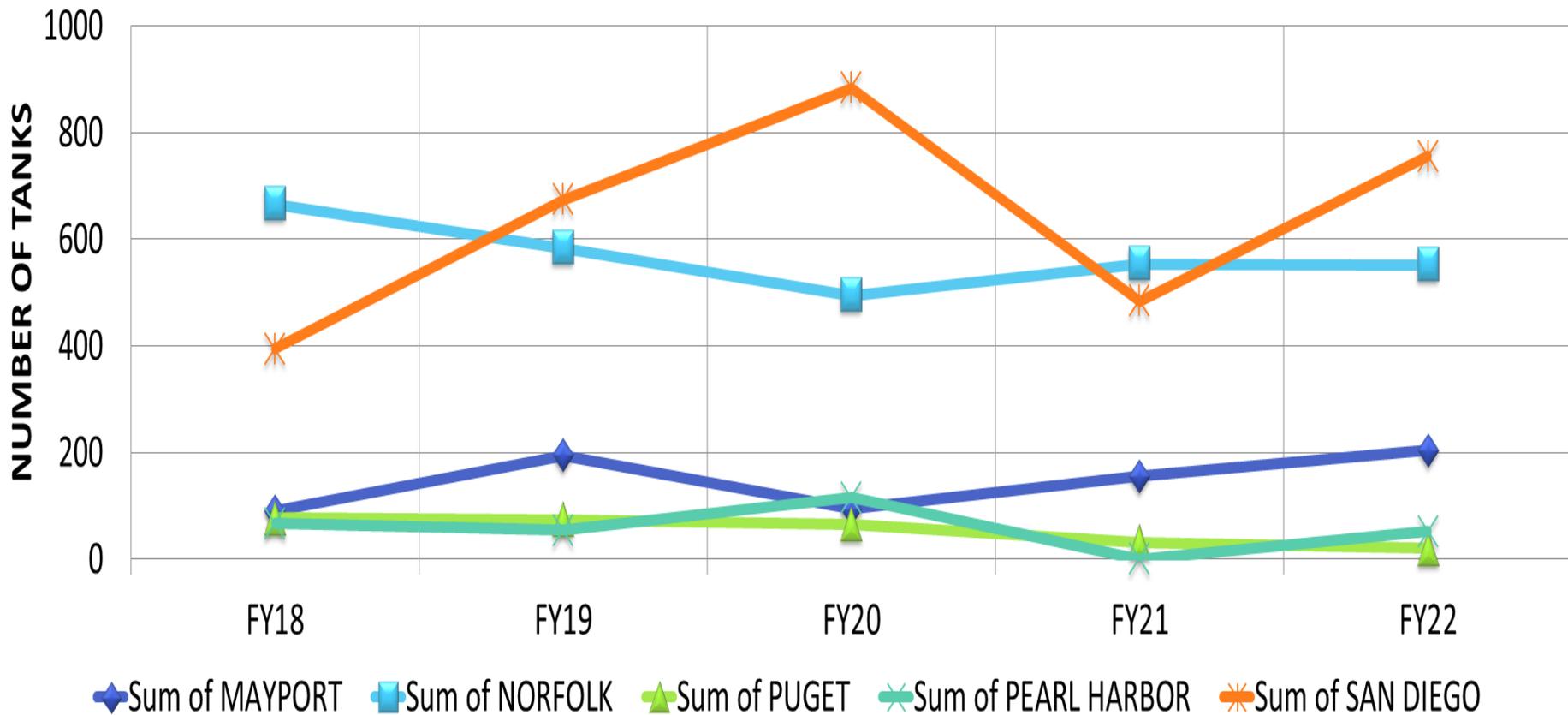
	FY17	FY18	FY19	FY20
■ P1	5824	5933	6441	6818
■ P2	2622	2597	2406	2270
■ P3	1263	1173	940	809
■ P4	748	751	673	577

