Surface Maintenance Engineering Planning Program (SURFMEPP)

DATE: 14 November 2017

Presented to VSRA

PRESENTED BY:
CAPT David E. Bauer, USN
SURFMEPP Commanding Officer
SURFMEPP Mission & Vision

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

**PRODUCT AREAS**
- Availability Analysis Study
- Baseline Availability Work Package
- Change Management Documentation
- Class Maintenance Plans
- Class Standard Work Templates
- Contracting Strategies
- Corrosion Program Management
- Deferral tracking by hull
- Integrated maintenance & modernization work packages
- Master Specification Catalog
- POM Ship Sheets by hull
- Robust Metrics
- DoN/FAST Ship Sheets
- Technical Foundation Papers

**THE SUN NEVER SETS ON SURFMEPP**
SURFMEPP Product Value Stream

Plan Long Range Requirements into Availabilitys

1. Class Maintenance Plan (CMP)
2. Technical Foundation Paper (TFP)
3. Ship Sheets (ship specific LRMS)
4. Baseline Availability Work Package (BAWP)

Technical Reqts
Class Reqts (Man-days)
Specific Ship Reqts (Man-days, Schedule)
Plan FRP Cycle

Execute Availability
Availability Work Package (AWP)
Assessment Results
Ship CSMP Modernization

Integrate Package
Document & Feedback
POM & DON Submission

Avail Close Out (Technical & Financial)
Deferred Life Cycle Maintenance
Work Item Level

Integrate, Execute, Document and Feedback
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.
Corrosion Management

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.
Corrosion Management

**POLYSILOXANE COATING**
- 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
Corrosion Management

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
Corrosion Management

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 Ploysiloxane 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

Polysiloxane Coatings

- Directive CMP task for freeboard and mast in docking availability
- Offers longer service life and can be cleaned rather than repainted
- Reduces the gradual “pinking” of traditional silicone

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
**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
Tank and Void 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.
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 JULY 2017

---

**Legend**
- Green Dash Line: 3-Year Historical Workload Average = 4919 RPD
- Black Dash Line: Industry Provided SURGE Capacity = 8000 RPD

---

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

---

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Total TYCOM, CM &amp; MOD FY Mandays</th>
<th>Average TYCOM, CM &amp; MOD FY Mandays</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY-17</td>
<td>1,242,589</td>
<td>4,991</td>
</tr>
<tr>
<td>FY-18</td>
<td>1,874,820</td>
<td>5,508</td>
</tr>
<tr>
<td>FY-19</td>
<td>949,122</td>
<td>3,756</td>
</tr>
<tr>
<td>FY-20</td>
<td>1,286,918</td>
<td>5,074</td>
</tr>
</tbody>
</table>

---

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

**Black Dash Line:** Industry Provided SURGE Capacity = 8000 RPD

---

**DISTRIBUTION STATEMENT A. Approved for Public Release.**

---

**Page 13**
**Contracting**

- CNO Avail execution
- Advanced Planning
- EM/CM

**MAC-MO (2015→)**
- CNO Availabilities & Continuous Maintenance Availabilities (CMAVs)
- 3rd Party Planning
- Planning
- Emergent Maintenance (EM)

**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 - 3rd Party

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

**Future Strategy (~2020 and beyond)**
- Evolved Strategy

**Aligning risk with appropriate contract type**

**MSMO Contract Structure:**
- 5-yr base w/ options
- Upfront Competition to select source
- “Sole Source” negotiation on all planning and execution work

**CPAIF**

**CPAF**

**CPAF/IF**

**CPFF**

**CPAF = Cost Plus Award Fee**
**CPIF = Cost Plus Incentive Fee**
**CPFF = Cost Plus Fixed Fee**
**FFP = Firm Fixed Price**
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)
Class Maintenance Plans

- 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”