### Key Messages and Takeaways

- Metric includes coating aging factor and applies degradation curves to accurately project future tank conditions.
- Considers avails scheduled and avail types to determine when tanks will be reset and applies reset to the projection model (docking avails will have more resets of inner-bottom P3 and P4 tanks)
- Model projections can be analyzed at a Class/Hull/AOR granularity level to better determine projected workloads
- Improves POM submission process and Advance Planning accuracy by projecting requirements in out years

**Tank coating demographics based on 75% probability of being in projected condition**

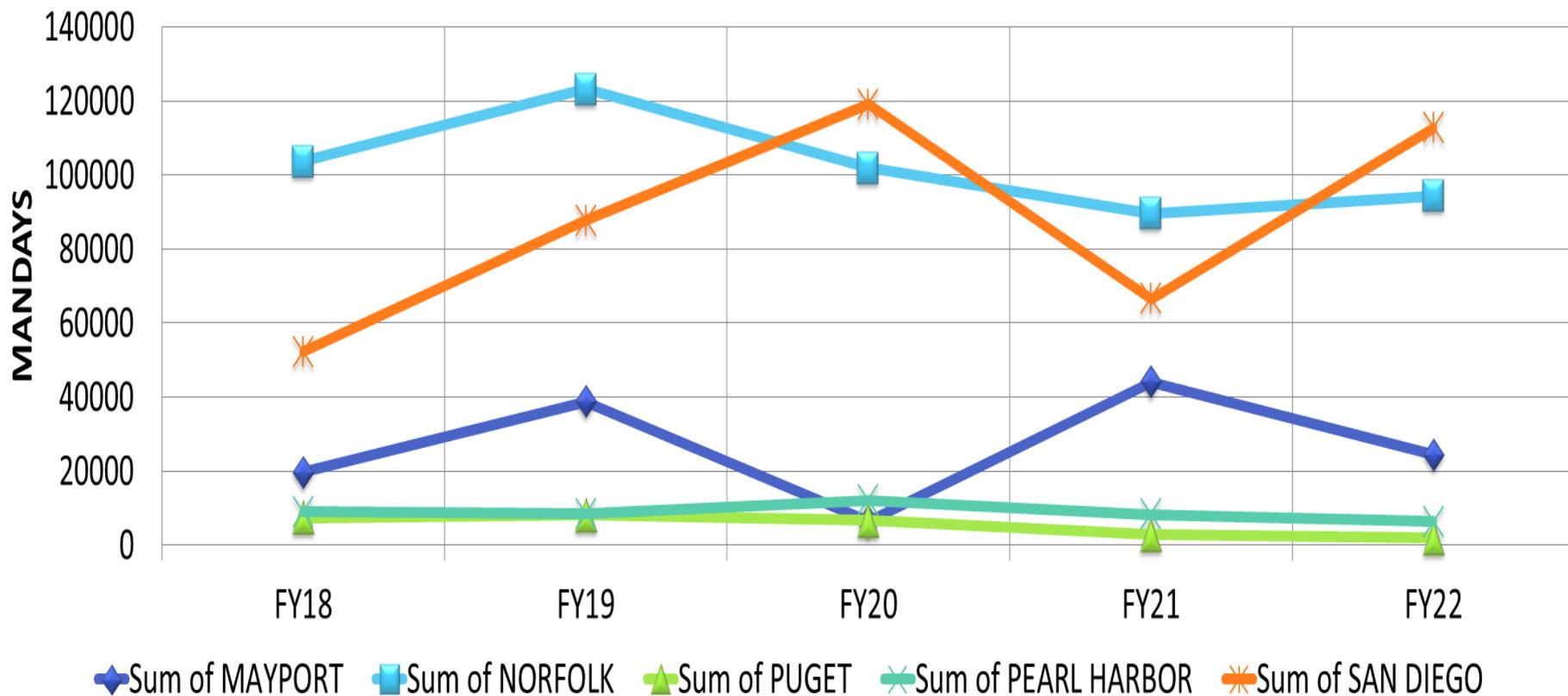
## WORKLOAD FORECAST FY18 - FY22 FOR SURFACE NAVY TANKS AND VOIDS



**SURFMEPP can now predict T&V trade level workloads by location and year.**

# Tank and Void MDY Forecast CONUS

**WORKLOAD FORECAST FY18 - FY22 FOR SURFACE NAVY TANKS AND VOIDS**



***SURFMEPP can now predict T&V trade level workloads by location and year.***



# MARMC Private Sector Workload Forecast with MOD estimates (No AIT) FY17-FY20 As of 21 JULY 2017

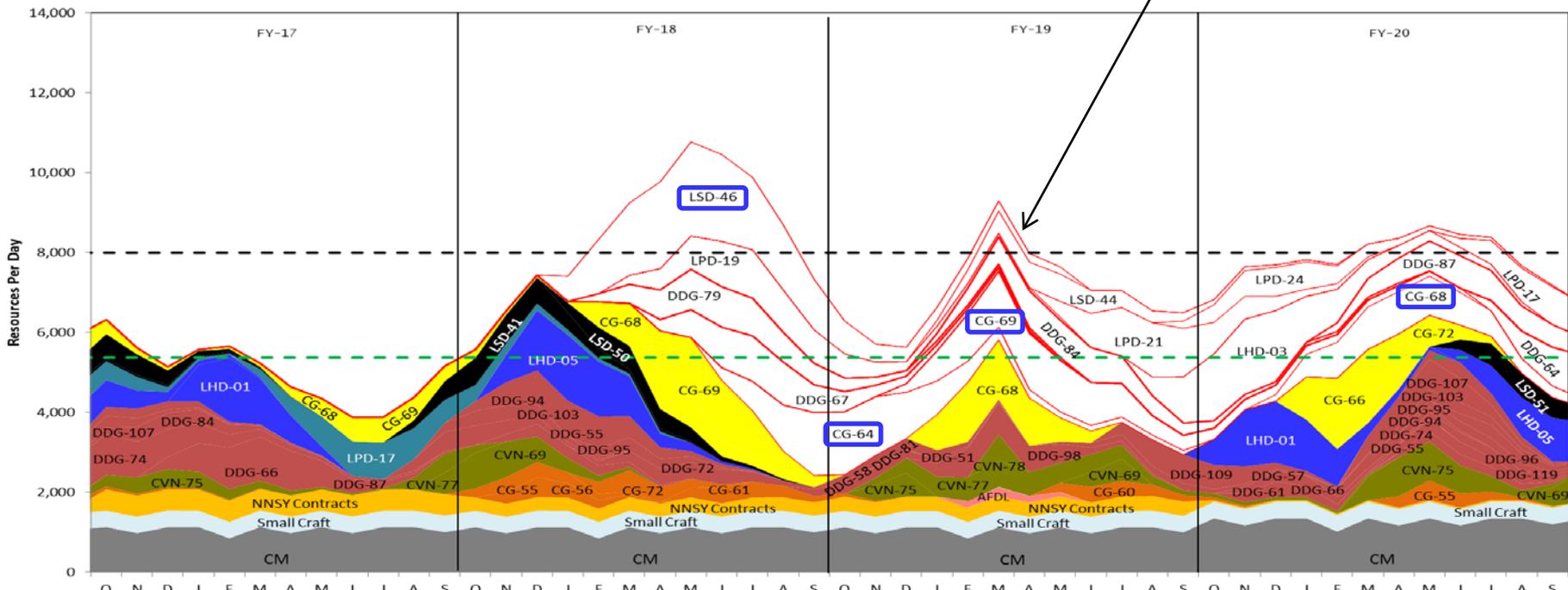


- Workload Color Legend
- CM
  - CG
  - DDG
  - LHD
  - LSD
  - CVN
  - LPD
  - SMCR
  - CG / LSD Modernization Program
  - CG / LSD MOD Availability (CWB)
  - AFDL
  - Estimated NNSY Contracting Plan

Last Update: 07/21/2017

MARMC Private Sector  
Workload Forecast Estimate with MOD (no AIT) FY17-FY20  
Baseline as of 21 JUL 2017

Red line indicates workload level if coast wide bid work remains at MARMC. Associated MDs NOT included in totals/average in chart legend



	FY-17	FY-18	FY-19	FY-20
Total TYCOM, CM & MOD FY Mandays	1,242,589	1,374,320	949,122	1,286,918
Average TYCOM, CM & MOD FY Mandays	4,991	5,508	3,756	5,074

Green Dash Line: 3-Year Historical Workload Average = 4919 RPD

Black Dash Line: Industry Provided SURGE Capacity = 8000 RPD



# Contracting



## MSMO (2004-2019)

- CNO Avail execution
- Advanced Planning
- EM/CM

MSMO  
Spiral 1

MSMO  
Spiral 2

CPAF

CPAF/IF

### MSMO Contract Structure:

- 5-yr base w/ options
- Upfront Competition to select source
- "Sole Source" negotiation on all planning and execution work

CPAF = Cost Plus Award Fee  
 CPIF = Cost Plus Incentive Fee  
 CPFF = Cost Plus Fixed Fee  
 FFP = Firm Fixed Price

## MAC-MO (2015→)

### MAC-MO

- CNO Availabilities & Continuous Maintenance Availabilities (CMAVs)

### 3<sup>rd</sup> Party Planning

- Planning

FFP

CPAF

- Emergent Maintenance (EM)

CPFF

### MAC-MO Contract Structure :

- DDGs & CGs in San Diego homeport
- Compete MAC to qualified ship repair yards – each awarded a contract
- Each CNO Avail/CMAV competed among MAC holders
- Accommodates Small Businesses
- EM – Maintain MSMO-like approach
- Planning approach - 3<sup>rd</sup> Party

## Future Strategy (~2020 and beyond)

Evolved Strategy

- Ensures flexibility and responsiveness
- Maximizes competition, to include use of MAC-MO
- Facilitates competitive pricing
- Maintains Industrial base
- Competitively awards 3<sup>rd</sup> party planning contracts
- Integrates and develops engineered work packages

Aligning risk with appropriate contract type



# Summary



- **SURFMEPP's MISSION: Properly plan maintenance over the life cycle of the ship**
- **Each avail properly packaged to be biddable and executable by MSRs**
- **CSWT engineered to ensure proper accomplishment of work with minimum discovery in execution**
- **Heavy focus on corrosion and structural issues**



## Questions / Back-up

***Win Them All.***



*Achieving Expected Service Life...One Ship at a Time*



# Evolution of SURFMEPP



- **2008 Pre-Surface Ship Life Cycle Management Activity (SSLCM)**

- 14 people for entire surface Navy
- Surface Navy was not performing all required life cycle maintenance
- No Technical Foundation Papers (TFPs)
- No Baseline Availability Work Packages (BAWPs)
- Ship Sheets at the Class level

- **SSLCM – May 2009**

- 36 total staff
- Class Maintenance Plan (CMP)
- TFP for DDG 51 class only
- BAWP
- Deferral tracking
- Ship Sheets based on deferrals

- **SURFMEPP – Nov 2010**

- 83 total staff

- **SURFMEPP today**

- 260 total staff (1 Mil, 154 CIVPER, 105 KTR)
- CMP strengthening
- TFP for all major ship classes
- BAWPs for all CNO availabilities
- Deferral tracking by hull
- Ship Sheets for every CNO availability
- Long Range Maintenance Schedules by hull
- Corrosion Control (CCIMS, TPRs, LRTPRs)



SSLCM

***Class Level Management***

***Hull Level Management***

SURFMEPP

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

- **Class Maintenance Plans (CMP)** are the “maintenance manual” of the ship class. Specifically included are:
  - **Maintenance Delivery Plan** including required dry-docking intervals
  - **Engineered maintenance requirements** such as equipment overhauls, shaft replacements, and corrosion protection
  - **System certification requirements**
- **CMPs are continuously updated based on class maintenance history**



***CMP = “Automobile’s Maintenance Manual”***